activities in the country. Some of these policy adjustments required the abandonment of NEP redistributive commitments relating to the rules and regulations on equity ownership and industrial licensing. Hence, the NEP began to be terminated before its term was up.

Post-1990: Free growth

The relatively quick recovery from the recession, though largely attributable to improved international conditions, was held as proof of the efficacy of the private sector in enhancing the efficiency and competitiveness of the economy. Though political realities preclude blatant abandonment of the NEP's redistributive priorities, it was obvious that it now had to play second fiddle to the more alluring target of rapid growth. It is to be expected then that the National Development Policy (NDP) which replaced NEP in 1990 sought to 'maximise economic growth through policies which will allow for the free play of the market mechanism and the active participation of the private sector in the spirit of Malaysia Incorporated.'[7]

The privatisation of public corporations, in particular huge utility establishments, has since proceeded at a relentless pace. One of the key problems of this exercise is that instead of transferring or selling off activities and enterprises which have not been well-run by the public sector, the government seems to be doing exactly the opposite. The better managed public sector activities and enterprises are being privatised, leaving the public sector encumbered with the poorly-run and often loss-making concerns. The result will only further strain government revenues and confirm the charges of public sector ineptitude, while enriching those well-placed to gain from the privatisation exercises. Increasingly, these privatisation projects have become the domain of a select group of politically well-connected business tycoons, rendering the Malaysian economy ever more oligarchic. More worrisome are the recent moves to privatise basic services like education and health-care, which had erstwhile been accessible to all at very low cost and comprised important equalising elements in the social structure. It is invariably the lower-income groups which will be most adversely affected by the attendant rising costs of privatisation. Progressively, it seems, big businesses are having the run of the country and, under such circumstances, the social imperatives that form a core component of governance are increasingly set aside.

The balance sheet

On the score of strict economic indicators, it is undeniable that Malaysia has done well. GDP growth averaged 8.7% during the 90s.[8] Not only has unemployment become a thing of the past, the country is facing a problem of acute labour shortage. Although income disparity is on the rise, incidence of poverty had been reduced to 8.9% by 1995.[9]

With regard to provision of social services, the government has also performed creditably. The formal health-care delivery system which has put 90% of Malaysian citizens within an hour or 5km of a health centre has been lauded by WHO as one of the most well-distributed health services in the Pacific region and worthy of study and emulation by other developing nations.[10] Infant mortality is at 10.5 per 1000 live births, and maternity mortality is at 0.2 per 1000 deliveries.[11] Besides, over 90% of the country's infants have been covered under the immunisation programme against diphtheria, pertusis, tetanus, poliomyelitis and tuberculosis.[12] However, as noted earlier, this welfare system is under threat with the current thrust towards privatisation.

Education is also largely provided by the government and heavily subsidised. Literacy rate is now at the level of 86%.[13] Recent liberalisation and expansion of institutions of higher learning are geared towards the target of 5.6% of the population in the 19-24 age group receiving tertiary education by the year 2000.[14] However, quality of education is not only to be measured in terms of

numbers and it is sobering that educationists have lamented the deteriorating standards at all levels of schooling.

It is in the arena of civil society imperatives that Malaysia is to be found most lacking. The clampdown on the Press, the NGO movement and the Judiciary since 1987-88 has severely restricted citizens' initiatives in moderating the development process. The NGO movement appears not to have recovered from the 1987 onslaught when a number of activists were among the 119 persons detained by the government, though they have now all been released. Since then, the government has not relaxed its vigilance in curbing action seen as challenging its authority and NGOs routinely come in for disparagement whenever they criticise any government decisions or actions.

The muzzled press means not only the lack of a forum for public opinion and debate, it also means that NGOs have lost an important channel for communicating their views. Information control has been extremely effective in limiting the clamour for public accountability. Coverage over major disasters cease after a few days and the incidents quickly fade in the collective memory. Promises of redress are equally swiftly forgotten until a fresh calamity recalls old debts. But these too, are shortly passed over. As the pace of development accelerates, tragedies emanating from shoddy public works, substandard infrastructure and environmental degradation have become more common but the public appears to have grown benumbed to their occurrence. This public apathy is not unrelated, though, to the current economic boom. There seems to be a general disinclination to question or rock the boat when times are good.

The gagging of the judiciary that began with the sacking of the Lord President in 1988 has meant little sympathy for public interest suits, most of which have not been ruled in favour of the plaintiffs. Public inquiries and Royal Commissions of Inquiry are routinely appointed but appear to serve scant purpose beyond apportioning of blame. Once the inquiry reports reach the Attorney-General's chambers, the matter is closed as no litigation against the culpable parties ensue.

It appears, though, that Malaysians have developed a tremendous tolerance for government heavy-handedness even as rhetoric of accountability and transparency are more frequently bandied about. They seem to have accepted the official rationalisation that economic prosperity necessarily entails the sacrifice of some civil liberties. As long as the government delivers the goods in terms of material comforts and well-being, some amount of coercion and repression is taken in stride.

Environmental concerns are among the rare issues that are allowed a relatively free hearing. It is to be noted though that the environment has never been a core consideration of the country's development planners. It did not make an appearance in development plans until the Third Malaysia Plan published 1976 and even then it was a fleeting one as the Fourth Malaysia Plan which was unveiled in 1981 made no mention of the issue at all. From the Fifth Malaysia Plan onwards, a chapter has been dedicated to the environment. By the time of the recently issued Seventh Malaysia Plan, discussions on environmental issues have reached a high level of sophistication.

Malaysia is a signatory to all the vital international environmental conventions like the Framework Convention on Climate Change, the Convention on Biological Diversity, the Basel Convention on the Transboundary Movement of Toxic and Hazardous Wastes and Their Disposal, the RAMSAR Convention and the Convention on Desertification. It was even elected as the first chairman of the Commission on Sustainable Development set up by the Rio Environmental Summit to monitor the integration of environment and development by the international community. At the national level, government has pledged to maintain the balance between growth objectives and environmental concerns.

A National Policy on the Environment is being prepared to ensure long-term sustainability and improvement in the quality of life. The objectives of the policy are:

- to achieve a clean, safe, healthy, and productive environment for both present and future generations;

- to conserve the country's unique natural resources and diverse cultural heritage with effective participation by all; and

- to promote lifestyles and patterns of consumption and production consistent with the principles of sustainable development.[15]

Unfortunately, such impressive proclamations do not always translate themselves into concrete policy, especially when it is a toss-up between economic gains and environmental protection. For instance, the government resorted to increased logging as a means of pulling the economy out of the 1985-86 recession. The running controversy on the construction of the Bakun Dam is also pitching environmentalists against government quarters and commercial interests that stand to gain from the project. Laws have been bent to allow the project to proceed. To ensure the speedy and unquestioned approval of the Environmental Impact Assessment (EIA) studies for the dam, the power of approval was transferred from the Federal Department of Environment (DoE) to the Sarawak Natural Resources and Environment Board, chaired by the Sarawak Chief Minister who has vested interests in the project. This move was challenged in court by three longhouse residents affected by the project. The Kuala Lumpur High Court declared that the transfer of power contravened the Environmental Quality Act and that the project proponent should submit its EIA to the DoE. Unfortunately, the jubilation over this victory was shortlived as the Appeal Court rapidly allowed the suspension of the effects of the High Court decision, thus allowing work on the project to continue, pending the hearing of an appeal by the project proponent against the High Court decision. Ultimately, even if the Appeals Court upholds the jurisdiction of the DoE, the department will come under severe political pressure to approve the EIA. The manner in which the government has handled the Bakun issue serves to illustrate how environmental concerns have been sacrificed to profit motive. The case studies that follow show that Bakun is not an isolated incident but only the latest controversy of this nature.

Growth sans environment

Development has definitely had its toll on the Malaysian environment and much of it can no longer be claimed to be committed out of ignorance. Models and guidelines on sustainable development are easily accessible. There is no lack of information upon which sound environmental policies can be based either. Indeed, policymakers in the country have often pledged their commitment to it and the country's latest development plan is couched in very progressive language as far as environmental concerns and policies are concerned. Unfortunately, the gulf between policy proclamation and implementation remains wide. As the case studies will show, this divergence becomes most obvious when it is perceived that economic gains and environmental concerns pull in different directions. This is a rather sad state of affairs as Malaysia's robust economy means that it can afford to be more discriminating in its choice of developmental projects and routes, to ensure, at the very least, detriment of the environment is retarded if not curbed. However, the obsession to achieve NIC-dom and join the ranks of the industrialised nations appears to outweigh all other considerations and the environment continues to be a victim of this mode of development. What is even more galling is that the damage to the environment is no longer confined to Malaysian shores as Malaysian companies spread their wings across the developing world, supposedly in the spirit of South-South cooperation.

GLOSSARY

Agro-Chemical Use

Application of inputs such as chemical pesticides has led to the misconception that pests can be eradicated, rather than simply managed. Farmers, therefore, continue to apply pesticides on a routine basis, and sometimes needlessly. Consequently, the use of pesticides has increased substantially in the past decade. Malaysia spent about RM283m ($113m) on agro-chemicals in 1993.[16] The routine and heavy use of pesticides has, however, led to other problems such as induced pest outbreaks, development of resistance to pesticides, pesticides treadmills, human health hazards, pesticide residues in food and the environment, adverse impact on non-target organisms, and reduced biodiversity.

***Induced pest outbreaks*:** Paddy farmers, reporting induced pest outbreaks, blame pesticides for killing frogs and snakes that used to control the rats in their fields. Now, huge rats attack the paddy plants. Indiscriminate spraying against leaf folders or leaf rollers within the first 45 days after transplanting have resulted in subsequent brown planthopper outbreaks.

***Pesticide poisoning*:** Paddy farmers and other farm workers suffer from pesticide poisoning after inhaling pesticides such as paraquat, methamidophos and 2,4-D which are sprayed to control weeds and other pests in their fields. A study conducted by the Malaysian Agricultural Research and Development Institute noted that one-third of the tobacco farmers in Kelantan suffered pesticide poisoning, manifesting symptoms like giddiness, nausea, skin problems and fainting spells.[17] Farmers also suffer from skin diseases when pesticide residues on the plants and in the ground are washed into the streams which they use for bathing.

***Pesticide residue*:** Residue of pesticides in market produce, particularly fresh fruits and vegetables, have become a cause for concern. Fungicides which are commonly used on a wide range of vegetables require a pre-harvest interval of 10-14 days. Farmers, however, do not usually follow the safe pre-harvest intervals but frequently apply the fungicide a day before harvest for post-harvest protection against fungicide diseases. Also, the use of higher-than-recommended rates is common and can result in excessive residues. In early 1987, in a rapid residues check, seven types of vegetables were found to contain excessive insecticide and fungicide residues and were declared unsafe for public consumption. Contamination by pesticides have also been recorded on other food commodities such as ricefield fish.

Aquaculture

Large-scale aquaculture for shrimps and fish was encouraged as a means of overcoming the crisis of depleted fisheries resources. Prawn aquaculture in Malaysia first began in late 70s, following news of success stories from Taiwan and Thailand. Many investors have made good profits in the short-term but the ecological impact is devastating. Large areas of mangroves, peat swamp forests and other wetlands are being destroyed, pollution of the coastal waters is serious (from the waste and chemicals used, such as antibiotics to combat disease) and, as in other monocultures, disease is rampant after a few years, leading to harvest failures in many cases. In the state of Johor approximately 56% of the 3405ha opened for prawn aquaculture have been abandoned.[18] Where freshwater is required, as in Pahang's extensive eel cultivation area, massive amounts of underground water are pumped, leading to degradation of groundwater and water shortages for local communities during the dry season. A few examples will serve to illustrate the follies of aquaculture in Malaysia.

***Kuala Muda*:** The livelihood of 3000 fishermen from 15 villages in the Kuala Muda area, Kedah, is being seriously threatened by the mushrooming of aquaculture projects in the area. An area of 1000ha of mangrove forests in the Kuala Muda area have been approved for aquaculture.[19] However, even before all the approved farms have started operation, a number of the tiger prawn farms have already fallen victim to viral attacks. In total, about half the tiger-prawn ponds originally started have been abandoned. Once abandoned, these areas are left as severely degraded wasteland.

***Kerpan*:** More than 400ha of highly productive paddy land, which form part of the country's rice bowl in the Muda area, were acquired in September 1993 by Kedah state government. The acquisition involved a total of 167 lots of land, belonging to over 800 landowners who had been traditionally cultivating paddy. Apart from these landowners, there were several hundred families who were working on these lands as tenants. The state government acquired these lands under the Land Acquisition Act 1960 for the purpose of tiger-prawn farming, which was to be undertaken by a joint-venture company known as Samak Aquaculture. At least 60% of the equity of this company is held by a Saudi Arabian company, Saudi Bin Ladin, 10% by Kedah state government, and the remaining 30% by a company called Aspirasi Gemilang, which was set up to represent the landowners' and farmers' interests. About 50% of the landowners affected were opposed to the acquisition. They formed an Action Committee and decided to challenge the acquisition of their land in court. The case is still pending in the Court of Appeal.[20] (*See case study*)

***Nenasi*:** Song Cheng Sdn Bhd, a joint venture involving Taiwanese, Japanese and Korean partners have been involved in the construction of the world's largest eel farm on 2080ha of rich peat swamp forest in Nenasi, in southeast Pahang. The first phase of the project covering an area of 290ha started in 1988. During the first year, shrimps were reared in 204 ponds. Subsequently, the company shifted to eel breeding as eels fetch a better price in the Japanese market. More than 400 tubewells, each 100 metre deep, were constructed to pump groundwater 24 hours a day to fill several hundred ponds for eel cultivation and the consequences were disastrous. The Pahang Public Works Department (PWD) revealed in 1993 that the water treatment plant in Nenasi was unable to extract enough water for 15,000 residents in the Bebar district comprising Nenasi and four other villages. The disruption to the water cycle was so drastic that there was no water during the dry season in 1992. The PWD was forced to supply water from house to house.[21] (*See case study*)

Dams

There are currently 56 dams in the country, built for purposes of irrigation, flood control, silt retention, supplying water for domestic use and generation of hydro-electric power. More dams are being constructed and many more proposed, 260 'suitable' dam sites having been identified. While a number of these dams are essential, their scale, design and manner of construction raise many public queries and concerns. The present controversy is over the construction of a RM1.5 bn ($600m), 205-metre high concrete face rockfill dam across the Upper Rejang river that will submerge 69,640ha (the size of Singapore) of forest and farmland.[22] The potential problems associated with the construction of the Bakun dam typifies those connected with dam construction in the country. These problems are: displacement of large communities (8000-10,000 in the case of Bakun) and loss of their ancestral lands; destruction of the river ecosystem; destruction of large tracts of rainforest, consequent loss of biodiversity, and in the case of some of the primal forests destroyed, loss of rare flora and fauna; high cost of construction; and threat of dam failure.

The Bakun dam is one of six hydro-electric plants planned for Sarawak, the first being the Batang Ai which was completed in 1985, which displaced about 3000 Ibans from their jungle

longhouses. Another 15,000 people will be dislocated if the four other dams (Pelagus, Murum, Baleh and Belaga) are built. On the peninsular, a number of dams are also being constructed or proposed, such as the Linggiu Dam in Johor, Beris in Kedah and Neggiri in Kelantan. Indeed, the Minister of Works has been quoted as saying that another 47 dams are needed by the year 2010. There is certainly a need to reconsider this dam-building spree. (*See case study*)

Floods

It has been estimated that 29,000 sq. km or 9% of the total land area in the country is flood prone affecting some 2.7m people or 18% of the total population. The average annual flood damage is estimated at RM100m ($40m at 1980 prices) and the value is expected to increase rapidly as a result of urban expansion and rising cost of land and property.[23] Though legislation provides for flood zones and the prohibition of buildings in flood-prone areas to enable flood protection measures to be undertaken, their implementation leaves much to be desired. Most of these floods are caused by encroachment on water catchment areas and natural retention ponds as well as hill-cutting which leads to soil-erosion and increase of sedimentation. In September 1995, Penang was paralysed for a few days due to extensive floods but this incident was only the most dramatic manifestation of a long-standing problem of flash floods, which are frequent occurrences in the major urban centres. Floods have also been aggravated by the release of water from dams which had been touted as mechanisms for flood mitigation. In December 1993, the Mentri Besar (chief minister) of Perak admitted that the release of water from four dams contributed to the worst flood in 22 years in the state.

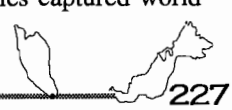
Forest Loss

Malaysia's forests have been under assault from agricultural land schemes, property development, resort development, infrastructure development and logging. The total area of natural forest in Malaysia at the end of 1994 was estimated to be 19.01mha or 57.95% of the total land area, with the proportion of forested land being higher in Sabah and Sarawak than in Peninsular Malaysia.[24] The loss of forest land in Peninsular Malaysia has been occurring at an alarming rate; 70% of the peninsula was still under forest cover in 1966 but by the time the National Forest Act was enacted in 1984, only 40% were left.[25] Although the Act provides for the gazetting of Permanent Forest Estates, the protection it can offer is limited. The Director-General of the Forestry Department revealed that between 1978 and 1994 Malaysia degazetted 1.39mha of forest reserves.[26]

This constant encroachment of the forests have led to disruption of climatic equilibrium and rise in temperature, loss of biodiversity, destruction and degradation of water catchment areas, increasing soil erosion, siltation and floods, destruction of forest-based societies, displacement and dispossession of peasants and forest peoples through floods and other adverse ecological impacts.

The massive destruction of the forests has engendered protests from the affected communities and the public in general, the most dramatic of them being the Sarawak natives' blockade against logging and the destruction of the forest, their ancestral homes and land, in the late 80s. Thousands of natives from three ethnic groups — the Penans, Kelabit and Kayan — formed human barricades across logging roads to prevent trucks from taking logs out of the timber camps and food from getting into the camps. Many were arrested in this bid to defend the forest, their rights and their way of life but it was a battle they could turn their backs on.

The widespread protests by and arrests of Sarawak's native communities captured world attention. The official line shifted from one of no adverse effects in Sarawak's logging, to a public discussion of over-logging throughout the country and



the patronage system in the handing out of logging concessions by state governments. Although some actions were finally taken by Federal government, unsustainable levels of logging still continue to feed the export market. (*See case study*)

Hill Destruction

Uplands development in Malaysia is threatening mountain biodiversity and its unique ecosystem. Accelerated erosion and slope failure resulting from land clearing and cutting have caused severe siltation and flash floods in the lowlands. Thus any disturbance of the uplands has irreversible impact because of the permanent change in the ecosystem. In Malaysia, the majority of slope failures occur on highways as well as residential and hillside development areas where human interference has altered the original slope. Though the dangers of uplands development are well-known and legislation prohibit construction of highrises on slopes above a gradient of 20 degrees, wanton violations of this regulation go unprosecuted. Just over the past three years, a number of disasters linked to excessive hill-cutting have occurred.

***Cameron highlands*:** A landslide in Cameron highlands killed seven persons on December 7, 1994. Due to overdevelopment, landslides have been occurring with increasing frequency in this hill resort, the main source of temperate vegetables and flowers in the country.

Genting highlands: On June 30, 1995 a massive landslide at the hill resort of Genting highlands killed 21 persons and injured 22 who were buried under the debris. The mishap was attributed to illegal land clearing that had resulted in severe soil erosion and slope instability. The scale of the disaster was due to a conjunction of events: flood on the main road had forced traffic to use the slip road, resulting in a traffic jam at the place where the landslide occurred.

Highland Towers: The collapse of Highland Towers, a 12-storey condominium block in Ulu Klang, Selangor, killed 48 persons on December 12, 1993. The tragedy was caused by environmental degradation in the vicinity, particularly, severe hill-cutting and land clearing for property development. The consequent soil erosion and water-seepage destabilised the soil and weakened the base of the highrise block. The incident caused a public furore and immediate government promise to review and restrict construction on hill-slopes, but such construction has continued apace since.
(*See case study*)

***North-South Highway*:** The collapse of a hill slope over the North-South highway on January 6, 1996, killing a truck driver and calling into question the adequacy of checks and monitoring of the country's highways. Collapses along the various stretches of highways occur periodically but the promises to ensure that such incidents would not recur remain mere promises.

Industrial Malfunction

Though industrial accidents which occur in Malaysia are relatively minor — mainly involving gas leakage, spillage of chemicals and molten metal, explosions and physical injuries caused by unsafe machines — the toll it exerts on the labour force is very high. The number of industrial accidents remains high — 114,134 accidents in 1995 — and this steady trend has been maintained over the past five years.[27] Every year, an average of 80,000 work-related injuries occur leaving 5000 workers disabled for the rest of their lives.[28]

***Arsenic poisoning*:** The case of arsenic poisoning of workers in the Malaysian Smelting Corporation in Butterworth was brought to light in November 1989, prompting government to examine the 460 workers in the factory. At least 90% of them were found to be suffering from chronic arsenic poisoning and 36% showed signs of early liver failure. The arsenic exists as an impurity in tin ore. When the tin is smelted, arsenic escapes as a gas. No measures had been taken to protect the workers against exposure to this toxic gas.[29]

***Bright Sparklers*:** A fire and explosion at Bright Sparklers, a fireworks factory in Sungei Buloh, Selangor, on May 7, 1991, killing 23 workers and injuring 100, has been described as the worst industrial accident in the country's history. The incident is all the more galling as the factory had violated more than 10 regulations related to safety provisions, licensing, building fitness, etc. for close to 20 years without compunction or censure. (*See case study*)

***Wembley Industries*:** Leakage of sulphur dioxide on October 15-16, 1992 from Wembley Industries, a factory producing sulphuric acid for the manufacture of activated clay, affected more than 700 workers at a nearby garment factory. The affected, who complained of difficulty in breathing, vomiting, burning sensations in the eyes and chests and throbbing headaches, were treated for sulphuric acid poisoning at the local hospital. Following the leakages, Wembley was ordered to close down by Department of Environment until it complied with safety requirements and regulations.[30]

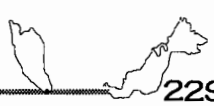
Mining

Extensive devegetation, soil exposure and erosion associated with alluvial tin-mining has left vast expanses of scarred landscape, a 'legacy' of the colonial period. The problem has been contained as a result of the decline of the tin industry, the number of mines having fallen from 1044 in 1972 to 82 in 1995.[31] However, with the imminent shift from the predominantly alluvial tin-mining to hard rock mineral mining in the future, it is envisaged that contamination of the watershed by heavy metals and treatment plant chemicals is likely to become a major problem if not closely monitored and controlled.

***Mamut*:** The Mamut Copper Mine in Sabah, the biggest in the country, has a long history of environmental and human health contamination. Its operations releases four categories of pollutants into the environment: silt and rubble during the wet season and dust during the dry season; heavy metals; chemical residues; and acid waste. During the early operations of the mine in the late 70s, mud and waste discharge damaged 1600ha of paddy fields in its vicinity.[32] Soil samples from the paddy fields were found to contain high levels of toxic metals like copper, chromium and zinc. Paddy crops harvested from these fields five years later were still found to be contaminated with high levels of heavy metals. The Mamut Copper Mine has also polluted the river systems in the area with silt and heavy metals and adversely affected fish yields from the affected rivers. The fish were also found to be contaminated. Even as these problems remain unresolved, there are plans to mine new deposits of copper and coal that are located in sensitive catchment areas.

Tourism

As Malaysia joins the chase for the tourist dollar, many of the country's natural heritage are being threatened by environmental degradation. Development of golf courses, ecotourism and the construction of five-star hotels are not only continuing to cause immense damage to the environment, but are also displacing the native people from their homes, depriving them of access to their rivers and forests.



***Eco-tourism*:** The advent of ecotourism was at first welcomed as a means of increasing awareness of Malaysia's natural heritage and minimising the damage wrought by tourism on the environment. However, it is becoming clear that this sector of tourism is similarly evolving into a money-spinner for those in the tourist trade, and its impact on the native population is no less adverse. As one insightful observer put it, 'the irony is that while tourists tramp all over the pristine forest without any knowledge of their importance, the local villagers who have protected and lived with these forests for centuries will be removed for conservation.'

***Golf courses*:** One of the most disturbing trends that has resulted from the tourism boom is the craze for the development of golf courses. It has been estimated that there are a total of 90 golf resorts in the country currently.[33] The widespread public objection to such development stems from the fact that golf courses: consume too much space, at least 100ha for a 18-hole course; incur high costs of maintenance in terms of water consumption; represent a potential source of chemical pollution of soil and water owing to heavy use of pesticides; are rarely subjected to proper EIA control; use large tracts of land for the leisure pursuits of an exclusive group in a situation where there is shortage of land for more pressing needs like housing and public parks; and exist as enclaves which serve the interests of foreigners and speculators at the expense of the local population.

***Island tourism*:** The spread of mass tourism to the scenic islands, such as Pulau Redang Langkawi and about two dozen more have caused considerable concern for at least three reasons: limited carrying capacity of the islands in terms of water and power supply; garbage disposal and the attendant impact on the marine reserves, in particular the coral habitat; and the displacement of the original fishing village communities.

***Sarawak*:** In Sarawak, the Berawans of Long Terawan have tried to defend their native customary rights as prime forest lands at the Mulu National Park were taken over in 1993 for the construction of a 97.5ha Royal Mulu Resort, consisting of a Japanese-managed five-star hotel and an 18-hole golf course. The resort has also polluted the Melinau River with raw sewage, thus depriving the native people of their main source of clean water.[34]

Toxic Waste Dumping

As the industrialisation process in Malaysia accelerates, the generation of hazardous wastes has kept pace. According to a Department of Environment survey, the amount of hazardous waste generated in the country had increased from an estimated 280,000cu m per year in 1984 to 380,000cu m per year in 1987 and 420,000cu m per year in 1994.[35] Despite that, there is still no proper system for the treatment and disposal of this waste. Currently, many industries are storing their wastes, both partially treated or fully-treated, at their factory compounds, warehouses or temporary storage sites.

Government decided in 1988 that private investors should carry out the construction, operation and maintenance of an integrated treatment and disposal facility for toxic waste. A site for the construction of the 'waste management centre' was identified at Bukit Nenas, Negri Sembilan, but drew the wrath of residents in the vicinity because it was situated too close to their homes. The EIA submitted by the consortium appointed to construct the facility was also found to be flawed. Though the waste treatment centre was originally scheduled to be completed by 1995, construction has yet to begin. In the meantime, numerous incidences of hazardous dumping of toxic waste have been reported.

***Asian Rare Earth*:** The dumping of radioactive waste by Asian Rare Earth, a factory set up by Mitsubishi and various Malaysian partners to extract rare trace elements and yttrium from tin-tailings, resulted in a 10-year-long battle by residents of Papan and Bukit Merah,

Perak, to close down the factory. Radiation levels in the vicinity of the factory were recorded at 170 millirem/year against the world average of 100 millirem/year and incidences of cancer, genetic defects and other radiation-linked ailments were higher in the affected areas than the national average.[36] The residents, who had been fighting the case in court for more than 10 years, lost their final court battle on December 23, 1993 but their perseverance and undaunted agitation led to the closing of the factory. (*See case study*)

***Kampung Bukit Ceraka*:** Illegal dumping of toxic waste in Kampung Bukit Ceraka, in Subang, Selangor, caused a stir among residents in the village in May 1992. It was found that vacant lots in their village had been used by unscrupulous garbage disposal operators and nearby factories to dump their waste, including large amounts of toxic waste.

***Pangkor Island dump*:** As many as 41 drums of toxic waste were dumped on Pangkor Island in March 1995. The poison from these drums leaked into the coastal waters, killing thousands of fish along the eastern shore of the island. It was later confirmed that the drums contained 2050kg of potassium cyanide which has the potential of killing nearly 7m people.[37]

Transnational Effects

In recent years, Malaysian companies have been aggressively spreading their wings to other developing countries and regrettably leaving a trail of environmental degradation behind. Among the gravest offenders have been Malaysian logging companies operating abroad. Tourism and infrastructure development projects overseas are other areas where Malaysian companies are riding an investment wave. But what is good news for the Malaysian business groups might not be good news for the environment or the people of the host countries.

***Infrastructure*:** Other Malaysia projects in the pipeline abroad include a huge real estate scheme in South Africa, a highway network in India, a water-treatment plant in Vietnam and a power plant in China. However, some of these companies lack the hands-on expertise or experience to manage huge projects overseas.[38]

***Forest plunder*:** Depleting forests in Malaysia, as well as some degree of regulation and increased public scrutiny, has contributed to the movement of Sarawak companies to new forests in the region and beyond. The Rimbunan Hijau Group, the first major overseas investor, now dominates the export of timber from Papua New Guinea. In 1994-95 major privately owned companies in Sarawak took over companies listed in the KLSE to raise funds for their expanding operations. Rising tropical timber prices in the late 80s and the concerted policy of government to promote Malaysian investments in other developing countries also led to numerous other companies joining in to reap quick profits from exploiting this 'green gold, ' though many of them such as Berjaya and Mun Loong having no previous logging record. Currently, Malaysian logging companies are major players in Laos, Cambodia, Papua New Guinea, the Solomon Islands, Vanuatu, Guyana and Suriname. The WTK Group has expanded into Indonesia and Burma as well.[39]

It is shocking that even as the viability and sustainability of Malaysia's 'selective' logging system is being increasingly discredited, Malaysian companies are promoting the same notion elsewhere. The disregard for the forest ecosystem and environment as well as the violation of land and forest rights of local communities which were exposed at home are reported to be repeating themselves in many countries. Such is the power and influence of the Malaysian timber barons that the Melanesian governments permit trees to be felled at three times the sustainable level. In less than a decade, Papua New

Guinea has become the world's fourth biggest exporter of logs, which now accounts for nearly 20% of its foreign earnings. In the Solomon Islands, 56% of export earnings in 1994 came from the shipment of logs, against 23% in 1991. At these rates, it has been estimated that the Solomons could lose all its commercially accessible forests within a decade and Papua New Guinea within a generation.[40]

Not surprisingly, local residents of these Pacific Islands are enraged by the destructive plunder of these logging companies. Millions of dollars worth of equipment has been sabotaged and demonstrations have erupted into violence. One Malaysian company had $400,000 worth of equipment put to the torch.[41] In many ways, the battles of the Pacific islanders are evocative of the anti-logging protests in Sarawak in the 80s.

Tourism: On another front, Cambodian tourism now appears under complete control of Malaysian corporations. In December 1994, the Malaysian Helicopter Service and the Cambodian government signed a contract that created a new national airline. A few weeks later, a little-known Malaysian company, Ariston Sdn Bhd was given the green light to develop a massive tourism complex, an international airport and an entire new town in the Sihanoukville area, with investment worth $1.3bn, and to run a floating casino in Phnom Penh.[42]

Another Malaysian company, YTL, is involved in luxury hotel projects in Siem Reap and has grand plans for a high-tech sound-and-light show at Angkor Wat as a tourist attraction. The latter incongruous project has come under international criticism for potentially threatening the structure of this historic shrine. Though approved by the Cambodian leadership, all these Malaysian ventures have been strongly criticised for lack of transparency and the expected adverse impacts they will have on the environment and people in this war-torn and poverty-struck country.

Water & Watershed Deterioration

As much as 75% of the Malaysia's water sources are slightly or grossly polluted as they do not meet the WHO specifications.[43] Only 28% of the country's rivers are classified as clean, meaning two out of every three rivers in the country are polluted. The quality of river water in the country has been deteriorating at the rate of 1.2% per year in the last decade.[44] Sewage water pollution accounts for about 65% of the pollution source, while industrial and agricultural pollution accounts for 27% and 8% respectively.[45] Sedimentation and siltation of rivers due to land clearing continue to degrade water quality and affect the discharge capacity of the natural channels. Coastal waters, on the other hand, are polluted by oil spills (14 in 1994) and desludging plus industrial waste.

Cameron Highlands: In the Cameron Highlands, human activities such as logging, land clearing and uphill farming in the Ringlet, Tanah Rata and Brinchang areas have clearly affected their water generating capacity, so much so that a discernible lowering of water level at the Sultan Abu Bakar Reservoir has occurred. Removal of vegetation at the Gunung Raya catchment in Langkawi has affected the quality and quantity of water at the Padang Saga water intake point. The Klang Gate Dam catchment area even though encircled by development is not really threatened by it, rather, it is the victim of undesirable human activities such as illegal logging and illegal clearing of vegetation to make way for small-scale illegal farms.

Durian Tunggal Dam: The fast pace of development has resulted in vast areas of forested land being cleared and their landuse changed. Most disturbing is the deforestation and devegetation of many water catchments which directly affect their water-generating capacity. As a result heavy rainfalls cannot be tapped effectively at the catchment level and this, in

turn, affects water levels in dams and rivers. The Durian Tunggal Dam catchment in Melaka is the most glaring example of the intrusion of development into the water catchment area through land clearings, plantations, built up areas, etc. (*See case study*)

***Kinta Valley*:** The Kinta Valley in the state of Perak and the Linggi basin in Negri Sembilan are two important emerging urban centres facing acute and severe intrusions into their water catchments. The Kinta River is an important water source for the valley, but human activities in the valley as well as on the hills at the upper reaches of the drainage system can cause serious problems to the quantity and quality of raw water drawn from the river for potable water supply.

***Linggi basin*:** In the Linggi basin, even though the Terip Dam catchment area has not yet been intruded upon by environmentally-degrading human activity, the catchment area of the Rantau intake point on the other hand is severely affected by myriad human activities. The Pedu Dam catchment in Kedah is encroached upon by the development of a golf course.

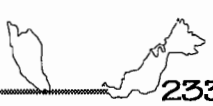
Wetlands Decimation

Malaysia's wetland habitats are facing major threats due to urbanisation, aquaculture and non-sustainable forestry practices. Almost half of the country's mangroves have been lost in this century. Much of the loss in recent years has been due to large scale harvest by the Japanese wood chip industry in Sabah and Sarawak, the conversion of mangrove land to prawn aquaculture ponds and the reclamation of mangrove land through seaward expansions.

***Aquaculture*:** Vast areas of mangroves have been destroyed to make way for aquaculture ponds. Many of these ponds are subsequently abandoned but the degraded mangroves can no longer be rehabilitated.

***Forestry practices*:** Non-sustainable exploitation for timber from mangrove and peat swamp forests can cause the destruction of the habitats. Non-sustainable logging practices in the North Selangor Peat Swamp Forest has resulted in drainage and exposure of peat soil, leading to subsidence and oxidation of the top layer of the soil. This has had major impacts on the natural hydrological cycle and led to destruction of the habitats for the freshwater fish population. In the long term, this can have serious impacts on the Barat Laut Rice Scheme, which depends on the water from the swamp to irrigate the ricefields.

***Urbanisation*:** With the growing demand for houses, many lakes and mining ponds have been filled in, thus destroying the aquatic habitat. Reclamation of land from the sea to meet the requirement for more space has resulted in sedimentation of the beaches, thereby interfering with the ecology of the area. Coral reefs located around coastal islands are seriously affected by sedimentation from largescale development on them. Reversion of forest reserves to state-land status for urbanisation has also threatened our valuable and fragile wetlands.



CASE STUDIES

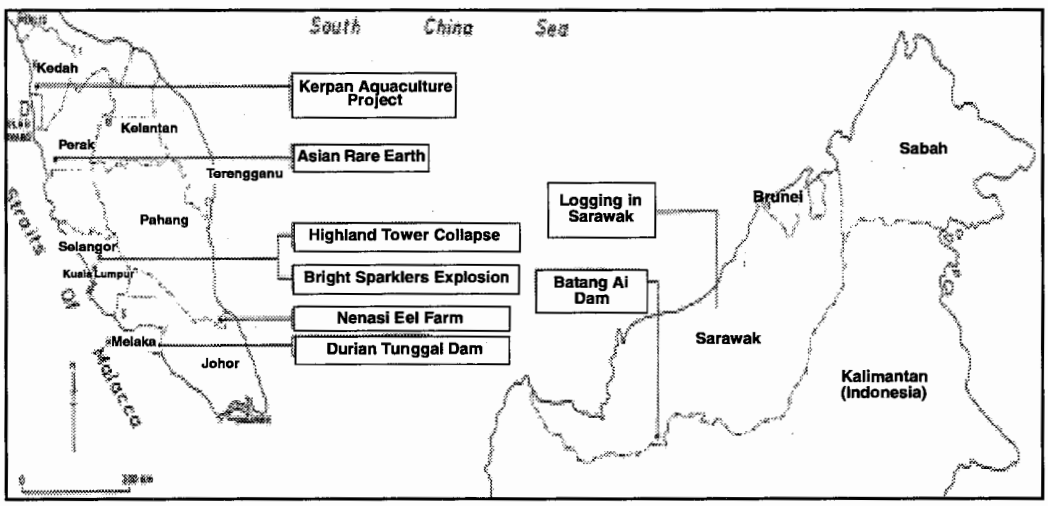
Kerpan Prawn Farming: Yen for Risky Ventures

In September 1993, the Kedah state government acquired 400ha of highly productive paddy lands which formed part of the country's rice bowl in the Muda area. The acquisition involved a total of 167 lots of land, belonging to over 800 landowners who had been traditionally cultivating paddy. Besides, there were several hundred families who were working on these lands as tenants. The Kedah state government acquired these lands under the Land Acquisition Act 1960 for the purpose of tiger-prawn farming, which was to be undertaken by a joint-venture company known as Samak Aquaculture. While 60% of the equity of this company is held by a Saudi Arabian company, Saudi Bin Ladin, 10% is held by the Kedah state government and the remaining 30% by a company called Aspirasi Gemilang, which was set up to represent the landowners' and farmers' interests.[46]

When implementing the project, government authorities did not consult the farmers as to their willingness to participate in the tiger-prawn venture. The farmers were told that they were partners in the joint venture project but were not shown the terms and conditions of the agreement and what its implications were. In the first phase of the project, 74 lots of land were acquired by government but about 50% of the landowners affected were opposed to the acquisition.[47] They did not want to participate in the tiger-prawn venture as they were uncertain about its sustainability and they did not want to lose control and ownership of their lands. Those who objected to the land acquisition were subjected to all manner of strong-arm tactics like warnings that their land would be confiscated if they refused to take part in the project or that they would be paid very low compensation if they took the case to court. Government also stopped the supply of fertilisers to farmers whose land had been earmarked for the project. When resistance persisted, police were mobilised in large numbers to arrest and detain the farmers.

Landowners who did not participate in the project were offered between RM43000 ($17,200) to RM57,600 ($23,000) per hectare of land in compensation.[48] The farmers who opposed the project did not accept this compensation as they argued that the amount was insufficient for acquiring

Location Map of Case Studies



alternative pieces of land for farming. They formed an Action Committee and decided to challenge the acquisition of their land by the state government in the High Court in Kedah. In June 1994 they succeeded in their court action when the High Court declared that the acquisition of their land was invalid and bad in law as the purpose of tiger-prawn farming was not within the purposes set out under the Land Aquisition Act '60. Just one month later, the Kedah state government reacquired the farmers' land and this time they justified the acquisition under the controversial Section 3(b) of the Act which was introduced in 1991 despite much public outcry. Under this section, if the state authority is of the opinion that a project is economically beneficial even for a small class of persons, the state can acquire any land.[49] In the Kerpan case, the state authority was of the opinion that the tiger-prawn project was beneficial to the people of Kerpan and to the state of Kedah as a whole. Again, the farmers mounted a challenge in court in December 1994. At the end of August 1995, the Kedah High Court rejected the farmers' case and no reasons for the decision were given. The farmers filed an appeal to the Court of Appeal and the case is still pending.

In the meantime, the paddy lands involved in the project have all been destroyed and converted for tiger-prawn farming. According to some farmers, tiger-prawn fries were released into some of the ponds in December 1995. Though one of the justifications for the project was that it would generate employment for residents in the area, investigations showed that foreign workers from Thailand, Bangladesh or Indonesia have been hired instead. On December 26, 1995, information was received that some six small tiger-prawn breeders in the vicinity of the Kerpan project have suffered huge losses when the prawns that they were rearing died in the ponds. These small-prawn farms were located immediately next to the Samak project. According to these operators, their prawns died when their ponds were polluted by effluents discharged from the Samak ponds.

Though the Kerpan project involves the conversion of 400ha of farmland to tiger-prawn cultivation, no EIA was done by the company undertaking the project because there was no legal requirement to do so. As the law currently stands, only when the activity involves the clearing of more than 50ha of mangrove forest is an EIA required. Claims about the economic benefits of the project have been made without adequately considering the environmental effects of this project. Many concerns have been raised by the farmers, among them:

- the potential impact of the project on adjoining rice-fields in relation to saline water intrusion from the prawn-ponds into the underground aquifers and irrigation canals;
- the potential impact of the project on its surrounding environment in relation to the sewage and chemical discharges from the ponds; and
- the potential impact on groundwater and the water-table as a result of the conversion of wetlands into tiger-prawn ponds.[50]

The farmers' concerned have not been taken heed of by the Kedah state government which declared on July 15, 1996 that the Kerpan project will continue as it is not the cause of coastal erosion in the vicinity.

It is perplexing why the government had chosen to site the prawn culture project on fertile and productive paddy land. The farmers have been forced to give up a tried and proven mode of living for a risky venture as prawn culture is known to suffer high rates of failure due to disease. The pumping of salt water from the sea into the prawn ponds will alter the salinity of the soil, rendering it irreversible for farming if the aquaculture project fails. The heavy use of chemicals and antibiotics for the prawn culture will definitely have a detrimental effect on the surrounding ecosystem, threatening also the livelihood of the fishermen in the vicinity. In the urge to turn in quick and massive profit, a sustainable way of life has been exchanged for one whose viability is very much in question.

Nenasi Aquaculture: Eel Export Imports Drought

In January 1988, the Pahang state government granted approval to Song Cheng Pte Ltd, a joint venture company involving Taiwanese, Japanese and Korean partners, to construct the world's largest eel farm on 2080ha of rich peat swamp forest in Nenasi in southeast Pahang.[51] Land clearance for the farm meant the burning of this vast area of peat swamp which is recognised to be of national and international importance for its biodiversity and hydrology. It sustains some rare wildlife communities and plays an important role in flood mitigation and recharging groundwater aquifers.

For the first phase of the project, which began operation in 1988, 204 ponds were dug in an area covering 290ha. During the first year of the project, shrimps were reared in the 204 ponds but the company subsequently shifted to eel breeding as eels fetched a better price in the Japanese market. Another 540ha of peat swamp was cleared in 1992 for the second phase of the project which involved the construction of 340 ponds which were first used for the rearing of *tilapia* but also subsequently to be converted to culturing of eels. In April 1992 about 1250ha of peat swamp was also burnt in readiness for the third phase of the project.[52] However, the latest information suggests that this third phase of eel breeding may not be continued as the high cost of importing the eel fries from Japan has rendered the project economically non-viable. In the meantime, hectares of valuable peat swamp forests have been destroyed and remain barren.[53]

No EIA was conducted for this massive project supposedly because it was approved before the enforcement of the EIA regulations. It was conveniently forgotten that the original approval was granted for prawn farming. The switch to eel breeding means a shift from using seawater to freshwater, which has very different and serious implications on the environment and the neighbouring marine ecosystem. Even then, no EIA was required of the Song Cheng.

The continuous supply of freshwater required to fill the hundreds of ponds was obtained by sinking about 400 tubewells to pump up groundwater. Each well is about 100 metre deep and is in operation 24 hours a day. The serious and adverse impact of this relentless extraction of groundwater on the local hydrological system was evident soon after. The Pahang Public Works Department (PWD) revealed in 1993 that the water treatment plant in Nenasi was having difficulty extracting enough water for the 15,000 residents in Bebar district comprising Nenasi and four other villages. These villages were dependent on groundwater for their domestic needs. The plant used to obtain 250,000 litre of fresh groundwater after 12 hours of continuous pumping each day. The refilling process was fast because of the large tracts of peat swamp forest which functioned as a water recharger. Since extensive logging began and the Song Cheng eel farm started massive extraction of groundwater, the PWD could only pump continuously for four hours. The refilling process had become much slower. The disruption to the water cycle was so drastic that there was no water during the dry season in 1992. The PWD was forced to supply water from house to house. At least 400 villagers from Kg Tanjung Batu, Nenasi also complained that their wells were drying up.[54]

Similar projects in other countries have shown that besides the drastic drop in water levels, excessive pumping of groundwater also leads to compaction of aquifers and eventual sinking of the land. Also, empty aquifers are subjected to saltwater intrusion which can disrupt the natural balance in the swamp environment and forests not affected by the clearing may eventually wither away due to salinised groundwater. In addition is the flushing of large amounts of effluents and organic wastes, pesticides, chemicals and diseased micro-organisms into the sea, thus contaminating the neighbouring marine ecosystem.

As usual, the justification for the project was job creation and profit generation. The project was estimated to be able to generate 3000 to 5000 jobs — how many are actually in the offing to the local population is uncertain and most of these jobs are of the unskilled and low-paying category.

The eel farms are also supposed to generate about RM150m ($60m) a year but it is not clear how much of this sum will benefit the local economy and how much of it will flow overseas.[55] Nonetheless the Mentri Besar (chief minister) of Pahang has not only repeatedly defended Song Cheng's activities but also asserted that the peat swamp forests are 'useless swamps,' demonstrating gross ignorance of the ecological role and functions of peat swamp forests. It does not augur well for the environment if policymakers at such high levels continue to be so ill-informed about green issues.

Batang Ai Dam Resettlement: Dislocated by Broken Promises

The Batang Ai Resettlement Scheme (BARS) is located in Lubok Antu District in Sarawak's Second Division. It was established to resettle Iban natives who had to make way for the construction of a hydroelectric dam across the Batang Ai river. This dam, the first to be built in Sarawak, was constructed during 1981-85 at a cost of RM600m ($240m) — mostly funded by long-term and low-interest loans provided by Japan's Overseas Economic Cooperation Fund. The Batang Ai station, currently the sole hydroelectric dam in Sarawak, supplies power to 50% of the state on the Kuching-Sibu-Bintulu grid. The artificial lake created by the dam flooded an area totalling 8500ha, directly affecting 26 longhouses and 3000 people, all of whom have been resettled in farms set up by state government.[56]

The natives who were moved during the first phase of resettlement were rehabilitated on 3090ha of land which, they found out later, had belonged to some other Iban communities. These lands, it appeared, were acquired by government at a price of RM1200 ($480) to RM1400 ($560) per hectare whereas the resettled natives were compensated at a rate of RM840 ($336) per hectare for their land.[57] When they arrived at BARS the land was still covered with secondary forest, contravening the state government promise that the land would be cleared and ready for cultivation. The natives who were involved in the second phase of resettlement were evacuated in an emergency situation as the water in the dam had risen to a worrisome level. When they arrived at BARS the longhouses they were supposed to occupy were still under construction. They had to set up tents and camp in the open for several months while awaiting the completion of their longhouses. Transportation was a major problem during the resettlement exercise. State government, which was responsible for providing the lorries, did not supply enough of them. The natives had to leave behind many of their belongings which were subsequently submerged by the rising waters of the dam.

With such an inauspicious start, it is not surprising that 10 years after resettlement, the natives' summation of their experience is mainly of broken promises, dislocation and maladjustment. The Ibans who had initially opposed the construction of the dam relented when they were promised free longhouses, free electricity, free water supply and sufficient land for cultivation. They were to find these promises reneged one after another.

As part of the resettlement package, the natives were promised that each family would be given a *bilik* (family apartment in traditional longhouses) in a longhouse for free. This *bilik* was to be build of durable ironwood and other high quality material and was to be of comparable size to their traditional *bilik*. When they were evacuated, government paid them a compensation of RM8000 ($3200) which was to be used as deposit for the new *bilik*. On arrival at the resettlement site, each family was charged RM27,000 ($10,800) for a new *bilik* to be paid in monthly instalments over a period of 25 years.[58] To this day, the natives have refused to pay for their *bilik* as they feel that the charge is a violation of the resettlement agreement. Moreover, they claim, the houses were substandard and smaller than the ones they used to live in.

The Ibans were also promised free electricity when they resettled in BARS, for what could have been more reasonable since they had made way for a hydroelectricity project? When they moved to BARS, however, they noticed that each *bilik* had a meter installed in it. They have since been required to pay for their electricity and those who failed to do so had their supply disconnected. They have also had to pay for water, which used to be theirs by right — obtained from a nearby stream or river or through gravity-fed pipes. This is yet another violation of their resettlement agreement.

According to the natives, state government had assured them that there would be sufficient land for every family in the resettlement scheme. Each household was supposed to have been allocated 11 acres of land: two acres for cultivating hill padi, three acres for rubber, five acres for cocoa and one acre for fruit trees. State government promised that the agricultural scheme would be ready for them to work on once they were resettled. They were also given the impression that they would reap huge profits and their earnings would be five times what they had obtained before resettlement. The reality, they discovered at BARS, was that the resettlement area was being occupied by other Iban communities. The land around them was communal land owned by someone else. The agricultural scheme was not ready and the whole area was still forested. There was no land for planting rice and they were forced to use their compensation money to buy rice and other provisions. Due to the lack of land, some families have been planting paddy on the fringe of commercial land schemes or on land allocated for planting fruit trees. Others have returned to the vicinity of their former homes and cleared land not submerged by the dam.

The Sarawak Land Consolidation and Rehabilitation Authority (SALCRA) was assigned the task of implementing the agricultural scheme for the resettled natives but the scheme did not get off the ground until two years after the Ibans had been moved. Under SALCRA, rubber, cocoa and oil palm trees were planted, but as the designated area was not suitable for these crops, the scheme failed. Rubber and cocoa plantations that did not fare well were replanted with dry paddy and oil palm. The settlers found it impossible to support their families on the wages from the SALCRA scheme as they were paid only RM8 ($3.2) a day and the number of working days each month averaged only 15. Moreover, only one person from each family is allowed to work with SALCRA. As a result, researchers in 1985 found that 60% of the resettled families were living below the poverty line.

One of the greatest trauma the Batang Ai resettlement community has had to face was being thrust suddenly from a subsistence economy to a cash economy. They no longer possess the security that the land will supply all their needs, and cash has to be found for a lot of their daily necessities. Many of them, not having had any experience dealing with large amounts of money, had not managed their compensation money well. A lot of it was squandered in shopping sprees or lost in gambling sessions — what is left is a greater sense of insecurity. Faced with the difficult situation in the resettlement scheme, many men have gone elsewhere to look for better jobs and a third of the BARS households are now headed by women. Resettlement has also taken its toll on family and social life. A culture has been uprooted, resulting in a sense of dislocation and uncertainty.

There are many lessons to be learnt from the Batang Ai experience — lessons that must be learned well and quickly if other communities soon to be displaced by similar dam projects are not to suffer the same fate. Work on the Bakun dam, which affects three times as many people, has already started but the compensation scheme for those affected is still shrouded in secrecy. The lack of consultation with and input from the affected community as to how their 'new life' is to be organised is surely the most regrettable aspect of the whole resettlement exercise — it engenders a sense of powerlessness which quickly degenerates to despair as an erstwhile independent people is robbed of their sense of self.

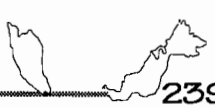
Logging in Sarawak: Woods Gone Forever

Logging, which has been carried out at a relentless pace in Sarawak since the 60s, has wrought ruinous damage on the rainforests and disrupted the lives of the native tribes that have inhabited those forests and used them in a sustainable manner for generations. In the period 1963-85, 2.8mha or 30% of Sarawak's total forest area were logged and the pace of timber felling has not eased.[59] Log extraction which amounted to 2.5mcm in 1975 had peaked at 15mcm in 1991 before state government agreed to cut its production level down to 9.2mcm annually, starting from 1992, in compliance with the recommendation of the International Tropical Timber Organisation (ITTO). As a result of this high level of exploitation, a UN report in 1992 placed Malaysia 10th on its list of major tropical rainforest destroyers with 0.36mha of forest lost each year.[60]

From the point of view of ecology, largescale hill logging operations in Sarawak are already causing floods, siltation of rivers, turbidity of upstream river water plus depletion of the aquatic and wildlife population. The most pervasive effects of logging in hilly terrain is the reduced water-holding capacity of the land and increased erosion from rain. The consequences of raised silt-load in rivers are far-reaching. Upland streams, naturally clear, become turbid during spates and remain so for longer periods after the water level abates. Stony streambeds become silted and muddy. Indigenous plant and animal life are highly vulnerable to oxygen depletion, added particulate matter and lack of light. Many plants and animal species, at all levels of the tropical web, are affected and some will be extirpated. Logging brings with it immediate physical disturbances, long-term habitat changes (e.g. damage to food trees and salt-licks), increased hunting by timber company workers and availability of logging roads as hunting routes. Many animals, like wild pigs are affected by loss of accessible feeding, breeding and travelling grounds, and by damage to food trees. Others, like the deer, are vulnerable to extreme hunting pressure along logging roads and around salt-licks. Serious injury to stocks of river fish occurs in logged-over areas as well. This is caused by mud and diesel-oil pollution, soil erosion and log transport.

There are also multiple repercussions on human settlements downstream. Rural communities are deprived of sources of clean water. Turbid river waters also mean reduced catches of fish and shell fish which is their chief source of dietary protein. The quality of rural life thus suffers, as is happening in Belaga in the Seventh Division and the Tutoh and Tinjar areas of the Fourth Division where the river water is now permanently turbid. It is also disturbing that logging activities are being carried out in many important water-catchments of the tributaries of the Rejang and Baram rivers.

The destruction to the forest cover itself is, of course, most distressing. Studies by FAO forestry officials have revealed that current logging practices in Sarawak's mixed Dipterocarp Hill Forest inflict extensive damage on the remaining stand even when harvest is selective and light. According to them, the three important causes of logging damage are felling, extraction and roadbuilding. The extraction process leaves an average of 34% of the forest stand open, even at the prevailing rate of seven trees taken per hectare. Thus hill forest logging in Sarawak removes about 46% of the natural cover. On top of this wasteful damage, silvicultural treatment, which is the poisoning of so-called uneconomic forest species, is carried out as part of the logging process. This reduces the complexity and species diversity of the tropical forests to only 10% of the original condition resulting in the systematic elimination of tree genetic resources.[61] Poisoning also leads to the long-term contamination of the environment. The residue of these poisons have long-term effects on aquatic and wildlife, soil, vegetation and health of humans living in these areas. Logging of hill forests also clears about 12% of the total forest areas for roads, landings and trails. The main roads used during one felling cycle can be considered removed from forest productivity permanently while regeneration of the forest in secondary and feeder roads takes place very slowly because of the hard compacted surfaces.



Under such circumstances, it would take more than 40 years for such a disturbed forest to recover. However, under Sarawak's Selective Felling System, the same area of hill forest can be logged again after 25 years under the rotation system. Moreover, stateland forest below 2500 feet are not managed under sustained yield at present. Thus logging goes on unchecked in the stateland forests, leading to its rapid depletion. According to a senior forester, whatever is left of the Permanent Forest will only last for another 20 years.[62]

The logging has also exerted a tremendous human toll, death and injury due to accidents in the timber camps mount with the increased pace of logging. The number of logging accidents in Sarawak jumped from 987 in 1979 to 1449 in 1983, a year in which 81 logging workers were killed. At least 108 deaths were reported from January 1984 to June 1985, caused by logging activities in the state.[63] Those who escape death and injury have not been spared the sufferings wrought by logging — they have to continually battle the timber concessionaires who are constantly encroaching on their customary land, robbing them of their free access to the forest and their traditional way of life. These concessionaires have the full backing of the state machinery, the army and the police behind them. Official intimidation has not, however, cowed the natives who have been staging their last stand in defence of the forest and their rights, though more than 300 of them have been arrested since their action started in 1987.[64]

Human Barricade

The natives had begun with attempts to persuade, But constant appeals to the authorities and even the timber companies fell on deaf ears. In desperation, the natives decided to erect barricades across logging roads. The blockades comprised logs, wooden structures and their own bodies — hundreds of men, women and children standing across the logging roads, preventing the timber lorries from getting through. The blockades began in March 1987 in the Baram and Limbang districts where logging was heaviest. As many as 25 blockades were eventually set up that year.[65] Timber lorries were unable to pass through and the logging was stopped for several months. But it was to be only a temporary lull.

The natives, especially the Penans, had hoped for some positive response from state government to their numerous pleas and petitions. They even took their case to Kuala Lumpur when a delegation of indigenous chiefs and representatives of the Penan, Kayan, Kenyah, Kelabit, Lun Bawang and Iban communities called on various federal ministers, including the deputy prime minister in June 1987. The national leaders listened with seeming sympathy to the problems brought up by the natives and promised to take up the matter with state government, but no action to relieve their plight was forthcoming.[66] Instead, the state machinery began to bear down on them hard. In August of that year, in two separate incidents, seven Penans were arrested and charged with burning six bridges belonging to timber companies. Two months later, in a simultaneous operation, the police visited all the blockade sites and ordered the natives to dismantle the barricades. At least villagers were arrested in connection with their blockade in Uma Bawang.[67] The leader of one of the NGOs helping the natives was detained under the Internal Security Act, which allows detention without trial, as part of a nationwide swoop against activists and political opponents of government.

Unable to break the spirited nonviolent protests of the natives, Sarawak government decided to change the rules of the game. On November 25, 1987, the State Legislative Assembly amended the State Forest Ordinance, making it an offence to set up any structure on any road constructed by a timber licensee or permit holder. The offence carries a two-year jail term and a fine of RM6000 ($2400).[68] It was very obvious that this new law was aimed at curbing any further attempts by the

natives to protect their customary land and forests. It clearly denied them the right to protect their own property. In February 1988, a meeting of Penan representatives resolved that the amendment was unjust because most logging roads cut through their land and property.

The plight of the natives worsened with the removal of the blockades and the enforcement of the new law. Logging companies resumed their activities at full speed. In the Baram District, logging proceeded 24 hours a day in three shifts. It caused great distress and angered thousands of natives. Throughout the month of July 1989, the Baram and Rejang districts experienced severe drought. Water supply was scarce and a wave of illnesses broke out, especially among the native children who were forced to use contaminated water. For the longhouse communities the drought had affected their sowing and jeopardised their rice harvest for the following year. The water crisis was in part triggered by heavy logging in the watershed of the Baram river basin.

The indiscriminate and intensive logging resulted in a new upsurge of blockades and brought in its wake a new wave of arrests. From prison, some of the detainees issued an open letter to government and people of Malaysia. It said:

We are Penan from the interior of Limbang, Baram and Belaga districts in Sarawak, East Malaysia. Today, 85 of us are detained in Lambir Prison because we tried to stop the destruction of our land. It is not easy to be arrested and detained in prison. Our families have nobody to look for food for them or to look after them when they are sick.

We are not criminals. We are only defending our constitutional and moral rights to our land, forest and properties. It is the loggers who damaged our land, crops and burial grounds and who polluted our rivers. When we appeal to the authorities for help we are ignored and when we are forced to defend ourselves and our land, forest and properties, we are arrested and put under long torturous periods of remand.

When we are released, we are just left in Miri without food and money to go home. When our friends try to help us, the authorities accuse these friends of instigating us. All we are advised to do by the authorities is to accept logging on our land and to ask for welfare money from the loggers. This is what we cannot and refuse to accept because only our land and forest can guarantee our future survival. It is our own right to decide what kind of development we want and to develop at our own pace.

The authorities have always claimed that logging practices in Sarawak are based on sound conservation and sustainable management. This claim is only good in theory. The actual practice is the opposite. We are the people who live in the forest. We know what is really happening is outright destruction of our land, forest and pollution of our rivers.

If logging is indeed done in a sustainable way and brings us benefits as the government says, nobody would protest and risk arrest and imprisonment as we have done three times now. We, therefore, demand that the government should seriously and immediately take steps to:

- Recognise and protect our rights to our land and forest;
- Stop logging on our Customary Land and forest to prevent further damage and destruction to our land and properties; and
- Release all of us who are presently detained for putting up blockades unconditionally.[69]

Unfortunately, such reasoned appeals were not heeded by government — the logging continues and occasional blockades are still mounted by the natives to draw attention to their plight. It is indeed a travesty of justice, especially since the billions of dollars raked from logging go mostly into the pockets of a handful of timber tycoons. Attempts by the natives to obtain some of the logging concessions were invariably rejected.

Even attempts to gain access to the forest produce have been unsuccessful although the Forest Ordinance empowers the Forestry Minister to declare certain areas of primary forest as communal forest reserves. The residents of longhouses within such communal forest reserves may collect jungle produce and timber for their domestic use. They are, however, not allowed to sell these products for commercial gain. Once the longhouse communities realised that the forests in their vicinity were being licensed for logging, most of them applied for their land to be gazetted as communal forest reserve. Altogether, the people of Belaga District have applied more than 30 times. However, with the exception of Rumah Lassah, none of these applications have been approved.[70] The logging could have been managed with greater sensitivity to the environment and the native community. As the natives themselves put it, 'If logging had been managed properly, if they did research, if they were accountable, if they took the *orang ulu* (natives) into account, it might have been a different story.'[71]

Money Makes it Hopeless

Commercial logging and denial of access to their customary land have simultaneously thrust the natives into a cash economy which upsets concepts of customary rights and strains social and work relations that had lent stability to the native community. Many of the native men have taken up employment in the timber camps. The wages that certain categories of logging workers receive can be quite substantial. This infusion of money into their lives has weaned them off the traditional economy permanently. It is likely that they will continue to try to follow the logging operators or migrate to the towns to seek wage employment. But because most of these young people do not have suitable technical or academic qualifications and hardly possess any business skills, it is likely that many will end up at the bottom of the labour force as unskilled casual labourers inhabiting the squalid squatter zones of Bintulu, Sibu and other towns. The decreased viability of subsistence agricultural activities has accelerated urban migration. Many young women from rural areas can be found in the bars and brothels of Kapit, Sibu and other towns. The integrity of the traditional society has been destroyed, bringing with it social malaise and a sense of hopelessness. These haunting words of a Penan sums it all,

Look at us. We don't know what to do anymore. We want to go back to the forest, but the forest has nothing more to offer us. It can never be the same again. We have no more hope, so we live like this day by day, like someone who does not know what to do.[72]

Highland Towers Collapse: Crumbling Pillars of High Development

It was standing upright and it very slowly started to slide, it was just gliding. It was very smooth. There was no noise associated with it. I just happened to catch it with the corner of my eye. I was not even seeing it and it just moved. Very slowly. I'd say it moved about 5-10 feet horizontally in vertical upright position. I called to my friend and I said, 'the building is moving' and I just continued to watch and all of a sudden, it was like it caught on the bottom and here was a very loud snapping noise and then the building started to topple.[73]

This was an eyewitness account of the collapse of Block 1 of the Highland Towers condominium complex that sent the country into shock on December 11, 1993. Under the debris of the building were buried 48 men, women and children — the youngest barely six weeks old.

Picking Up the Pieces

Those whose lives were spared, nonetheless, had to deal with the daunting task of putting their shattered lives together again and tackle the practical problems resulting from the loss of their homes and properties. It was not only the occupants of the collapsed condominium block who had to handle of the travails of this tragedy; residents of two adjacent blocks that were declared unsafe for occupation also faced the trauma of having to abandon their homes. The only silver lining in this bleak situation was the strong sense of solidarity and mutual support that emerged amongst the residents, which facilitated the organisation of an action committee to look after their common interests.

The Highland Towers Action Committee set itself the task of:

- launching a donation drive for families of maids, including a number of foreign maids, who were killed in the tragedy;
- appointing their own consultants from among the residents (many of whom were professionals) and volunteers to investigate the cause of the collapse and the safety of the remaining two blocks so that they can present an independent view of the probable cause of the collapse;
- setting up a legal sub-committee to look into individual and collective interests of the residents; and,
- affording the residents assistance in seeking alternative accommodation and helping them overcome outstanding bank loans related to the apartment and submit insurance claims.

Through these efforts, the residents were able to a obtain moratorium on their loans from a number of banks for a period of one year.

Unfortunately, the victims were to find that redress was slow to come. One year after the incident, the residents had not received any form of compensation; initial offers of help had stopped; interest and loan repayment waivers had not been renewed. Those who owned apartments in Block A had to pay instalments for homes that no longer existed, others who owned apartments in Block B and C had to resume payment though they could not live in their homes.[74]

Criminal Negligence

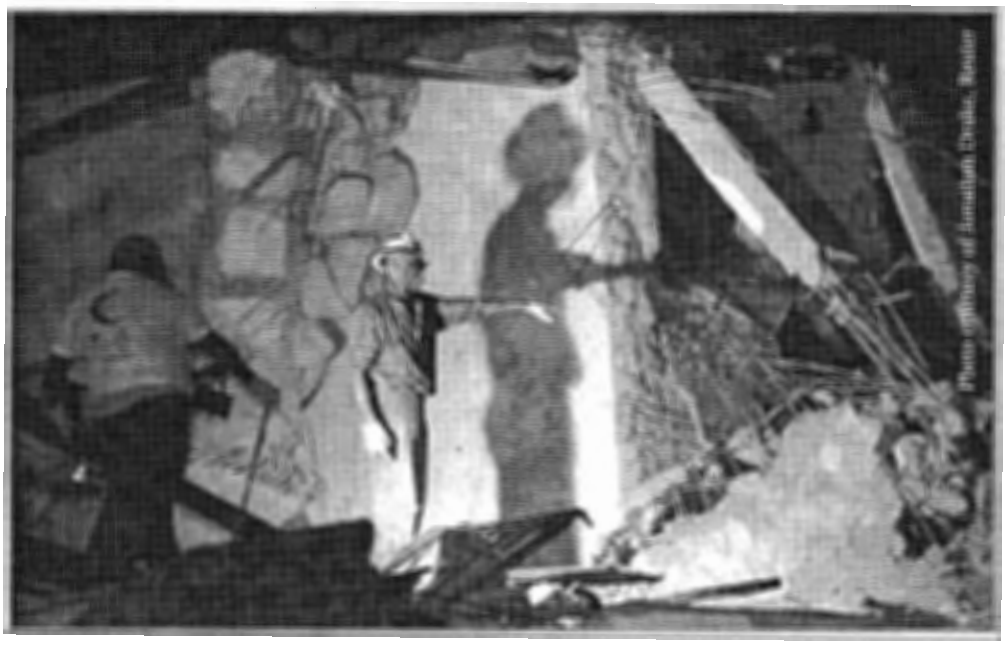
Nevertheless, the solidarity engendered by the residents' committee ensured that a large number of them turned up as witnesses for the official inquiry conducted by the Ampang Jaya Municipal Council (AJMC). Also, when the council issued a notice to the owners of Blocks B and C to submit proposals for rectifying and stabilising these blocks within three months or face demolition of the buildings, and worse, being billed for them, the committee reacted quickly and had the order quashed in court.[75] It was also under the pressure of the committee that the AJMC issued an order to Arab-Malaysia Development who owned the slope adjoining the blocks to take measures to stabilise it.

Official investigations into the tragedy pointed the finger at environmental degradation in the vicinity of the apartment block and negligence on the part of the developer and regulatory agencies. According to the AJMC inquiry team, a landslide behind Block 1 imposed additional pressure on the soil under the building, causing the rubble wall in the front of the block to collapse. The soil was already under pressure because of the poorly constructed rubble walls, almost barren slopes and inadequately and improperly maintained surface drainage, resulting in a high surface water runoff. The combined force of the landslide, the collapsing rubble walls and the soil movement under the building caused fissures in the rail piles foundation which buckled and sheared. The landslide itself was attributed to two factors. The natural water path at the adjoining and upper portion of the hillslope behind the apartment block had been diverted into a

stream behind Block 1, resulting in the concentration of run-off water in the slope behind the ill-fated block. This concentration of run-off water coupled with the inadequate maintenance of the surface drainage had accelerated the flow of water and had further aggravated the stability of the slope and rubble wall.[76]

What made matters worse was that the slope and rubble walls behind and in front of Block 1 were not properly designed nor was their construction properly supervised. They were unstable, with a theoretical safety factor of less than one. An engineer had approved the road and drainage plans though he did not design them. He had also failed to supervise the drainage works. A weak foundation was the main cause of the building's collapse as the developer had failed to conform to building requirements in 1966 — when the plans were submitted for approval. The failure of the regulatory agency occurred in 1974 when it approved the plans, in spite of several regulations set by the local council not being followed. The way the approval was given was also questionable. [77]

Based on the findings of the inquiry, six of the affected victims filed a RM1.6m suit against



Rescue workers continue their search for surviviors in the 12-storey Highland Tower condominium building collapse in Kuala Lumpur in December 1993.

the developer and eight other parties identified in the report as being culpable.[78] They included the draughtsman who drew up the drainage plans, the consultant engineer who signed the plans, the local authority which approved them and the companies involved in the development of adjacent lots which contributed to the slope failure and landslide. The Highland Towers Action Committee view this as a test case. If the residents win the case, the other victims would be able to make claims based on the outcome of the case. The residents, however, vowed to continue the court battle even if they lost the test case. The case is still pending in the courts.

Pitfalls of Breakneck Development

A conjuncture of specific circumstances might have led to the collapse of Highland Towers' Block 1 but the entire episode points to a larger problem associated with rapid development on hillsides and mountains as a result of urban encroachment and business opportunities. Degradation

of these upland areas has resulted in accelerated erosion, high frequency of slope failure and damage to the drainage system. Hillslope topography in Peninsular Malaysia is old terrain, having already undergone advanced erosion and landmass movement. Hence in its natural state, slope failures scarcely occur and if they do occur the volume involved is considered small. The majority of slope failures that have been occurring are on highways, and residential and hillside development areas where people had altered the original slope. Slopecutting and embankment increase the gradient of the original slope and expose friable soil material susceptible to failure.

These problems of slope failure occur because development has taken place in the absence of a clear policy on highland development and comprehensive guidelines. The scarcity of data has aggravated the situation because planners lack information on which decisions can be based to ensure sustainable development. The Highland Tower tragedy is a clear warning that the methodologies used so far for slope stabilisation are inadequate. To be effective, the environmental management framework should look at the system as a whole rather than its parts. Most of the time, the problem of managing the environment pivots on the fact that the environmental system is viewed in a sectoral manner, thereby making its management ineffective.

Nonetheless, the best management plans can be rendered impotent if money and politics allow the regulations to be shunted aside. The questionable way in which the Highland Towers plans were approved despite non-compliance with certain regulations is a case in point. The irony was also not lost when the Government lifted the temporary ban on the construction of highrise buildings in hilly areas and on ex-mining land on the very day that the Highland Towers Inquiry Report was made public.

Bright Sparklers' Explosion: Crime Without Punishment

On May 7, 1991, explosions at the Bright Sparklers[81] fireworks factory in Sungei Buloh, Selangor, claimed the lives of 23 workers and injured more than 100 people. It also caused massive damage to property in the area, leaving many homeless. A Royal Commission of Inquiry set up to investigate the cause of the tragedy revealed that the company had violated numerous laws and regulations during its nearly 20 years of operation but yet was not subjected to any prosecution. Indeed, six fires had occurred in the factory prior to the 1991 tragedy, resulting in six deaths. These fires were also related directly or indirectly to fireworks manufacture. Despite the fires, the Fire Services Department took no action to enforce existing laws on Bright Sparklers. The reason given by the Fire Department chief for his inaction was that he had no manpower to enforce the Act. This was lame excuse indeed and, taken with the numerous other violations that Bright Sparklers committed with impunity, suggests that it was not simply negligence by certain departments that allowed the offender to escape scot-free. More sinister explanations have to be found.

Bright Sparklers appeared to have broken practically every law in the books. In the first place, it was operating without a license most of the time. According to the law, a licence or permit is required for carrying out any trade, occupation on any premises, including premises for a factory. The licence is renewable yearly, subject to conditions and restrictions and may be revoked by the authorities. Bright Sparklers did comply with this law except in the years 1978 and 1979. Their application in 1989 was rejected and there was no evidence of any other application or approval. Although the Selangor State Security Committee had expressed concern over the illegal operations of the factory in view of the security implications of its manufacturing activities and the hazardous nature of its product, the local authority took no action on the excuse that it was one of many such illegal factories — some of which inevitably escape the surveillance of the authority. It omitted the fact that Bright Sparklers and the danger it posed was the specific subject of the State Security Committee meetings over a period of two years during

1982-84. Workers at the factory also testified that police officials visited the factory frequently, giving the lie to the authority's claim of ignorance.

Bright Sparklers did not possess any permits to manufacture, import or store explosive material either. Permits and licenses are required under the Explosives Act 1957, for the manufacture, storage, import and export, removal, sale, possession and purchase of explosives. If manufacturing is done in an unlicensed premise, the explosives, its ingredients and the apparatus used in its manufacture may be forfeited. Authorisation is required from the Ministry of Home Affairs for the erection of magazines for the storage of explosives. Bright Sparklers was reminded time and again by various authorities such as the Ministry of Trade and Industry and the Enforcement Unit of the Selangor Pharmacy Department that they required the various permits under the Explosives Act, but its management blithely decided to defy them. In reply to the Selangor Pharmacy Department's letter stating that he had to obtain a licence from the police for manufacture of explosives, the factory's managing director declared that the department was mistaken. The Bright Sparkler's management took a similarly recalcitrant stand with regard to licences for import and storage of material. Although its application for the erection of a storage magazine was never approved, it built and used it for storage nonetheless. In August 1982, the Selangor Police recommended the immediate closure of Bright Sparklers, followed by swift prosecution under the Explosives Act. Two months later, the police raided the company, seized its goods and made some arrests, then handed the case over to the Deputy Public Prosecutor (DPP). Nothing happened until 1988, full six years later, when the DPP recommended that no further action be taken as the factory had been destroyed by fire in 1984 — he was apparently unaware that the factory was up and operating again, still in contravention to the law.

Other legal offences committed by Bright Sparklers included failure to:

- obtain a permit to convert its land for industrial use;
- obtain a Certificate of Fitness for its buildings;
- comply with provisions related to the safety of its workers;
- obtain a Certificate of Fitness for its machinery;
- obtain a permit for the import of barium nitrate; and
- comply with fire safety provisions.

In all, at least 10 major offences were committed but Bright Sparklers faced no prosecution or penalty for any of them. It is a sad testimony that all the best-crafted laws in the land are rendered superfluous if the authorities entrusted to enforce them are stupefied into inaction. That so many and such wide-ranging authorities chose to turn a blind eye to Bright Sparkler's offences, indeed defies all logic. One likely explanation is the presence of a political bigwig on the board of directors of the company. If that is indeed the solution to the mystery, it is a woeful indictment of the Malaysian legal system.

The system was equally deficient in safeguarding the welfare of the victims of this explosion. The bulk of the compensation that the victims or their kin received were derived from public donations to the Sungei Buloh Fireworks Tragedy Fund, out of which the families of those killed received an average of RM7000 ($2800) each, those whose houses were destroyed obtained about RM4000 ($1600) each and those whose homes were damaged received various sums for repairs. Compensations from the Social Security Organisation (SOCSO) were paltry. One of the victims who lost the use of both legs as a result of the accident revealed that she obtained only RM10 ($4) a day from SOCSO for medical expenses. The Malaysian Trade Union Council also disclosed that six months after the blast, 147 workers had yet to be paid salaries due to them and the next-of-kin of the workers who were killed in the tragedy had not received any assistance from the factory management.

The victims themselves did not set up any organisation to champion their collective welfare but a group of 10 concerned lawyers set up the Advocates for Public Interest to help them get legal redress. More than 100 victims and their relatives registered with the group for its assistance.[82] In one of the suits, 155 workers claimed more than RM500,000 in balance of wages due and indemnity in lieu of termination notice and termination benefits.[83] The case is yet to be heard by the Industrial Court. In any case, the Advocates for Public Interest filed a negligence suit against Bright Sparklers, Selangor government, Petaling Municipal Council and Federal Government on behalf of the parents of a welder who died in the tragedy. This case is also still pending.

Asian Rare Earth Radiation Hazard: The Ten Years' Crusade

On July 11, 1982, Asian Rare Earth (ARE), jointly owned by Mitsubishi Chemical Industries of Japan and some local companies, began operation near Papan, a small former tin-mining town in Perak. The factory produces yttrium — an element with several industrial uses — from monazite, a substance found in tin tailings. In the production process, radioactive thorium hydroxide is produced. Malaysian government decided to store the thorium hydroxide as it is considered to be a potential nuclear fuel. In 1982, the authorities first proposed storing the waste at Parit, a small town near Papan. Following protests from the residents there, the government decided to site the dump in Papan in 1984. Strong protests and demonstrations by the residents again forced the plan to be abandoned. While the search was on for an alternative dumpsite, the waste was stored at the factory site in Bukit Merah.

The Bukit Merah residents found, however, that the factory was not storing the waste in compliance with international safety standards. Instead, the waste was carelessly disposed in drums which were not properly covered and plastic bags that were strewn about. In an attempt to conceal the waste, the factory covered the dumping area with sand. The residents also claimed that they has seen heaps of waste being dumped into a nearby pond leading to a river. To prove that their worries were not baseless, the residents invited an international expert on the effects of low-level radiation, Professor Sadao Ichikawa, to conduct investigations in their neighbourhood. Professor Ichikawa visited Bukit Merah in December 1984 and measured the radiation levels around the temporary dumpsite of the ARE factory. He found that the radiation levels at the dumpsite and in the neighbouring areas were much higher than the average natural radiation level in the world, 100m rem/year. The levels also exceeded the International Commission on Radiation Protection (ICRP) dose limit of 500m rem/year.[84] When Professor Ichikawa conducted another round of tests in 1986, he found the level to have risen. At one point, the radiation level was 150 to 160 times higher than the average natural background level and almost three times above the ICRP safety standard for workers.[85]

The adverse effects of such high levels of radiation on the health of the residents did not take long to manifest themselves. Between 1988 and 1990, Canadian radiation expert and founder-director of the Institute of Concern for Public Health in Canada, Dr Rosalie Bertell, testified in court hearings that:

- the incidence of childhood leukaemia in Bukit Merah was 42 times higher than the average rate in Peninsular Malaysia; three cases of leukaemia were diagnosed among residents below the age of 20 in Bukit Merah within a six-month period in 1988-89;[86]
- studies on the health of Bukit Merah children showed that all of them had higher than normal levels of lead in their blood, in five per cent of them the toxicity level was high enough to cause brain damage;
- most children had lower than normal counts of white blood cells;

- out of 108 childbearing women surveyed, no less than 15 had suffered unexplained miscarriages or had lost their babies soon after birth; and

- Bukit Merah children suffered more ill health of all kinds than a similar group of children with poorer nutrition, studied in the adjoining state of Selangor.[87]

The horrendous implications of these effects hit hard when the vice-president of the Perak Anti-Radiation Committee died of bone cancer in July 1988.[88] The fear and anguish of the Bukit Merah residents mounted as cases of birth defects came to light.

Fear, pain and abhorrence of the irresponsibility of ARE galvanised the Bukit Merah residents to sustain a 10-year battle to stop the factory from further endangering their health and lives. Following is a chronological account of this inspiring campaign.[89]

31.5.84: Receiving news that government had decided to locate the radioactive waste dump in Papan, about 200 residents of the town block the road leading to the site in protest against the decision.

19.6.84: About 300 Papan residents demonstrate for the second time against the proposed location of the dump.

10.12.84: More than 1500 residents in Papan stage a one-day hungerstrike to protest against government's decision to go ahead with the plan to build the waste dump near the town. Bukit Merah residents bring in Japanese radiation genetics expert, Professor Sadao Ichikawa, to measure radiation levels of the radioactive wastes stored in the premises of the ARE factory. He finds the readings dangerously high.

11.1.85: Government decides to relocate the proposed permanent dump site to Mukim Belanja, about 5 km from Papan.

1.2.85: Eight residents, on behalf of themselves and the residents of Bukit Merah, file an application in the Ipoh High Court to stop ARE from producing, storing and keeping radioactive waste in the vicinity of the village. This is the first time that a case concerning radioactive waste has been brought to the Malaysian courts.

5.9.85: About 3000 residents in and around Bukit Merah stage a demonstration to protest against ARE's intention to dump radioactive waste in its permanent dump near Mukim Belanja.

15.10.85: The Ipoh High Court grants an injunction to the eight residents to stop ARE from operating until adequate safety measures are taken to prevent radioactive rays from escaping its factory. In the course of the suit, one of the plaintiffs dies of cancer. ARE appeal to the Supreme Court to set aside the injunction.

7.7.86: ARE withdraw its appeal to the Supreme Court to set aside the High Court interlocutory injunction granted in 1985.

29.10.86: Professor Ichikawa reveals that radiation around the ARE factory and its temporary dump site was still above the acceptable level. He is refused entry into the factory.

7.2.87: The Malaysian Atomic Energy Licensing Board grants a licence to ARE to resume operation.

10.4.87: A contingent of foreign experts invited by the Papan Anti-Radiation Committee (PARC) to appraise the situation is refused entry by the ARE factory. At a forum held in Bukit Merah, the experts concur that the ARE factory presents severe health hazards to the residents in its vicinity.

12.4.87: About 10,000 people march through Bukit Merah New Village to protest against the resumption of operation by ARE.

7.9.87: The hearing of the suit filed by the eight residents of Bukit Merah against ARE begins before Justice Peh Swee Chin in the Ipoh High Court. To highlight their plight, supporters of PARC walk for 7 km from Bukit Merah to the Ipoh High Court. Police break up their march along the way and arrest nine of the participants who are later released on bail. About 1000 residents turned up at the Ipoh High Court to show their support and concern.

11.9.87: Supporters of the PARC march from Bukit Merah to the Ipoh High Court for the last day of the hearing. Their number in the court and outside swells to 3000.

18.9.87: Residents of Bukit Merah file contempt proceedings against ARE for breaking an injunction granted by the Ipoh High Court in 1985 to stop the factory from operating.

Dr Bernard Lau, a Canadian radiation expert engaged by the PARC tells a meeting of 400 people that about 40 out of 60 children in Bukit Merah have been found to be suffering from an abnormal blood count which could be caused by the effects of radon gas emitted by the ARE plant.

25.1.88: The trial resumes.

13.2.90: The trial comes to a close after 65 days of hearing stretching over 32 months.

11.7.92: The people of Bukit Merah win their suit against ARE. The factory is ordered by the Ipoh High Court to shut down. In passing judgment, Justice Peh Swee Chin remarks, 'the waste of ARE's processing, including thorium hydroxide, was not stored or kept away in a sufficiently safe manner....The radon gases which are dangerous to health do escape from ARE's plant.... What has been proven is a high probability that very serious injuries will be caused to the plaintiffs ... the magnitude of such injuries involving possibly a large number of people is mind-boggling.'

ARE announces that it would appeal to the Supreme Court.

23.12.93: Supreme Court overrules the High Court decision and allows ARE to resume operations.

19.1.94: ARE announces that it had decided to cease operations.

It is unfortunate that after such a long and hard struggle, the residents of Bukit Merah were not to find justice in the courts. The highest level of the judiciary once again showed that it was not prepared to protect the citizenry. The persistence and perseverance of the people of Bukit Merah was inspiring indeed and raised the consciousness of Malaysian society to the dangers of radiation and also the importance of community organisation and empowerment. The campaign won the support of many in the country and worldwide, especially in Japan. Japanese lawyers representing various public-interest and environmental groups who attended the court hearings, as well as Japanese reporters who covered the court cases for various news networks, put pressure in Mitsubishi's home country. As many as 15 Japanese organisations had been supporting the PARC in its fight against ARE. Mitsubishi was also consistently under attack from Japanese parliamentarians for exporting pollution to Malaysia. Demonstrations against ARE were also held in Japan.[90] It was citizens' pressure in both countries that finally forced the closure of the factory and allowed the people of Bukit Merah to hope once again that their 'dream of living in an environment free from any kind of pollution is becoming a reality.'[91]

Durian Tunggal Dam: Running Dry in the Course of Progress

On January 15, 1991 the Durian Tunggal Dam in the state of Melaka went completely dry. In desperation, state government spent RM3.2m ($1.28m) to commission US rainmakers to fill the dam but their performance fell far below expectations. This episode demonstrates the high cost that has to be paid for poor environmental management as studies showed that the main cause for the drying up of the dam was obliteration of forests from the dam's catchment area, with forest cover having been reduced to 4.2%. More than 50% of the land had been used for agriculture and the rest was made up of built-up areas, grassland, bush, clearings, swamps, etc.[79]

The obliteration of forest ecology from the Durian Tunggal Dam catchment affected its water resource production capacity as surface runoff increased and infiltration rate decreased. Because the whole catchment did not perform as well as it would under forest ecology, the water retention capability was much reduced. Under normal climatic conditions, this situation would have been offset by the heavy rainfall typical of an equatorial climate. In which case, the actual capability of the catchment would have been masked by the heavy surface runoff feeding the dam. However, under a prolonged dry spell, groundwater and subsurface flows were unable to sustain water level in the dam. The dry spell in Melaka in 1990 unveiled the real condition of the dam when heavy releases of water from it to the Melaka river could not be matched by the groundwater and subsurface flows of the catchment. This factor, operating in combination with others such as the prolonged drought, the hydrometeorological processes acting on the dam's waterbody and human error, caused the drying up of the dam.

What happened in Durian Tunggal is an indication of the effect of the rapid physical development that has taken place in the country which has not only encroached on and altered the water catchment areas but, in more serious cases like this, destroyed them. The result is that heavy rainfalls cannot be tapped effectively at the catchment level, and this, in turn, affects water levels in dams and rivers. Vegetation cover is of utmost importance for sustaining water resources. Devegetation of an area severely restricts the infiltration of rainwater. This is due to the fact that canopy interception is very minimal or nonexistent, resulting in huge amounts of rainfall reaching the mineral soil. Blockage of the soil particle spaces by rain-splash activity prevents the water from infiltrating into the soil. This results in the formation of surface runoffs which flow to the drainage system in the area. Lack of infiltration leads to little or no water being retained by the area, drastically reducing the subsurface flow. Therefore, during rainless periods, the drainage system is not replenished by the subsurface water storage and, in severe cases, the water channels dry up.

The amount of water available is dependent on the rainfall-runoff relationship. It is estimated that the annual surface runoff of the country is in the region of 554.4bn cu. m per year. The runoff is of little use if it is not tapped in a beneficial manner. There are 56 dams in operation in the country with a total capacity of 12bn cu. m per year.[80] The amount of water stored by the dams constitutes only 2% of the total runoff available in a year, which is a very minute proportion compared to the total runoffs available but the burden shouldered by these dams is gigantic due to the fact that many water supply installations depend on them for their supply. All these go to show that Malaysia may be heading for a water crisis if the management of the watershed and dams is not improved.

STATISTICS

Socio-Economic Indicators

	1957	1970	1980	1991
Literacy Rate				
Total	50.8	60.8	72.0	85.0
Male	68.1	72.1	80.0	N/A
Female	32.2	49.6	64.0	N/A
Child Labour Rate*				
Total	8.6	8.4	5.5	3.0
Male	9.6	9.0	7.2	3.3
Female	7.4	7.7	5.1	2.6
Unemployment				
Total	N/A	7.8	5.7	5.1
Male	N/A	N/A	N/A	N/A
Female	N/A	N/A	N/A	N/A
Workforce Participation Rate				
Total	44.8	49.4	63.3	62.9
Male	74.8	66.3	84.8	83.8
Female	26.2	32.3	42.2	41.9
Poverty Rate				
Total	N/A	49.3	29.2	16.5
Male	N/A	N/A	N/A	N/A
Female	N/A	N/A	N/A	N/A

**Child labour rate here denotes the percentage of children in the 10-14 age-group recorded as being under employment*

Sources: *Population Census Reports 1957, 1970, 1980 & 1991*

Environmental Degradation

Indicators	1985	1995
Forest Cover	62.3%	57.9%
Total Forest Land	20.6mha	19.01mha
Extent of Dipterocarp Forest	17.87mha	16.70mha
Extent of Freshwater Swamp Forest	2.10mha	1.72mha
Extent of Mangrove Forest	0.60mha	0.59mha
Critical Coastal Erosion Areas	49 (1986)	67 (1991)
Quantity of Scheduled Waste	280,000 cu. m/yr	420,000 cu. m/yr

River Pollution

Year	Clean rivers	Polluted rivers	Slightly polluted rivers
1986	54%	5%	41%
1987	47%	3%	50%
1988	53%	3%	44%
1989	49%	3%	48%
1990	53%	8%	39%
1991	43%	7%	50%
1992	29%	8%	63%
1993	28%	9%	63%
1994	33%	12%	55%
1995	44%	12%	44%

Sources: *Environmental Quality Reports: 1986-95*

Industrial Accidents

Year	Total
1981	65,598
1982	60,564
1983	59,326
1984	64,182
1985	64,775
1986	71,550
1987	79,285
1988	90,988
1989	110,288
1990	124,008
1991	124,898
1992	130,019
1993	133,293
1994	122,688
1995	114,134

ENDNOTES

[1] *Jomo KS*, Growth and Structural Change in the Malaysian Economy, *London: Macmillan, 1990, p156.*

[2] Ibid, *p111.*

[3] Ibid, *p164.*

[4] Ibid, *pp147-48.*

[5] *Malaysia,* The Second Outline Perspective Plan 1991-2000, *[OPP2] Kuala Lumpur: Government Printer, 1991, p36.*

[6] Ibid, *p99.*

[7] Ibid, *p27.*

[8] *Malaysia,* The Seventh Malaysia Plan 1996-2000, *[7MP] Kuala Lumpur: Government Printer, 1996 p37.*

[9] Ibid, *p51.*

[10] *Chan Chee Khoon, 'Health Care Financing' in Jomo KS & Ng Suew Kiat (ed.),* Malaysia's Economic Development: Policy and Reform, *Kuala Lumpur: Pelanduk/MIER, 1996, p343.*

[11] *7MP, p539.*

[12] Ibid, *p534.*

[13] *Department of Statistics, Malaysia,* General Report of the Population Census 1991, vol. 1, *Kuala Lumpur, 1995, p112.*

[14] *7MP, p328.*

[15] *7MP, p605.*

[16] *Chew Boon Hock, 'Sustainable Agriculture — Present and Future in Malaysia, ' paper presented at the* CAP-SAM National Conference on the State of the Malaysian Environment, *5-9 January 1996, Penang. This conference will henceforth be indicated as* CAP-SAM *[CAP is the Consumers' Association of Penang, while SAM is* Sahabat Alam Malaysia *or Friends of the Earth, Malaysia].*

[17] Utusan Konsumer, *June 1988 [*Utusan Konsumer *is a fortnightly publication of the Consumers' Association of Penang].*

[18] *A Sasekumar, 'The Ecological and Social Impact of Pond Aquaculture' in* CAP-SAM, *p3.*

[19] Utusan Konsumer, *Dec. 1991.*

[20] *Information for this entry is drawn from Meenakshi Raman, 'The Impact of Aquaculture on Communities — A Presentation of Case Studies' in* CAP-SAM, *pp5-8.*

[21] Ibid, *pp9-10.*

[22] *INSAN,* Power Play: Why the Bakun Hydroelectric Project is damned, *INSAN, 1996, p3.*

[23] *Keizrul Abdullah & Juhaini Jusoh, 'An Appraisal of Malaysia's Water Resources: Problems and Prospects' in* CAP-SAM, *p9.*

[24] *Abdul Rashid bin Mat Amin, 'The State of Malaysia's Forests — An Overview' in* CAP-SAM, *p4.*

[25] *Mohideen Abdul Kader & Shahridan Faiez, 'Land-use Law and Policies and Environmental Degradation' in* CAP-SAM, *p9.*

[26] New Straits Times, *10 March 1996.*

[27] New Straits Times, *7 August 1996.*

[28] Malay Mail, *30 November 1992.*

[29] Utusan Konsumer, *Mid-November 1989.*

[30] Utusan Konsumer, *November 1992.*

[31] *Hamzah Mohamad & Wan Fuad Hassan, 'Mining: What Environmental Impact?' in* CAP-SAM, *p21.*

[32] Utusan Konsumer, *Mid-August 1990.*

[33] Utusan Konsumer, *October 1991.*

[34] *Anita Pleumaron, 'Environmental and Socio-economic Implications of Tourism in Southeast Asia' in* CAP-SAM, *p13.*

[35] *Ibrahim bin Sahfi, 'Toxic Chemicals and Hazardous Wastes Management in Malaysia — An Overview' in* CAP-SAM, *p5.*

[36] Far Eastern Economic Review, 21 May 1987.

[37] New Straits Times, *25 April 1996.*

[38] Asia Inc., *August 1995, pp33-5.*

[39] *Chee Yok Ling, 'Regional Development: Implications for Malaysia' in* CAP-SAM.

[40] Asia Inc., *October 1995, p44.*

[41] Ibid, *p42.*

[42] *Anita Pleumaron, op cit, p6.*

[43] The Star, *11 September 1995.*

[44] New Straits Times, *7 November 1995.*

[45] Seventh Malaysia Plan, *1996, p593.*

[46] *Raman, Meenakshi, 'The Impact of Aquaculture on Communities — A Presentation of Case-Studies' paper presented at the* CAP-SAM National Conference on the State of the Malaysian Environment, *Penang, 5-9 January 1996, p5-6. This conference is subsequently indicated as* CAP-SAM.

[47] Ibid, *p6.*

[48] Loc cit.

[49] Ibid, *p7.*

[50] Ibid, *p8-9.*

[51] Ibid, *p9.*

[52] Utusan Konsumer, *Mid-September 1992.*

[53] *Raman, Meenakshi,* op cit, *p10.*

[54] Ibid, *p9-10.*

[55] Utusan Konsumer, *Mid-September 1992.*

[56] Utusan Konsumer, *September 1995.*

[57] Ibid.

[58] Ibid.

[59] *World Rainforest Movement/Sahabat Alam Malaysia [WRM/SAM],* The Battle for Sarawak's Forests, *Penang, 1990. p8.*

[60] Utusan Konsumer, *December 1992.*

[61] *WRM/SAM,* op cit, *p201.*

[62] Ibid, *p202.*

[63] Utusan Konsumer, *November 1985.*

[64] Utusan Konsumer, *Mid-August 1991.*

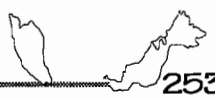
[65] Ibid

[66] Ibid.

[67] Ibid.

[68] Ibid.

[69] Utusan Konsumer, *November 1989.*



[70] *Sarawak Study Group, 'Logging in Sarawak: The Belaga Experience' in* Logging Against the Natives of Sarawak, *Petaling Jaya: INSAN, 1989, p12-13.*

[71] Utusan Konsumer, *Mid-June 1990.*

[72] *Ibid.*

[73] New Straits Times, *5 July 1994.*

[74] The Star, *11 December 1994.*

[75] New Straits Time, *19 August 1994.*

[76] New Straits Times, *23 June 1994.*

[77] Ibid.

[78] New Straits Times, *16 October 1994.*

[79] Hamirdin Ithnin, *'The Obliteration of Forest Ecology and its Effects on Water Resources: Lessons from the Durian Tunggal Dam, Melaka, Malaysia' in MY Hussein, AS Sayap and SB Japar (ed.),* Status Ekologi Semasa Menjelang 2020: Prosiding Ekologi Malaysia I, *Serdang: Ekological Association of Malaysia, 1992.*

[80] Hamirdin Ithnin, *'Are We Heading for a Water Crisis?' in* CAP-SAM, *p3.*

[81] *Materials for the this case-study is drawn from* Utusan Konsumer, *May 1992, unless otherwise stated.*

[82] New Straits Times, *13 June 1991.*

[83] New Straits Times, *21 June 1991.*

[84] Utusan Konsumer, *November 1985.*

[85] Utusan Konsumer, *December 1986.*

[86] Utusan Konsumer, *January 1990.*

[87] Utusan Konsumer, *March 1988.*

[88] Utusan Konsumer, *August 1988.*

[89] *The following account is drawn from* Utusan Konsumer, *Mid-July 1992.*

[90] Utusan Konsumer, *February 1994.*

[91] Ibid.

Abdul Rashid bin Mat Amin, 'The State of Malaysia's Forests — An Overview, ' paper presented at the CAP-SAM National Conference on the State of the Malaysian Environment, *Penang, 1996*

Anita Pleumaron, 'Environmental and Socio-economic Implications of Tourism in Southeast Asia, ' paper presented at the CAP-SAM National Conference on the State of the Malaysian Environment, *Penang, 1996*

Asia Inc., *August & October 1995*

Chan, Chee Khoon, 'Health Care Financing' in Jomo KS and Ng Suew Kiat (ed.) Malaysia's Economic Development: Policy and Reform, *Kuala Lumpur: Pelanduk/MIER, 1996*

REFERENCES

Chee Yoke Ling, 'Regional Development: Implications for Malaysia, ' paper presented at the CAP-SAM National Conference on the State of the Malaysian Environment, *Penang, 1996*

Chew, Boon Hock, 'Sustainable Agriculture — Present and Future in Malaysia, ' paper presented at the CAP-SAM National Conference on the State of the Malaysian Environment, *Penang, 1996*

Department of Statistics, Malaysia, General Report of the Population Census 1991, vol. I, *Kuala Lumpur, 1995*

Hamzah Mohamad & Wan Fuad Hassan, 'Mining: What Environmental Impact?, ' paper presented at the CAP-SAM National Conference on the State of the Malaysian Environment, *Penang, 1996*

Hamirdin Ithnin, 'The Obliteration of Forest Ecology and its Effects on Water Resources: Lessons from the Durian Tunggal Dam, Melaka, Malaysia' in MY Hussein, AS Sayap and SB Japar (ed.) Status Ekologi Semasa Menjelang 2020: Prosiding Ekologi Malaysia 1, *Serdang: Ecological Association of Malaysia, 1992*

_____, *'Are We Heading for a Water Crisis?, ' paper presented at the* CAP-SAM National Conference on the State of the Malaysian Environment, *Penang, 1996*

Ibrahim bin Sahfi, 'Toxic Chemicals and Hazardous Wastes Management in Malaysia — an Overview, ' paper presented at the CAP-SAM National Conference on the State of the Malaysian Environment, *Penang, 1996*

Keizul Abdullah & Juhaini Jusoh, 'An Appraisal of Malaysia's Water Resources: Problems and Prospects, ' paper presented at the CAP-SAM National Conference on the State of the Malaysian Environment, *Penang, 1996*

INSAN, Power Play: Why the Bakun Hydroelectric Project is Damned, *Kuala Lumpur: INSAN, 1996*

Jomo KS, Beyond 1990: Considerations for a New National Development Strategy, *Kuala Lumpur: Institute of Advanced Studies, University of Malaya, 1989*

_____, Growth and Structural Change in the Malaysian Economy, *London: Macmillan, 1990*

Malaysia, Third Malaysia Plan, 1976-80, *Kuala Lumpur: Government Printer, 1976*

_____, Fifth Malaysia Plan, 1986-1990, *Kuala Lumpur: Government Printer, 1986*

_____, The Second Outline Perspective Plan 1991-2000, *Kuala Lumpur: Government Printer, 1991*

_____, The Seventh Malaysia Plan, 1996-2000, *Kuala Lumpur: Government Printer, 1996*

Meenakshi Raman, 'The Impact of Aquaculture on Communities — A Presentation of Case Studies, ' paper presented at the CAP-SAM National Conference on the State of the Malaysian Environment, *Penang, 1996*

Mohideen Abdul Kader & Shahridan Faiez, 'Land-use Laws and Policies and Environmental Degradation, ' paper presented at the CAP-SAM National Conference on the State of the Malaysian Environment, *Penang, 1996*

New Straits Times, *1985-96*

Sarawak Study Group, 'Logging in Sarawak: the Belaga Experience' in Logging Against the Natives of Sarawak, *Kuala Lumpur: INSAN, 1989*

Sasekumar, A, 'The Ecological and Social Impact of Pond Aquaculture, ' paper presented at the CAP-SAM National Conference on the State of the Malaysian Environment, *Penang, 1996*

The Star, *1985-96*

Utusan Konsumer, *1985-96*

World Rainforest Movement & Sahabat Alam Malaysia, The Battle for Sarawak's Forest, *Penang, 1990*

HAZY DAYS - IS ANY END IN SIGHT?[1]

Indonesia has had a long tradition of millenarian movements that anticipate the appearance of a *Ratu Adil* (Prince of Justice) who overcomes all odds, delivers the people from the claws of their oppressors, and brings the victims a fairer and brighter world.

But it looks as if no such justice can be expected at the end of this millenium. No prince of light has come, only a prince of darkness in the form of a foreboding haze that blocks out the sun and brings darkness at noon to parts of Indonesia and neighbouring countries. Conditions in Sarawak, Malaysia, when the API (air pollution index) exceeded 800 in September, were likened by some to a nuclear winter. The grit-laden air brought tears to the eyes, choked the lungs, and brought on respiratory problems of previously unknown proportions. Presently the *api* (fire) remains undoused, with little hope of a permanent solution.

Each year the burning of Indonesia's forests for agricultural purposes briefly raises pollution levels in neighbouring countries but it is tolerated until the September rains arrive to put out the flames. This year, the fires have developed into a regional disaster.

The fires are out of control, partly because of the super-dry conditions caused apparently by the El Nino Effect, but mostly because of the callous manner in which big plantation businesses have cut, slashed and burnt the Indonesian forests to the ground.

The Indonesian government estimates that 300,000 hectares are ablaze. The World Wide Fund for Nature (WWF) suggests that the affected area is closer to 600,000 hectares - equivalent to the size of Brunei. The WWF calls the fire an 'international catastrophe' because between 40,000 and 60,000 hectares of protected forests and parkland have gone up in flames, destroying in its wake the habitat of endangered species such as Sumatran tigers, orangutans and elephants. It has been estimated that it could take 100 years to reafforest the destroyed tracts.

Thousands of innocent people have suffered from the ill winds that continue to blow over Borneo, Sumatra, Singapore and Malaysia. But the real culprits - the rogue politicians, rogue loggers and rogue corporate bosses - sit pretty in Java where ironically they still enjoy 'blue skies and everything nice'.

The health of thousands of Southeast Asians has been badly affected, in some cases, permanently. At least four Indonesians have died as a direct result of the smoke. More than 50,000 people have sought treatment for various ailments attributable to the haze. Investigators are probing the possibility that the haze contributed to the September 26 crash of a Garuda Airbus on its approach to Medan airport in northern Sumatra. All 234 people on board died.

Where is the justice in all these? Is a solution in sight? Will President Suharto and the Indonesian government do more than apologise to neighbouring countries? Will the people of Southeast Asia continue to choke while their governments remain largely silent in the name of ASEAN solidarity? Who will deliver us from this curse?

The answer, my friends, is blowing in the wind.

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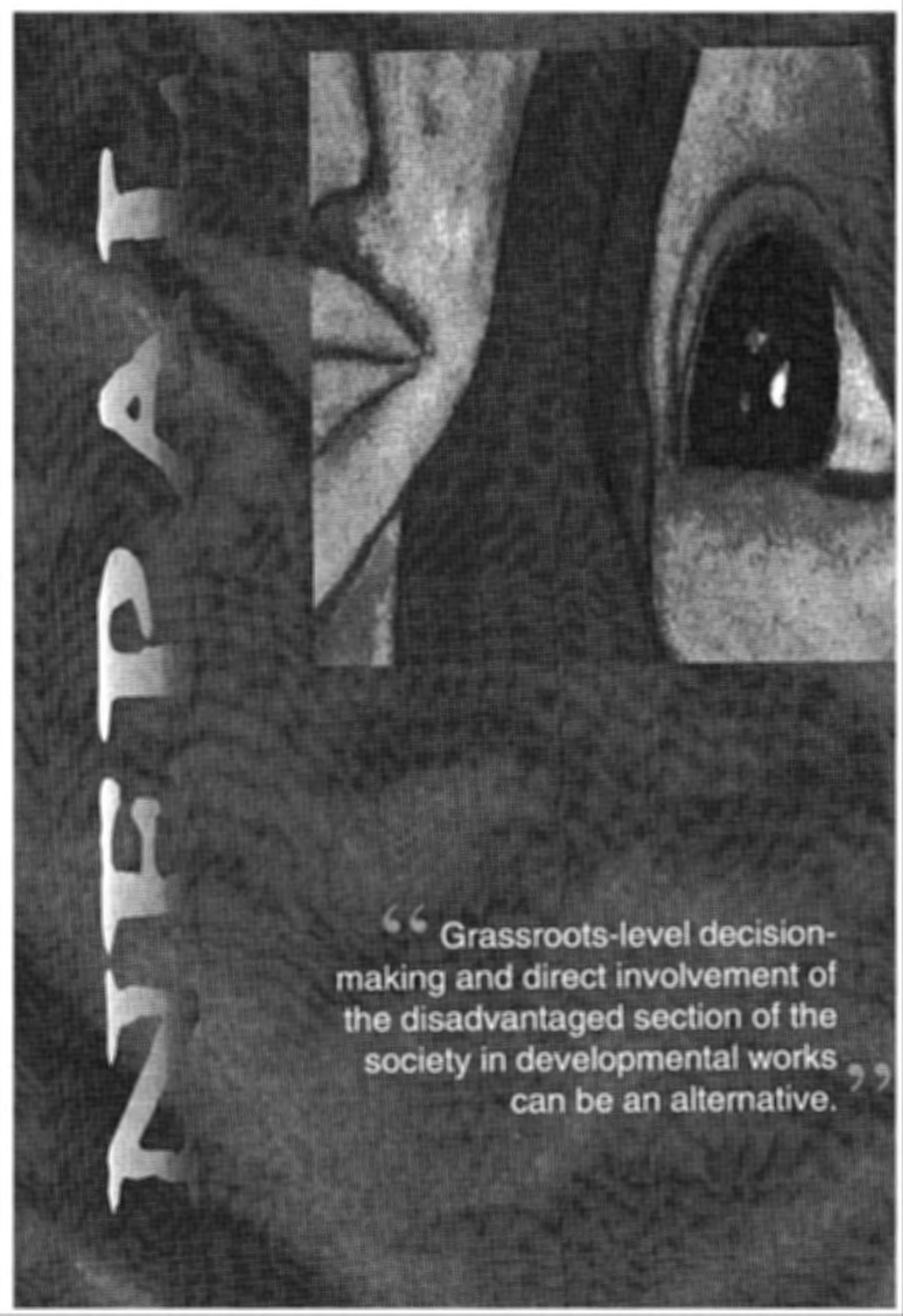
[1] Many thanks to my old friend, Choong Tet Sieu, for permitting me to make liberal use of the information contained in her article, 'Scorched Earth', *Asiaweek*, October 10, 1997


NEPAL
“ Grassroots-level decision-making and direct involvement of the disadvantaged section of the society in developmental works can be an alternative. ”

NEPAL

Gopi Upreti, Rishi Adhikari
& Arjun Karki

Structural Adjustment in Nepal: Deeper into Underdevelopment

Modern Nepal as a nation came into existence more than 220 years ago, when Prithivi Narayan Shah, king of the small hill principality of Gorkha, unified the other feudal principalities and the three kingdoms of Kathmandu valley. The expansion of the Gorkha kingdom invited conflict with British India which was consolidating and expanding its empire in the subcontinent. Nepal was defeated in the Anglo-Nepal war of 1814-16 and was forced to sign an unequal treaty with British India.

After the death of Prithivi Narayan Shah in 1775, the politics of Nepal was marked by palace conspiracies and court rivalries. The British wanted to establish a friendly government in Nepal and recruit the intrepid Gorkha fighters in their army so that they could be used elsewhere to further expand the empire. Finally, Jung Bahadur Rana, an army officer, came to power through a bloody coup in 1846 and established the Rana oligarchy. The century-long Rana era was marked by ruthless exploitation of the mountainous land and its people.

The first stirrings of a democratic consciousness in the landlocked land was inspired by the anti-imperialist struggles in the neighbouring countries of India and China in the late 1940s. The Rana oligarchy was finally overthrown through an armed revolution in 1950 led by the Nepali Congress and other political parties and the first democratic constitution of Nepal was promulgated eight years later. The first-ever general election was held in 1959 which led to the formation of an elected government. However, the Nepali Congress government headed by Prime Minister B P Koirala, was removed within 18 months by King Mahendra in a bloodless coup in 1960. The king dissolved parliament, suppressed fundamental rights and replaced the multiparty order with a partyless panchayat (local self-government) system. The autocratic rule lasted for three decades till it was overthrown in 1989 in a people's upsurge. The democratic movement restored the multiparty parliamentary system — with constitutional monarchy — and drafted a constitution that guaranteed fundamental rights.

Though Nepal has been through eight five-year plans over the last four decades, they have done very little to benefit the majority of the population which is steeped in poverty and whose number is constantly rising. The plans, programmes

and development projects over this entire period, supported by various multilateral and bilateral donors, have only widened inequalities through the distribution of incomes and assets in favour of the urban and rural elite and pushed the overwhelming majority of the people beyond the edge. Though there have been some improvements in physical infrastructure such as roads, bridges, hydro-power, civil aviation and telecommunication and some advances in social infrastructure such as schools, colleges, health centres and epidemic control, the fallout of 'development' is hardly reflected in the living conditions of the masses. Development in Nepal has primarily been towards underdevelopment.

Deepening Poverty

Situated on the southern slopes of the central Himalayan range, Nepal is a landlocked country characterised by a fragile ecology and remarkable altitudinal variations ranging from 100m above sea level in the southern foothills to over 8000m in the northern crestline. Centuries of interaction with such diverse environment has created a unique diversity of culture among communities along altitudinal gradation. As many as 65 different ethnic and caste groups inhabit the mountainous terrain, each with a distinct culture and identity. Hinduism is the predominant religion followed by Buddhism, Islam and Christianity — all of which have contributed to the evolution of a society with a high degree of tolerance and harmony.

Nepal has a population of 20m, half of which inhabits the plains and forest-cloaked foothills. It is primarily an agrarian country with agriculture contributing 45% of the GDP and over 80% of the people eking out their daily livelihood in this sector. Poverty in the country is pervasive, the per capita income being less than $200. A feudal socio-economic structure, skewed land distribution, lack of education and employment opportunities coupled with fatalism, religious orthodoxy and absence of political will have all contributed to the impoverishment of the people.

Today, 12 million Nepalis or over 60% of the population, mostly in the rural areas, live in absolute penury. The end of the 80s witnessed a phenomenal spurt in the poverty spiral, a jump from 42.55% in 1984-85 to 71% in less than five years. As in other developing countries, the deepening poverty on such an unprecedented scale is directly linked to the exploitative policies of the rich nations and the structural adjustment programme imposed by international lending agencies led by the World Bank-IMF combine. Insensitivity of the bureaucracy and lack of vision of the political leadership has only aggravated the problem.

Big Debts of a Small Country

Nepal is basically an aid-dependent country. Since the 80s, government and policy makers have consistently relied on external loans to fund development works, including large-scale and expensive infrastructure projects. As the country 's debt mounted and debt-servicing became an acute problem, Nepal was forced to accept the strict conditionalities and the structural adjustment programme of the IMF-World Bank which imposed a heavy burden on the people.

The first structural adjustment loan from the World Bank was launched in 1986 and the second in 1989. The former had emphasised sound macroeconomic practices, rational management of public finances, liberalisation of trade, and reforms in public enterprises. The reforms stressed policies and action programmes to restructure the tax system, scaling down of welfare expenditures, liberalisation of the fertiliser trade, and opening up of the financial sector. In 1992-93, the Enhanced Structural Adjustment Facility (ESAF) loan programme was launched. This time, the focus was on reducing the budgetary deficit to zero level, increased privatisation, deregulation of prices, exchange and interest rates, and integration of the fiscal system with the international financial mechanism.

When the Nepali Congress came back to power in 1991, partial convertibility in the exchange rate system was introduced and full convertibility in the current account followed. Tariff rates were reduced and subsidies cut, resulting in an increase in the prices of public utility services and essential goods and services. Public enterprises were sold to local and foreign companies even though most of the enterprises were not 'sick' industries in reality.

During 1986-90, an increase in debt and prices occurred and inflation jumped to more than 12% from 5-6% in 1980-85. Outstanding debt, which was 22% of the GDP in 1985 touched a high of 53% in 1990. Data from World Bank-based sources on land distribution pattern and economic status of various socio-economic groups showed that the population categorised as 'poor' was more than 71% in 1989-90 as compared with 42.55% in 1984-85.

In the fiscal year 1991-92, the overall growth rate of the economy was just 2.1%. The low growth continued in 1992-93 with an average growth rate of only 2.9%. The rate of inflation was an unprecedented 21%. A recent study undertaken to examine the impact of liberalisation on poverty since 1992-94 reveals that 76% of the population are poor. A World Bank report of March 1994 stated that the consequences of a cut in social sector expenditure would be extremely grave for the Nepali people, especially in the spheres of education, health and family planning. Yet the report heartlessly added:

A cutback in social programmes would be unavoidable. It is calculated that a reduction in the growth of social sector expenditure to around 5-6% a year, compared to the 8% annual growth which the public expenditure analysis of this report show to be appropriate to meet Nepal's pressing human resource development needs, would be required to help eliminate the financing gap.

The Communist Party of Nepal-Unified Marxist Leninist (CPN-UML) emerged victorious in the mid-term election in 1994 and temporarily stalled the privatisation and liberalisation programmes in order to examine and evaluate past programmes and their impact on ordinary people. However, the new government in September 1995 relaunched the liberalisation-structural adjustment process with greater zeal. The budget of 1995-96 advocated acceleration of privatisation and free market, more cuts in subsidies on essential goods and services, abolition of wealth tax and the introduction of value-added and other indirect taxes. It appears that the Nepali Congress-led coalition government is blindly pursuing and endorsing the policy prescriptions of IMF-WB in a bid to please them and acquire more loans. The latest budget (1996-97) has introduced measures towards aviation and power privatisation, decreased subsidies on public utilities, fertilisers and pesticides, value-added tax, and revamp of the tax administration. These were the stipulations of the Bank in 1994 for further loans.

Saga of Impoverishment

All this is not new for Nepal. These were the prescriptions of multilateral and other western donor agencies in the 50s and 60s for a growth strategy based on the trickle-down hypothesis, and institutional arrangements under monarchy were tailored to promote this. From the 70s, however, the emphasis was on fulfilling basic needs through expansion in gainful employment and human resources development, but in the 80s both these strategies were mixed, confounding the objectives.

Despite massive propaganda in favour of liberalisation and its positive impact on industralisation, no success has been achieved in establishing new industries. The growth in output of major import-substitution industries was, in fact, negative in 1992-94 when compared with even the low growth rate in such industries in 1991-92. The imposition of the unified tariff system on consumer, intermediate and capital goods following the introduction of full convertibility in current account and a sharp fall

in agricultural production contributed to the closure of many industries and business activities of small entrepreneurs. The decline in exports in these two years was also accompanied by economic recession, compelling government to rely largely on deficit financing in violation of the ESAF conditionalities to meet rising expenses.

In a bid to attain a higher growth rate, international funds have poured into Nepal in support of a few large projects in irrigation, power, infrastructure and forestry. Though these projects have ushered in some changes in social mores, the benefits are yet to percolate to the masses. On the other hand, they have irrevocably transformed the pristine landscape of the mountainous kingdom smearing it with denuded hills, silted rivers, and squalid urban slums.

The degradation of the environment has set off a chain of misery. Deforestation and the consequent lack of fuelwood has led rural households to burn cattle dung as a substitute, thereby severely reducing the fertility of farmlands. Landslides, riverbed rise and frequent flooding are playing havoc with the life and livelihoods of the people. Pollution has engulfed the urban centres, bringing in its wake a host of environmental diseases. Ironically, Nepal neither has any environmental legislation, nor any regulatory body to enforce anti-pollution norms.

The neglect of the social sector have widened the rich-poor divide and intensified the proverbial poverty in the country. Today most of Nepal lacks safe drinking water, infant mortality is among the highest in the region, while education and healthcare are almost nonexistent. At the same time, Kathmandu roads are choked with imported limousines, luxury hotels are sprouting all over the countryside, and the rush of tourists never ceases at airports.

Structural adjustment has resulted in economic stagnation, serious unemployment and underemployment problems. A polarisation process in Nepali society became manifest in this period with further marginalisation of small and landless peasants and increasing impoverishment of the poor and the disadvantaged. Encouragement to capital-intensive techniques and disappearance of import-substitution industries have blocked every possibility of employment generation, enhancing the likelihood of increasing child labour in industry with low wage rates. The liberalisation-privatisation policies have merely benefited the rich and raked in huge profits for global capital. The misery of the people is expected to intensify in the days to come.

Structural Adjustment With a Difference

The paradigms of economic development — growth through aid and reduction in social opportunity — charted out for Nepal by the international lending agencies will only sink the country deeper into the depths of underdevelopment. The centuries-old social structure and current political arrangements are not only inadequate to resist such humiliation, but they can only pave the way for further slavery to global capital.

Grassroots-level decision-making and direct involvement of the disadvantaged section of the society in developmental works can be an alternative. The need of the hour, definitely, is structural adjustment — but of a different kind. For such a situation to come about pressure has to be mounted at all levels and in every corner of the globe, challenging the hegemony of international capital.

GLOSSARY

Arun III Hydel Project

The Arun III hydel project aimed to harness the waters of Arun river in the Faxinda of Sankhuwa-sabha district in the eastern mountain region of Nepal for the generation of 201MW electricity. However, the project has been dropped for the time being under tremendous internal and external pressures on the World Bank through a three-year relentless campaign by national and international NGOs, CBOs, independent researchers and academics. The controversy arose from the overriding cost estimate of the project — almost $1.1bn or two years ' national budget of Nepal with potential reduction on social projects —adverse impact on local people and the environment, preconditions of funding agencies, especially the international financial institutions, and physical and financial risks associated with the project.

Bara Forest Management

The controversial Bara forest management project involves the handing over of 32,430ha prime Sal forest to Enso International of Finland to be managed for a period of five years in collaboration with three Nepali companies. The crux of the matter is that these companies will be allowed to harvest 85% of the forest on the pretext of clearing 'slum forest'. Government and the Finnish company reached an agreement on the project, sidelining the local people. Community forestry projects managed by local communities in Nepal have been lauded as the best in the world. So the question arises why were these people charged with mismanaging this forest? In addition to the direct negative impacts the project will have on the people in terms of forest resources utilisation, their cattle population of 10,000 will lose their grazing pastures. The project is planned to start in 1997, but a clause in the Constitution requiring ratification of any agreement offering the use of the country 's natural resources to foreigners may prove to be a stumbling block in its implementation.

Child Labour

In Nepal, children constitute a large part of family labour and of commercial farm workers. According to unofficial estimates, as much as 60% of the total child population in Nepal is engaged in labour either in the informal sectors such as carpet-garment factories, tea estates, brick kiln-stone quarries, hotels-restaurants, and as porters, child prostitutes, domestic servants, and bonded workers. In major cities there is also a large number of street children who work mainly as rag-pickers. Poverty is the main cause driving children to toil under adverse conditions for long hours in unhealthy environments, and, most of the time, for a pittance. Not only are they malnourished, but, working in hazardous conditions, are also prone to chronic respiratory diseases, skin problems, headaches and gastro-enteric ailments. There is little or no effort to release them from their slavery or improve their working conditions.

Floods

Floods are an annual occurrence in Nepal, their intensity and frequency increasing in some parts of the country. In 1991, heavy floods in the Chitwan district affected many people as well as wildlife in the national park. In 1993 the area was inundated once more with heavier losses of life and damage to property and wildlife

. Many people were displaced, thousands of hectares destroyed by river bank erosion and deposition of sand. In 1996, widespread floods took an even heavier toll in Jhapa , Dolkha, Bardia, Sindhuli, Dhanusa, Rajbiraj, Achham, Bhojpur, Mohottari and Morang districts. Overall at least 49 of the 75 districts were affected and several thousand hectares of land damaged. As in earlier floods, communications were disrupted, national highways and telecommunication, power and irrigation systems being severely damaged. At least 92 people were killed, 62 are still missing and 5522 displaced families are still awaiting to be rehabilitated.

Godavari Marble Mining

Unchecked marble mining and manufacture is wreaking havoc in the Phulchowki-Godavari area in the southeastern corner of Kathmandu valley. The subtropical forests in these hills with its immense biodiversity is under constant threat while the idyllic tourist spots and pilgrim centres are being desecrated. Noise and dust are adversely affecting the health of the villagers in the area and flying rocks from periodic blasting has become a real menace. (*See case study*)

Kamaiya System

Kamaiya, a medieval system of eternal bondage of poor farmers, is still practised mostly in five far western districts of Nepal. Under this system of slavery, members of the Tharu farming community sell themselves to landlords for a period of one year which gets extended every year with a possibility of minor modifications. The landless farm workers are trapped in this vicious circle through an illegal usury system in which interest on loans increase in geometric proportions. The men in bondage work for their Masters day and night as tillers, their wives and children as domestic help or tending cattle or sheep. There are about 40,000 Kamaiyas in these five districts, about 95% of whom are illiterate. A Kamaiya Liberation Campaign has been initiated now with the formation of a 'National Forum' which is demanding the abolition of the usury system and resettlement and employment for the Kamaiyas. Demands have also been raised for fixation of working hours and fair wages, free education for their children, end to the exploitation of their womenfolk, imparting of job-oriented training.

Kathmandu Pollution

Kathmandu, the destination of tourists from all over the world, has already surpassed all South Asian cities and is set to overtake Mexico City in urban pollution. Unbridled urbanisation, unplanned and faulty development policies, unchecked commercial tourism, absence of regulatory or mitigating measures, and lack of environmental awareness among the citizens and those in authority is fast transforming this Himalayan paradise into an environmental nightmare. (*See case study*)

Kulekhani Hydel Project

The 60-MW Kulekhani hydel project, commissioned in 1986 after nine years of construction, is an example of development disaster in Asia. Constructed with financial assistance from HMG, Nepal and OECF, Japan, with Nippon Koei Co., Ltd, Japan, as technical consultant, it uses two river systems — Kulekhani and upper Rapti river basin — and is situated in Mahabharat range of middle mountain of Nepal, about 30 km southwest of Kathmandu. The 114m high dam, with a catchment area of 126 sq. km and reservoir covering 2.2 sq. km, is situated in an ecologically fragile mountain system. The excess silt and boulders being dumped into the reservoir has shortened the dam's lifespan from 100 years to about 50 years. The penstock pipe broke due to defective

surge tank operations in the floods of 1993 summer and the ensuing deluge on the plains killed hundreds of people including six Chinese technicians on night duty. (*See case study*)

Narayani Lift Irrigation

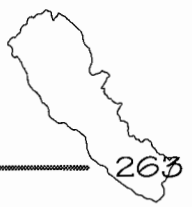
The costly Narayani Lift Irrigation project was undertaken by Nepal government due to a clause in a treaty with India that Nepal cannot construct a dam that may disturb hydroelectric and irrigation project downstream of the Narayani river on the Saryu or Gandak in India. Its construction started in 1978 and was completed after 12 years with loans amounting to $10m from ADB and technical assistance from AHT-Germany. The project uses an electric pump system costing $200,000 annually. The initial aim was to irrigate 4700ha in Chitwan district in south central Nepal but till now it has covered only 4000ha. The system functions for only three months in the monsoon and its maintenance cost is very high during dry period when it cannot be operated but is most needed. The maintenance aid itself is $100,000 annually due to unavailability of skilled manpower and spare parts in Nepal; every year there is deposition of heavy silt in the canal and farmlands, thus decreasing productivity. (*See case study*)

Pancheshwor Dam

Nepalese parliament has ratified a treaty with India to build the 315-metre-high Pancheshwor dam — Nepal's highest and the third-highest dam in the world— across the border river Mahakali at a very high economic, environmental, social and cultural cost to the country and its people. The dam will submerge 30 sq. km in Nepal and 90 sq. km in India affecting 24 villages (25,000 people) and 120 villages (40,000 people) in the two countries respectively. Nepal and India have agreed to equally share the $13bn construction cost of the dam as well as the power to be generated. For a poor country like Nepal with a total annual budget of less than $1bn, the contract may turn out to be a risky proposition. The dam site lies in an earthquake-prone area, on one of the most active seismic faults in the Himalayan region. Three major earth quakes have struck this region in the last century and a major one is long-awaited. People in both countries have raised their voices against the project and awareness campaigns have been initiated around the dam site. In Nepal the agreement with India is viewed as yet another 'sellout' to big brother as in the case of the Kosi and Gandaki river projects.

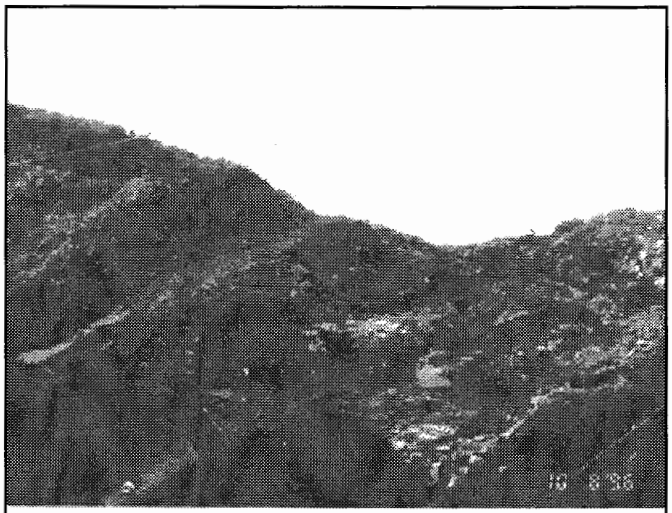
Trafficking in Women

Growing traffic in young girls and women has become a serious problem in Nepal. An ever-expanding sex market has already pushed at least 100,000, possibly more, Nepali girls and women into Indian brothels. As more girls are sucked into the trade every day, their average age keeps going down because of the increasing demand for virgins. The agony of the Nepali women is further aggravated by deep-rooted cultural traditions which forces women of some communities such as Deoki and Badi, into the profession. Local girls, outside of these communities, are also being lured into the burgeoning sex business in towns across the country, offering an escape from the clutches of abject poverty. The low social and educational status of Nepali women is mainly responsible for their victimisation. Demands are being raised to enact stricter legislation to bring to book the unscrupulous traffickers while several NGOs are working for the rehabilitation of rescued victims. Recently they were able to bring home 128 girls from Indian brothels, most of whom have been found to be infected with HIV.



Triveni Cement

The Triveni Cement Factory, set up in 1986 in a densely-populated area in Chitwan district of central Nepal, is one of several instances of foreigners carrying out lucrative business with little care for either the environment or the safety and welfare of the local people. Owned by an Indian industrialist, the 10-tonne capacity plant operates round-the-clock in three shifts. It employs only 27 permanent staff including three Indian officers, and uses local natural resources such as iron ore, clay, limestone, coal etc. The huge amounts of mineral dust released into the atmosphere from the factory is affecting the health of people living in the vicinity and their domestic animals. An autopsy carried out on a cow unearthed a chunk of cement lodged in its stomach. Besides the smoke and dust which has led to rising incidence of asthma, bronchial and respiratory problems, skin infections and allergies, the noise of the machines is unbearable for the local people. The mineral dust is affecting crops, soil and water in the area and visibility is reduced while the regular blasting have damaged walls of several houses. There are other cement factories in the country— Himal Cement Factory in Chovar, Kathmandu, Hetauda Cement Factory, Udayapur Cement factory etc. — with similar ill effects on the health of the local people, agriculture and the environment.



The site of the Godivari Marble industry in Nepal

CASE STUDIES

Godavari Marble Industry

Shameful Disregard for Environment

The aggressive policy of unbridled development is directly responsible for many of Nepal's environmental problems and the destruction of the Himalayan ecology. The Godavari Marble Industry is an example of how profit-raking ventures are pushed through in complete disregard of the havoc they wreak on the land and its people.

Treasure in the Hills

The marble factory, located in the Phulchowki-Godavari area at the southeastern corner of Kathmandu valley, has been in operation since 1933. Originally a marble depot established through Khadga Nishana Sanad (laws), it was registered by the Industry Department in 1948. In 1964, an area of 2.5 sq. km covering forests and hills was auctioned and permission granted by the Industry Department to mine it for marble. The ownership of the factory changed hands several times and by 1978 it had become a modern marble manufacturing and processing unit. The license for mining has been extended by a cabinet decision up to 2001.

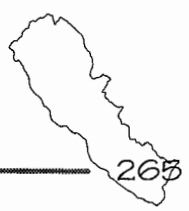
Apart from marble, the factory mined stones, gravel, lime etc. used in the construction of the new royal palace and the ring road around Kathmandu valley. The mining department tried to prevent the mining of these destructive materials to protect the marble deposits but were thwarted under the pretext that marble mining yielded them as by products. Later licence was granted even to mine those materials. The Godavari mine is currently supplying 20% of the growing demand for stone in the Kathmandu valley, which has kept pace with the rapid urbanisation. About 80% of the marble is exported to India.

At present the mine is spread over an area of 10 ha, another 5 ha being taken up by the factory and office complex. Mines 1, 2 and 3 are in operation now, but no. 4 has been closed following mounting pressure from the local people and environmentalists for it was believed to have caused the drying up of some of the famous water spouts in Naudhara.

The mines employ 400 people directly, about 100 local people among them. An additional 200 get employment during winter. The company paid a wage bill of $200,000 and $37,046 as taxes in 1992. In recent years factory sources claim to be paying about $50,000 as taxes per annum. Going by these figures it is obvious that the Godavari Marble Factory is doing very well indeed. But what is it doing to the people and the surrounding land?

The Land and the People

Phulchowki-Godavari lies in the Mahabharat range, about 16 km from Kathmandu and is bounded by the Roshi river on the east, Nallu and Lele in the southwest, and Godavari in the north. Phulchowki mountain is the highest peak in Kathmandu valley, Godavari village situated at its base. The area houses the Royal Botanical Gardens, National Herbarium, National Fisheries and is renowned for being among the richest sanctuaries for birds in the world. Some 256 species of birds are found in Godavari, 17 of which are endangered, and six considered threatened worldwide. There are 665 species found in the whole



of North America, while Nepal has over 800 species, half of them to be found in Kathmandu valley alone.

The subtropical, broad-leafed forests of the area is home to a wide variety of flora and fauna. Among its floral treasures are 571 angiosperms, two gymnosperms, and 80 species of ferns and fern allies. The leopard, Himalayan black bear, barking deer, jungle cat, marten and mongoose roam the forests which is also the habitat of a number of rare butterfly species —the Sikkim Hairshreak, the Pale Hockeystick Sailor, the Blue Duchess, and the Naga Hedge Blue. In recent years, previously unknown spiders and insects of important scientific value have been found in Godavari.

There are 20 settlements in the Phulchowki-Godavari area, with a population of 25,836 according to the 1991 census. Agriculture is the primary occupation of the people, though many are moving out to Kathmandu city in search of work. Cultural and ethnic diversity have allowed traditional occupations to flourish in Godavari. Brahmins perform religious rites, Newars are in business, the Damai, Kami and Sarki are engaged in dress-making, crafting ornaments or manufacturing shoes while the Tamangs provide fuel by burning standing trees. Some are employed in stone-crushing used as gravel.

Rice, maize, wheat, beans, soybean, barley and cowpea are the main crops in the area. Pumpkin, potato, aubergine, cauliflower, radish, and leafy vegetables are grown in most of the households. The land, which once produced surplus food grains, has now lost its fertility owing to the dumping of waste material from marble mining.

For centuries the Godavari area has been a pilgrim centre, drawing people from around the world every 12 years to the Goddess temple. Folk tales abound about its Shiva temple and the adjoining pond while the water spouts of the Naudhara (nine taps) have slaked the thirst of people for ages.

Polluted Water, Soil and Air

The marble factory has been the bane of this enormously bio-rich and culturally diverse land. Its most visible impact is the ugly red scar on the face of Phulchowki mountain, once covered with lush green forests. Quarrying has caused severe deforestation of the surrounding hills depriving villagers of their fuelwood supply and contributing to soil erosion and runoff problems. There is real threat to the rare plants and birds.

Increased mining activity is not only affecting the natural environment, it is also polluting the soil, water and air. The water-carrying capacity of Godavari river has been greatly reduced, and the quality of available water is highly degraded. The stream waters used for the irrigation of approximately 3000ha of local crops is of such high silt content that the soil fertility and productivity has drastically declined, while the crops are often plastered over with mineral dust, destroying entire harvests.

The marble industry uses large amounts of water for the operation, cooling, and cleaning of its equipment. Contributing even further to the degradation of the water quality is the lack of sanitation facilities for the 300-400 labourers employed at the factory, who live near the quarry premises, and urinate, defecate, and dispose of garbage upstream of all the local villages. The 100 tonne of limestone slush produced in marble production adds to the river's pollution.

The mining produces constant noise and dust as the drills run throughout the day, and frequently the night as well. Periodic blasting, observed to occur as frequently as 22 times in a period of three minutes, not only adds to the noise pollution, but the flying boulders pose a threat

to villagers in the neighbourhood, and residents of St. Xavier's boarding school, which is situated directly at the base of the hill on which the quarry is located.

Protests in Vain

The Godavari marble factory has disturbed the tranquillity of the area and disrupted the lives of the people living there threatening their health, livelihood, and future. Their complaints about fall in crop yield, soil fertility loss, deforestation, water shortages and so on have prompted a number of NGOs and advocates from Kathmandu, as well as several local clubs in Godavari to launch efforts to restrict mining activity in Godavari and protect the environment. They have now taken to the streets with the slogan: 'We rather want safer environment than development.' Over 20,000 signatories of a signature campaign have petitioned the Prime Minister demanding closure of the quarry. All these protests over several years have had little impact.

A Supreme Court ruling on a writ petition seeking closure of the marble factory filed by LEADERS Nepal, an NGO, in May 1989 recognised that effective mitigation and corrective measures had not been taken for environmental conservation but did not order closure of the marble factory. Instead, it issued an advisory directive to the Ministry of Industry, Cabinet Secretariat and others to enforce the Mines and Minerals Act, 1986, and enact legislation for the conservation of the environment of Godavari area.

The insensitivity shown to the plight of the Godavari villagers indicates that those in power have no regard for environmental and cultural heritage as well as people's safety and will go to any length in abetting the exploitation of nature for profit.

Kulekhani Hydel Project

Mega Projects, High Price

International aid has been pouring into Nepal to tap its immense hydropower resources—second only to Brazil with an estimated potential capacity of 83,000MW. But slow national industrial growth and a limited market for power — India is the lone buyer — raises serious questions regarding developing the country's energy sector with huge investments that may put additional economic burden, and potential investment cuts in social sectors such as education, health, etc. The Kulekhani hydroelectric project is a case in point.

The Colossus

Kulekhani is the biggest hydroelectric dam so far built in Nepal. At an estimated cost of $105.4m, the project, commissioned in 1986, involved several parties in its planning and implementation. Funding came from six international sources: Kuwait Fund, Japanese Government, OPEC, EEC, UNDP and the World Bank contributing the maximum at $40.8m. Nippon Koel Co. Ltd, Japan, was the engineering consultant and Sambu Construction Co. of South Korea was the main contractor. His Majesty's Government of Nepal (HMGN) was responsible for land acquisition and providing services such as housing, water supply and access roads to the project sites.

For the 92MW project — Kulekhani I and II — a 114-metre-high rock-filled dam with clay inner core was built across Kulekhani stream to create the 2 sq. km Indra Sarobar reservoir. The Kulekhani watershed area lies in northeastern Makwanpur district in the Central Development Region of Nepal in the Mahabharat

range, about 30 km southwest of Kathmandu. It covers the basins of two different river systems — the Kulekhani and the upper Rapti and is fed by the June-September monsoons which brings more than two-thirds of the total rainfall in the area. The outlet of the reservoir, 1500m above sea level, marks its lowest point while the southwestern ridge of Palung Khola marks the highest point at 2621m. Tasar, Bisingkhel and Chitlang Kholas are its major tributaries.

Around 42% of the watershed area is agricultural land and 44% is covered in forests, the rest being shrubland and grazing commons. More than 28,000 people inhabit the watershed area living off the fruits of the land.

Feet of Clay

Within a decade of its commissioning, serious doubts have been raised about the efficacy of the Kulekhani project.

Life span: The lifespan of the dam had been calculated to be 100 years. However, an independent expert estimates its lifespan to be not more than 50 years from the date of completion.

Operation & maintenance: Nepal does not have the technical capacity or expertise to repair and maintain the dam as was evident in the 1992 floods. The penstock pipe was damaged beyond repair due to careless handling by surge tank operators.

Cracks in the dam: In 1993, within a year of completion and even before it started operating, cracks appeared on the dam crest. It was intriguing that despite recommendations of remedial works such as additional embankments on the upstream shoulder portion and concrete guard blocks during the dry period, the cracks were judged to be not dangerous for the dam's safety.

Excessive sedimentation: It appears that the problem of sedimentation was not taken into account when the dam was conceived. Following the heavy rains of July 19-20, 1993, the force of the waters washed great amounts of silt into the dam raising the reservoir bed. A survey in October 1994 showed that the water holding capacity had decreased significantly.

Floods: The devastating floods following the heavy rains spelt disaster for the Kulekhani plant which suffered severe damage. Thousands of tonnes of boulders rushed down the mountain stream, snapping the penstock pipe at Jurikhet Khola causing stoppage of the Kulekhani I system. Six Chinese technicians were washed away trying to open the barrage gates which otherwise could have caused unprecedented damage downstream. Later their bodies were found along with the body of a Nepali technician. The intake of Kulekhani II and Mandu Khola was also damaged by the debris flow. A boulder weighing 4000 tonne was washed down the Mandu Khola near the Mandu intake. The breakdown of Kelekhani led to a 40% shortfall in the national power system causing prolonged power-shedding. The flood devastation was intensified by accompanying landslides. In Makwanpur district alone 242 persons died and 14,748 families were affected. Villages were washed away or buried under debris, over 3600 houses were partly or completely damaged and 4656 ha of cultivated land was destroyed.

People Denied

Around 3500 villagers were affected when 200ha of land was acquired for the Kulekhani project. Maize was cultivated on 70% of this land while rice was grown on 20%. Almost all the

land belonged to private owners. The level of formal compensation for land acquired by government was decided by a committee formed for the purpose.

Compensation for 450 houses that were submerged including service structures such as cowshed and *dhansar* (grain store) was decided on the basis of their life, size, and material used. Similarly, the compensation for 50 local water mills were assessed on their grinding capacity. The loss of standing crops for one season was included in compensation payment and schools and temples were evaluated on their construction costs. On the other hand, common resources such as grazing land and water sources were not taken into account and neither were fruit trees, bamboo bushes or fodder plants that form the base for sustainable living in the hills.

The Tamangs of Markhu village were the first to lose their land to the project. The only option given to them was cash. Officials took recourse to the prevailing land acquisition law which had no land-for-land clause except in case of residential structures.

The Tamangs are a peaceful people, deeply attached to their land. Their tradition held land and house to be inviolable property, an inalienable right that no one could take away without their consent. The law of the land created by an urban elite was incomprehensible to their traditional way of thinking and they did not take seriously the threat to their land and property. They later claimed that their leaders were arrested so that the land acquisition could proceed smoothly. And the officials made no serious effort at negotiation or explaining the situation to the simple hill people.

The Tamangs took the extreme stand that they would not give up their land at any price. They gathered in Kathmandu to picket in front of the Royal Palace, The police were called in when the Tamangs tried to stop the project work and an undersecretary of HMG was attacked. The project could continue only after mass arrest of the Tamang protesters.

The adverse impact of the cash compensations on the Tamang community was more serious then the loss of property. The sudden wealth led to gambling and drinking at unprecedented levels. Eight men developed severe tuberculosis, all but one dying of alcoholism in pitiable condition within five years. One young Tamang who received a large sum in compensation went to a Kathmandu casino, lost all his money gambling and ended up toiling as a dishwasher. A few individuals had some entrepreneurial ambitions, but lacking experience, ended up losing their possessions.

Today, even after two decades since the project began in 1976, impoverished Tamangs consider the Kulekhani project their enemy. Officials, in their turn, do not trust the Tamangs and do not hire them even for menial jobs. Not a single Tamang from Markhu is employed in any permanent capacity in the project.

The Tamangs are justified in their opposition. At night when the Kulekhani colony glows with electric lights, the Tamang village is in complete darkness. Officials claim that the Tamangs did not apply for electrification, but the Tamangs say their applications were not entertained. Kulekhani extracted a heavy toll on the Tamangs, taking away their land, livelihood and even their lives in one blow, giving nothing in return.

The experience of the Kulekhani project makes it clear that internationally-funded, capital-intensive and technically-sophisticated projects are not only inappropriate for a small, economically backward nation like Nepal, but that they usually bring little or no benefit for the people. Instead, they are harbingers of disaster and destroyers of peoples and their cultures. The other face of globalisation is devastation.

Narayani Lift Irrigation System

A Technological Fiasco

Imported projects, expensive and capital-intensive with design and technology inappropriate for local conditions, are proving to be an enormous burden on poor and traditional economies like Nepal.The Narayani Lift Irrigation System (NLIS) proposed and executed by the expatriate consultant AHT as part of the ADB-aided Chitwan Valley irrigation project, is a prime example of the destruction wrought by such untenable schemes.

Defective Design

The NLIS, meant to supply pumped water for irrigation from the Narayani river, as well as the tributaries of the Rapti, was thought to be an excellent scheme when conceived in 1972. Due to cheap electricity prices and energy surpluses prevailing at that time, ADB's feasibility study concluded that the lift irrigation system was a viable proposition. Consequently, the bank approved a loan of $12.5m, envisaging that the project would be completed by 1979. The NLIS was finally completed in 1989, a decade behind schedule, and at a revised cost of $28m, $18.4m being the loan from the bank itself.

The NLIS is a highly complex irrigation system, pumping water from the river in two stages and serving two sprawling mountain terraces. In the first stage, 7.8 cumec water is lifted by an intricate network of pumps situated on the riverbank, and discharged into a 500m-long link canal, a part of which goes to augment the Khageri system, another small river irrigation scheme. In the second stage 3.2 cumec water is lifted to a height of 18m by a second set of pumps and delivered to another canal system.

This complicated system of lifting and channelising river waters has proved to be a bane for the farmers living in the Narayani river valley as it has caused excessive siltation in the area, not only choking the canal systems but also destroying the fertility of land. The problem was detected as early as 1983 soon after the commissioning of the pumps but, though remedial measures were undertaken subsequently, the high rate of siltation goes on unchecked.

It is evident that the NLIS design was faulty and that sediment management was never adequately addressed in the project. The intake and the pumps cannot operate under high sediment levels in the monsoons, the former being positioned in the backwaters where sediment tends to settle rather than be carried down the river. Besides, the major portion of the inflow silt is of 0.3mm or less diameter and it is impossible to exclude it all at the intake point. The operation of the pumps also has to follow an inflexible schedule irrespective of the fluctuations in the sediment loads in the river.

How such basic defects in the engineering design of the system was overlooked at the time of construction of the NLIS is anybody 's guess. Expatriate experts were basically responsible for the design with minimal local involvement and there seems to have been a lack of proper investigation and careful assessment of hydrological data, specially river sediment load and environmental conditions.

Alien Technology

Farmers in the Narayani river valley, the supposed beneficiaries of the project, have reasons to believe that the NLIS is a technological disaster and a hindrance to their agricultural activities.

A random survey of 40 farmers in the command area of the NLIS revealed that the system was unreliable and had a negative impact on productivity.

As many as 38 respondents did not find any positive change in the average yield of rice following the inception of NLIS. In fact 14 claimed to have observed a decreasing trend in the yield which they attributed to siltation and depletion of soil fertility. In addition, all the farmers felt that they could not depend on the NLIS as they did not receive irrigation water when they needed it badly and usually got plenty when it was actually not required. So most of them tried to maximise the use of monsoon rainfall in their farming operations without depending on the NLIS. Naturally, the farmers were indifferent to the NLIS and its management, never feeling that the irrigation facilities provided by the system was their own.

To make matters worse, the running costs of the project have been found to be exorbitant. Since the system is dependent on high input of electricity and expensive electro-mechanical equipment, management and maintenance outlays are much higher than the monetary benefits accruing from the project. It can, therefore, be justifiably labelled as a ' white-elephant'.

It is apparent that the complex technologies used in donor-aided projects such as the NLIS are unfavourable to local conditions and do not take into account traditional practices. Imposed from above with no grassroots participation, they remain incomprehensible to the people for whose benefit such projects are supposedly implemented. For a country like Nepal such alien technologies are clearly unsustainable and their intrusion only adds to the misery of the people.

Water and Air Pollution in Kathmandu

The Poisoned Land

Kathmandu, the destination of tourists from all over the world, has already surpassed all South Asian cities and is set to overtake Mexico City in urban pollution. Unbridled urbanisation, unplanned and faulty development policies, unchecked commercial tourism, absence of regulatory or mitigating measures, and lack of environmental awareness among the citizens and those in authority is fast transforming this Himalayan paradise into an environmental nightmare.

The problem of pollution is not confined to Nepal's capital city alone. All urban centres in the Kathmandu valley, Patan and Bhaktapur among them, and the tourist towns spread across the heavenly kingdom that offer a glimpse of Himalayan majesty, are on the brink of disaster, their over-stretched civic services unable to supply adequate water or dispose of wastes, their unbreathable air almost saturated with polluting gases and particles.

Not a Drop to Drink

The quality of drinking water in Kathmandu valley has been found to be extremely unsafe. The Bagmati, the main river in the valley and its main source of drinking water, household needs and irrigation, has become so heavily polluted that its waters cannot be used anymore. The proliferation of industrial units along its banks has made the river the repository for untreated solid wastes and toxic effluents from carpet, cement, leather, plastic and other industries. Added to this are sewage and domestic waste discharge into the river which is further degrading its water quality and damaging the aquatic environment. Studies indicate that the waters are so polluted once the river flows into urban Kathmandu that its effects can be observed even 10km downstream. Even the self-purification capability of Bagmati river has been severely damaged.

Bacterial contamination poses a serious threat to the Bagmati river system, with some tested samples containing coliform bacteria exceeding 4800% during monsoon, way below WHO safety standards. About 25% of the population of Kathmandu, Lalitpur and Bhaktpur are served by sewerage system, another 25% of the total population are believed to have private on-site sanitary facilities (pit latrines or septic tanks). The rest have the open space.

The problem is compounded by an inadequate system of collection and disposal of domestic wastes in all towns, including Kathmandu. The Solid Waste Management Resource Mobilisation Centre collects waste from 70% of the city area in Kathmandu whereas in Lalitpur only 35% area has this facility. In Kathmandu, hazardous and infectious hospital waste is dumped in open fields or discharged without treatment into drains and rivers. A study conducted by the Centre for Development Administration (CEDA) in1989 revealed that 64% of the waste in Kathmandu is disposed of haphazardly, a prime cause of ground and surface water pollution.

No wonder, water-borne diseases are considerably high in Nepal in comparison with other diseases, the situation being worst in Nepal than most other Asian countries. Diarrhoea is responsible for almost half the deaths of children, accounting for 18% of the 35% child mortality rate.

At present, there is a deficiency of water supply in Kathmandu valley, in spite of the enormous resource potential of surface and ground water. Kathmandu city gets water for just a few hours a day, and sometimes in the dry season some areas get no supply of water at all.

Not a Whiff to Breathe

Poor water quality is not the only one of Kathmandu's woes. The desire to keep pace with the ultra-modern metropoles of the world, the mad rush in search of a better and faster life, the consequent ever-increasing number of automobiles on the roads, and the mushrooming of industries out to make a fast buck, are all turning the fast-changing city and the valley into a gas chamber.

Kathmandu valley is especially susceptible to air pollution because of its bowl-shaped topography. Atmospheric inversion and the phenomenon of back radiation traps pollutants in the lower atmosphere of the bowl which cannot circulate and rise high enough to be blown away, and which swathe the valley in a haze.

Kathmandu valley has about 100,000 vehicles on the roads every day emitting about 8290 tonnes of carbon monoxide, 664 tonnes of oxides of nitrogen, 3170 tonnes of hydrocrabons and 96 tonnes of sulphur dioxide into the atmosphere. Over the past decade, the population of minibuses, buses and trucks in Kathmandu have increased by 93%, cars and jeeps by 64%, while two-wheelers — motorcycles and scooters — have more than doubled at 118%. On the whole, the vehicle population of Nepal is increasing at an alarming rate of 15% per year. The trend continues unabated.

The problem of traffic pollution is aggravated by leaded, substandard and adulterated fuel, narrow, congested streets, poor traffic management, import of second-hand vehicles and poor vehicle maintenance. An independent survey of the presence of lead in the atmosphere found a direct corelation between heavy traffic and atmospheric lead concentrations in Kathmandu, ranging between 500-700 ppm at busy intersections, 1000 times higher than the safe standard of 0.6 ppm.

The high concentration of lead in the air has a disastrous impact on health. Children are more susceptible to lead toxicity that causes a wide range of diseases from anaemia to impaired brain development. It is suspected that high blood lead levels is a common occurrence among children below five years of age in Kathmandu. There appears to be no remedy in sight with the increasing number of automobiles on the roads running on inferior gasoline with high lead content imported from India.

The growing prevalence of environmental diseases in Kathmandu valley is becoming even more acute with an alarming rise in industrial pollutants in the air. Not only has the number of industrial establishments increased dramatically in the urban and peri-urban areas, their profile has also changed from small to medium and large, agro-based to manufacturing, less polluting to pollution prone. The resultant spurt in emission of suspended particulate matter and polluting gases are posing a grave threat to the fragile ecology of the valley apart from their impact on people's health.

The race towards urbanisation, and the consequent construction boom, appears to be the prime cause of industrial pollution. Surveys reveal that brick manufacture is the largest industrial polluter in Kathmandu, contributing 59% to the total emissions from the industrial sector. The cement industry is next with a share of 17.5% in total emissions.

Besides brick and cement, industries which are pollution hot-spots include marble, magnesite, tile, jute, lime, textile, paper, pesticide and chemical, soap, quarry and bone. These industries use wood, coal, diesel, furnace oil, kerosene, sawdust, husk, etc. as the principal fuel for their furnace, boiler and kiln, emitting large amounts of sulphur dioxide, oxides of nitrogen, hydrocarbons, carbon monoxide and suspended particulate matter.

Continued exposure to pollutants in the water and air have led to the growing incidence of bronchio-respiratory diseases, asthma, eye, nose and throat infections and allergies. The frequency of the occurrences of cholera, diarrhoea, dysentery, headache, bronchial and chest pain, sinusitis have increased phenomenally over the last ten years. Physicians and medical practitioners have found more than half their clinical cases to be pollution-induced. They advise guardians not to keep children under the age of 10 suffering from asthma, bronchial or sinus problems in Kathmandu. Many victims do not even know the disease they have has something to do with pollution. Many people who cannot afford to see a doctor simply have to live with their problem.

Whither Nepal?

As Nepal moves swiftly towards embracing a new economic order, the problems of water and air pollution is showing its ugly fangs everywhere. Kathmandu valley is not the only sufferer; the disease is engulfing all major urban centres and even the rural areas are experiencing some environmental problem or the other.

As trucks carry loads of construction materials through dense forests, as the tropical trees give way to the bulldozer, as the mountains are gouged by dynamite and as the rivers get choked with effluents, Nepal's water and air are fast losing their life-sustaining force. This inexorable process of development is a boon to those who have it all; but for the poor, illiterate majority of Nepal, it can only spell destruction.

STATISTICS

Human Development

Indicators	Unit	1974-75	1984-85	1992-93	Latest single year		S Asia
					Low-inc group	Next high inc. group	
GNP per capita	$	120	160	190	310	380	1590
Gross enrolment	% school-age pop.						
Primary		51	82	102	106	108	104
Male		86	110	121	118	116	..
Female		16	51	81	93	101	..
Mortality	per 1000 live births						
Infant mortality		153.0	122.0	96.4	83.7	63.1	39.0
Under 5		..	..	128.0	123.9	101.4	61.5
Immunisation	% age group						
Measles		..	34.0	63.0	85.8	87.3	77.6
DPT		..	32.0	74.0	90.2	89.9	82.2
Under-5 malnutrition		69.6	..	50.0	60.4	40.3	..
Life expectancy	years	43	48	54	60	62	67
Female advantage		-1.5	-1.5	-0.8	0.4	2.1	5.9
Total fertility rate	births per woman	6.3	6.4	5.3	4.0	3.6	2.9
Maternal mortality rate	per 100,000 live births				420		
Access to safe water	% of pop.						
Total		8.0	28.3	36.7	69.5	67.0	..
Urban		85.0	71.0	62.0	73.8	78.8	..
Rural		5.0	25.0	38.0	67.2	62.0	..
Access to health care		..	10.0		95.8	..	..

Pollution

Road Traffic and Lead Discharge in Kathmandu

Estimates of 1982			Extrapolated estimates for 1995		
Location	*Vehicles/day*	*Lead (ppm)*	*Location*	*Vehicles/day*	*Lead (ppm)*
Heavy traffic areas			*Heavy traffic areas*		
Maitighar	2200	574	Maitighar	3300	738
GPO Complex	2000	374	GPO Complex	3000	671
Narayanhity	1600	323	Narayanhity	2400	537
Light traffic areas			*Light traffic areas*		
Balaju	<100	34	Balaju	200	44
Dharmashthali	<100	51	Dharmashthali	200	44
Budhanilkantha	<100	10	Budhanilkantha	200	44

Source: Bhattrai D R & P R Shrestha, Lead contents in the dust of Katmandu city roads, *Proceedings of Nepal Chemical Society, 1992*

Vehicular Emissions, 1992-93
(*in tonnes*)

Vehicle Type	Pollutants						All pollutants
	CO	*HC*	*NO_x*	*SO_2*	*Pb*	*TSP*	
Trucks	96	37	171	32	0	20	356
Bus	16	6	31	5	0	2	60
Minibus	16	6	31	5	0	6	64
Jeep	95	46	59	25	0	28	253
Tractor	26	10	50	8	0	9	103
Car	4105	610	268	9	2	36	5030
3-wheeler (diesel)	14	6	27	5	0	5	57
3-wheeler (gasoline)	316	198	5	1	<1	5	525
2-wheeler	3606	2251	22	6	1	91	5977
Total	8290	3170	664	96	4	202	12426

Source: *ENPHO, 1993*

Industrial Emissions, 1992-93
(*in tonnes*)

Industry	Pollutants					All pollutants
	CO	*HC*	*NO_x*	*SO_2*	*TSP*	
Bricks (Local)	1767 (49.2)	1158 (52.5)	238 (48.3)	295 (43.8)	320 (47.8)	3782 (49.5)
Bricks (Chinese)	344 (9.6)	226 (10.3)	47 (9.4)	58 (8.6)	62 (9.2)	736 (9.7)
Cement	770 (21.4)	171 (7.8)	30 (6.0)	205 (30.4)	171 (25.6)	1347 (17.5)
Others	711 (19.8)	647 (29.4)	182 (36.6)	115 (17.0)	115 (17.2)	1770 (23.2)
Total from all sectors	3592 (100)	2203 (100)	498 (100)	673 (100)	669 (100)	7635 (100)

Note: *Figures in the parenthesis represent percentage share of pollutants by industrial types*

REFERENCES

Bhattrai, M D, Industrial Contribution to Air Quality, *Paper presented at Urban Air Quality Management Workshop, Kathmandu, Dec. 1-3, 1993.*

Bhattrai, D R & P R Shrestha, Lead contents in the dust of Kathmandu city roads, *Proceeding of Nepal Chemical Society, 47-50, 1982.*

Centre for Development Administration (CEDA), A study of Environmental Problems due to Urbanisation in some selected Nagar Panchayat of Nepal, *Kathmandu, 1990.*

Chitwan Valley Development Project, Final Report, *HMG/ADB, Agrar-Und Hydrotechnik GMBH, Essen, Germany, 1985 .*

Council for Conservation of Natural and Cultural Resources (CCNCR), State of Godavari Area Environment: Investigation Report, *pp. 27-28, 1993 .*

Council of Retired Public Servants, Agenda for the Nation and the Government, *vol. II, Kathmandu,* Rastra Sewak *(Formerly JANASEWA), No. 2 Spring/Summer, 1995.*

Department of Soil Conservation and Watershed Management (DSCWM), Siltation Survey of Kulekhani Reservoir, March 1993, Babar Mahal, Kathmandu, June 1993 .

_____ *Siltation Survey of Kulekhani Reservoir, December, 1993, Babar Mahal, Kathmandu, March, 1994 .*

DECORE, Socio-economic Baseline Survey of Kulekhani Tal Watershed, *1991.*

Department of Soil Conservation, Sedimentation Survey of Kulekhani Reservoir, October - 1994, *His Majesty's Government, Ministry of Forestry and Soil Conservation, Research and Soil Conservation Sections, November, 1994.*

Devkota, S R, Air Pollution Emission Inventory of Nepal, *Vikas 13 (2): 18-27, 1993.*

_____ Ambient Air Quality Monitoring in Kathmandu Valley, *Report submitted to Kathmandu Valley Emission Control Project, Kathmandu, 1993.*

ENPHO, Air Quality Assessment in Kathmandu City, *Environment and Public health Organisation, Kathmandu, 1993.*

Environment Protection Council (EPC), Nepal Environmental Policy and Action Plan (NEPAP), *Kathmandu, 1993.*

Field Trip Report on The Narayani Lift Irrigation System, *Water & Energy Commission Secretariat Kathmandu, Nepal.*

International Council for Bird Preservation (ICBP), Conservation Project for Phulchowki Mountain, *1991.*

Interviews and Personal Communication with the field staffs and Engineers of Chitwan Irrigation Development Office, December, 1996.

Joshi, A R, Air Pollution, Nepal Environmental Policy and Action Plan, *EPC, 1993.*

Joshi, K M, Monitoring of Vehicular Emission in Kathmandu valley, *Report submitted to Kathmandu Valley Vehicular Emission Control Project, Kathmandu, 1993.*

Kathmandu Valley Vehicular Emission Control Project *(KVVECP), Final Report, Ministry of Works & Transport, Kathmandu, 1993.*

LEADERS Nepal, Writ Petition to the Supreme Court, 1989.

Narayani Lift Irrigation System - Brief Introduction, *Chitwan, 1995 .*

National Conservation Strategy Implementation Project (NCSIP), Environmental Pollution in Nepal: A review of studies, *Nepal, 1990.*

Nepal Environmental Conservation Group (NECG), Survey of Environmental Pollution in Urban and Rural areas of Nepal, *Kathmandu, 1990.*

National Planning Commission (NPC), The Sixth Plan, 1980.

_____, *The Seventh Plan, 1985.*

_____, *The Eighth Plan, 1992 .*

Pokhrel, J C, Large Scale Resource Development projects and the Problem of Displacement Compensation and Resettlement *(With Reference to the Kulekhani Hydroelectric project in Nepal), Thesis Submitted to the University of Hawaii, USA, 1985.*

Rapid Appraisal of Narayani Lift Irrigation System in Chitwan District, *WECS, Earth Consults and masina Continental Associates, May 1995.*

Sanekata, Sadao, Kulekhani Hydroelectric project, Inspection Report on Kulekhani Dam, *Nippon Koei Co., Ltd, Consulting Engineers, Tokyo, 1983 .*

Sapkota, S R, and N Belbase, Environmental Enforcement and Compliance in Godavari Area: A case study, *LEADERS Nepal, 1996.*

Shrestha, B, Health Effects of Air Pollution due to Vehicular Emission, *report submitted to Kathmandu Valley Vehicular Emission Control Project, Kathmandu, 1993.*

Water Induced Disaster Prevention Technical Centre (DPTC), Photo Album — Disaster of July 1993 in Nepal, *Central Disaster Relief Committee Ministry of Home, Ministry of Water Resources, December 1993.*

PAKISTAN

"The vision of economic development in Pakistan, as in virtually all post-colonial countries, has been conditioned strongly by the colonial experience."

PAKISTAN

Tariq Banuri &
Kiran Nazir Ahmed

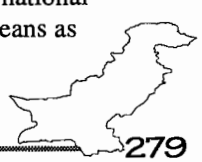
Conventional Development in Pakistan: Healthy but Mismanaged Growth

Pakistan has followed a very conventional approach to development policies since independence in 1947. The emphasis of these policies and their planning has been on investment, mainly in physical infrastructure, and that too concentrated in the productive sectors. Scant attention has been paid to the management, maintenance and operations of the infrastructure thus created, institutional development and governance, creation of human or social capital and environmental issues. Moreover, the engine of growth has been geared towards increased rather than better use of natural resources, mainly water and land.

The result has been a curiously biased pattern of development. While the growth rate has been respectable, averaging over 6% per annum overall and over 3% per annum in per capita terms, progress has been sub-optimal in other areas. In terms of literacy, infant mortality and life expectancy, especially among women and in rural areas, Pakistan ranks far below the levels expected from its GDP. Population growth, too, at over 3% per annum is very high in an already crowded country of 131 million, leading to increasing congestion in towns and cities, growing pressure on the natural resource base and a critical deterioration in the range and quality of public services.

The pattern of economic expansion has influenced the nature of social and political change. The deterioration in the quality of public services has been matched by a corresponding decline in the quality of governance, resulting in a dramatic worsening of law and order, emergence of severe ethnic, religious and civic conflicts and a general erosion of human and civic rights.

However, indications of the reversal of these trends have surfaced in some areas, and might have the capacity of spreading beyond their confines. Two such indications are the success of community development efforts — especially the Agha Khan Rural Support Programme (AKRSP) and the Orangi Pilot Project (OPP) — at the local level and a new approach to policy-making introduced through the process of National Conservation Strategy (NCS) at the national level. Both have aimed at institutional development and capacity-building as a means as well as an end of policy, and both have shown that alternatives are possible.



Planning and Structural Adjustments

Development policy and planning started in earnest only in the 50s, with the preparation of the First Five-Year Plan (1955-60). This was a fairly ad hoc document, prepared on the basis of scanty data and without an overall policy framework. This was followed by a more concerted effort for the second plan (1960-65) and the third plan (1965-70) which used a somewhat neoclassical approach to encourage private investment. The fourth plan (1970-75) was not implemented because of the breakup of the country, though it had sought to respond to growing frustrations by emphasising social and equity issues. In the event, the period 1970-76 was covered by a series of annual plans that aimed at remedying the dislocation caused by major policy changes — nationalisation as well as land, financial sector and administrative reforms. In retrospect, these reforms did not achieve their stated purpose but helped only to undermine the system of governance. The period also witnessed accumulation of large budgetary deficits, leading to gradual emergence of a debt overhang and an endemic fiscal crisis.

After 1976, economic policy was dominated by the need for structural adjustment to cope with the persistent outstandings and fiscal deficits. A series of such adjustment packages were undertaken by successive governments under the tutelage of the World Bank and the IMF. These packages were criticised by most of the eminent economists and activists for being biased against vulnerable groups — women, children, the poor and the unemployed — as well as the environment. That their criticism was not without some basis is proved by the fact that incidence of poverty rose before declining, and has begun to rise again in recent years. Education enrolments also went down in some years, despite a severe backlog, even as literacy rates, especially for rural women, continue to be among the lowest in the world. At the same time, infant and maternal mortality rates have not fallen by as much as suggested by the rate of economic growth.

One result of the structural adjustment programme is that consumer subsidies — which, notwithstanding leakage, protected the urban poor against inflation — have been slashed drastically. On the other hand, expenditures of politically powerful groups were hardly touched, while defence expenditure continued to rise in real terms and were not criticised until the mid-90s. Access by politically powerful individuals and groups to bank credit remained untouched despite accumulating evidence of non-payment and misuse. The structural adjustment programmes have continued in the 90s, with no end to the underlying problems in sight.

Some of the adverse consequences of the structural adjustments were overcome by another phenomenon that came into prominence in the 70s and 80s — the inflow of worker remittances mainly from the Gulf countries. These remittances introduced a measure of equity in an otherwise inequitable situation. They also helped sustain consumption levels in the face of severe belt-tightening.

Dependence on Agriculture

Pakistan's GDP has grown at an average rate of around 6% over the past 35 years. During this period, the economy went through major structural transformation. The agricultural sector, which comprised more than half of the GDP at the time of independence, is less than a quarter today. At the same time, the minuscule industrial sector now shares 26% while the service sector has expanded from 30% to 49% of the GDP.

But, notwithstanding the decline in its share of the GDP, agriculture has performed extremely well. Indeed, the rapid growth of Pakistan's GDP would not have been possible without a sustained growth of about 4% per annum of the agricultural sector. This sustained growth has been made

possible by a doubling of the water use and an increase of 70-80% in landuse. However, since both land and water are now scarce resources, it is unlikely that the previous strategy of growth will continue to serve in the future.

The significance of the agricultural sector in Pakistan's economy is also visible in the critical role played by the two key crops in determining economic activity. The bulk of agricultural production consists of wheat and cotton. Stagnation in the output of wheat, the main staple crop, affects the economy in a number of ways. Shortages and price hikes lead to consumer frustrations and political unrest, and impart an inflationary thrust to the economy. Cotton, on the other hand, is both the primary export crop and the main source of raw materials for the country's key industries — cotton yarns, textiles and cloth. A decline in cotton production, therefore, affects industrial activity, employment, export earnings, government revenues as well as the overall economic situation. Indeed, the health of the economy as a whole continues to depend critically on these two agricultural products. This has led to a high degree of vulnerability of the economy to both climatic variations and unforeseen international price and demand changes.

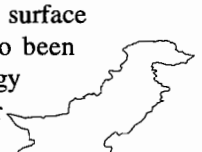
Neglected Social Sector

While the vulnerability created by excessive dependence on agriculture is a matter of concern, the major failing of Pakistan's development strategy lies in its neglect of the social sector. The country's population was estimated to be 131.63m on January 1, 1996, reflecting an almost fourfold increase from the 1951 population of 33.82m and an average annual growth rate of over 3%. Such high rate of population growth has been accompanied by a rapid process of urbanisation, so much so that the population of Karachi, the largest metropolis, has grown from 0.4m to more than 10m in less than 50 years. At the same time, six other cities have expanded to populations of more than one million, and tens of small towns have grown into large urban concentrations. All this has happened without the development of corresponding institutional and social infrastructure. As a result, both the quality and quantity of education and health facilities remain far below the rising demand. Urban water supply and sewerage disposal are also inadequate, leading to serious health problems along with civic disillusionment and deterioration in the quality of life.

Another aspect of the population explosion is its impact on social variables. First, the dependency ratio of over 50% places stress on the economically-productive sections of the society. Second, the population is distributed unevenly — Pakistan is one of the few countries where men outnumber women. Finally, the problems spill over into other social domains — the country has one of the highest infant mortality rates in the world at 101.8 per 1000 live births and its maternal mortality is estimated at 500-600 per 100,000 births. Moreover, life expectancy at birth is still a low 62 years, while literacy is estimated at 37.9% overall and 25.3% for women.

Endangered Environment

A similar set of problems is evident in the realm of environment in Pakistan. To begin with, the nature of economic change in the country has been accompanied by a rapid degradation of the natural resource base. While reliable data on forest cover in the early years of independence are not available, the current forest cover is estimated to be a low 4.8% of the total land area. Anecdotal as well impressionistic evidence suggests that this has resulted from massive deforestation in the mountainous regions of the country over the last three to four decades. Second, water pollution from industrial as well as municipal sources has resulted in a situation where no surface water source has remained potable, and many underground aquifers have also been infiltrated. The country is both energy-deficient, in terms of per capita energy availability, and energy-profligate, in the sense that a unit of energy contributes far



less to the creation of value than in most comparable countries. Finally, the two resources responsible for sustained agricultural growth — water and arable land — have virtually been exhausted. Future growth in agriculture as well as in the overall economy have to make better use and management of these and other natural resources.

Poor Governance

At the heart of the emerging problems in Pakistan is the issue of governance. Here, the concerns are manifold and include erosion of governmental efficiency and responsibility, weakness of collective institutions to protect the public interest, expropriation by the state and, in some cases, by powerful individuals of communal or traditional property rights in natural resources, and the neglect of managerial and operational issues in comparison with investments in infrastructure.

Increase in population, rapid urbanisation and concentration of population, and a high dependency ratio requiring an unprecedented expansion of public services have placed the public sector under severe stress. This has not been matched by an equal investment in the sector in the quality of personnel or in the system of management. Real incomes of public officials have declined consistently since independence, information management systems have not improved, nor have the systems of supervision or public accountability. Collusion between unscrupulous public officials and corrupt politicians has further undermined the integrity of the system. On the supply side, educated individuals with high quality professional skills have become a 'tradable' commodity with an international market. This has deprived government of a large hitherto captive talent pool.

The inevitable result of all this is a growing degree of corruption, mismanagement and inefficiency in the discharge of public duties. The consequent deterioration of morale has rendered public services unattractive, thus depleting the already shrunken stock of human resources available to it. The worst deterioration occurred in the most critical areas — the judiciary, the police, the tax collection system and the systems of economic regulation —which provide the greatest opportunities for graft and have the greatest impact on economic performance. Indeed, what has been affected the most is the critical faculty of the various arms of government.

The response of government to this situation has consisted invariably of ad hoc and arbitrary solutions. These include mechanisms for reducing discretionary authority of officials even in areas where decisions must require the exercise of discretion or where discretion was designed to protect peoples' rights. It also includes introduction of many parallel systems or shifting of even day-to-day decisions into the hands of senior policymakers and a virtual moratorium on long-term thinking and planning.

An important issue in this context is the deterioration of mechanisms designed to protect the public against natural or human-made disasters. Facilities for control of air and water pollution have virtually disappeared, inspection of food and drugs is done only cursorily, emergency systems such as flood-control or fire brigade have fallen into disrepair because of insufficient attention and there is little accountability for neglect leading to loss of life or property in highway or train accidents or due to medical malpractice. All these have multiplied human-made disasters and increased the cost of natural catastrophes.

Apathy of the Independent Sector

The erosion of public service is not the only reason for such a situation. A major cause is the weakness of collective, non-governmental institutions for protecting public welfare. The tradition of conflict between the state and civil society has substantially weakened non-state collective

institutions and functions that could easily have been undertaken by the independent sector are left entirely to the government. These include consumer protection, supervision of education and health institutions, monitoring of medical malpractice, public interest research, and protection of natural resources. One reason is the overall weakness of judicial institutions, which blocks off at least one avenue of collective action. Another is the ambiguity of collective property rights in natural resources and the inability to enforce the rights that do exist. Finally, while there is popular support for independent action in these spheres, there is little willingness to provide financial help. Apart from spectacular cases such as the Shaukat Khanum Hospital, the only areas for which popular financial support is available on a consistent basis are the religious schools and mosques.

Virtually all collective property rights in natural resources are vested in the state. This is a legacy of the colonial period when the state took over control of forests, rivers and the rich storehouse of minerals of the country. Over the years, the ability of the state to protect and maintain these treasures has deteriorated because of factors mentioned earlier. The result is that neither the state, nor any individual or group is in a position to protest against the degradation of natural resources. All rivers in Pakistan are polluted but state agencies are powerless to stop their despoiling, while no individual or community feels that it has any right to challenge the source of such pollution.

In many cases, statutory rights favouring the state are in conflict with the customary or traditional rights of the people, undermining their willingness to protect the country's resources. Given the corruption of state institutions, statutory rights are often invoked by politically powerful groups in favour of certain individuals by undermining customary rights. For example, a community forest could be cut down and the timber sold, and the money used to purchase land or other private assets. In such circumstances, the rational choice for the people is to convert the resource ownership from public to private hands which, at least, ensures that they cannot readily be encroached upon by the powerful.

A common measure taken by the government — increasingly popular in recent years under the active advocacy of multilateral financial institutions — is the privatisation of common property resources. This has often led to intensified conflict, uncertainty, and environmental degradation.

Managerial and Operational Drawbacks

A situation like this did not emerge by accident. It is the inevitable consequence of a vision of development which favours the state over civil society, infrastructure over institutions and catching up over managing, maintaining, or conserving. Indeed, the main problem is no longer the inadequacy of infrastructure — although, in some sense, this is still the case — but the inability to manage and maintain the infrastructure already created.

School buildings have been built; but they do not provide education because teachers will not go there or apply themselves. Hospitals and dispensaries do exist, but are poorly managed and maintained; many cannot attract doctors or nurses and those that do are filthy and corrupt; medical malpractice and negligence is widespread and unchecked; and the system does not serve to improve the health and wellbeing of the populace. In no event is it supported by a system of hygiene, water purification, sewage treatment, pollution control and popular dissemination of the knowledge of health and hygiene. Factories, too, have come up but do not bring about any improvement in quality of their products nor do they respond to the demands of consumers. They disseminate pollution and wastes indiscriminately.

It is in the realm of environment that the weakness of conservation systems is most visible. The response of the government is to 'catch up', for instance, by planting more

trees, constructing effluent treatment plants, so on. Clearly, the idea is not to improve the systems of management in order to reduce waste and improve efficiency.

The vision of economic development in Pakistan, as in virtually all post-colonial countries, has been conditioned strongly by the colonial experience. In this legacy, 'idle' resources of vast regions were opened up for the interplay of market forces through the political might of the imperial state. In order to justify such actions, the economic wellbeing of the colonising nations was placed at a superior level to that of the colonised countries. After independence, similar attitude was adopted by the groups or classes in control of the state vis-à-vis the rural and distant populations. For this purpose, the idea of 'national interest' — supposed to predominate unequivocally over any local interest — was introduced. It required a fairly centralised political and economic system and all collective property rights were supposed to vest in the national or at best, the provincial, governments. In such systems, decision-making was never participatory but highly technocratic and tempered by the appeasement of selected political elite.

Basis for Optimism

However, in Pakistan, there is some basis for optimism. The 80s witnessed the emergence of a number of new initiatives, primarily from the civil society but with the active support and involvement of government. These provide a vision of the possibilities for the future. Here, we will mention only two key initiatives, the Aga Khan Rural Support Programme (AKRSP), a community development programme in the northern areas of Pakistan; and the National Conservation Strategy (NCS), a policy initiative to orient the development programme towards sustainability.

AKRSP aims to support the creation of village organisations to enable rural folk to undertake development projects and mobilise savings from their own resources. It seeks to correct the weaknesses of institutions at the local level and introduce participatory decision- making in rural society. Though the overt goal is to promote development, this is viewed as a means of promoting institutional development and capacity-building.

The NCS, on the other hand, is a strategy developed through a participatory arrangement between government and leading NGOs, especially IUCN-Pakistan, Here, the process is far more significant than the product. While the product is a mere document aimed at the conservation of the environment, the process has tried to mobilise stakeholders into taking independent action in pursuit of conservation. This is being achieved through a focus on institutional development in government as well as in the NGOs, mass awareness and the creation of legal and regulatory mechanisms for environment protection.

What is common to both these programmes is that they focus on the key weakness in society — the inability to act collectively, either through government mechanisms or independently. The two programmes address this weakness both through tangible investment activities as well as the processes through which they are developed and refined. They provide the way for a new vision of development which could enable the communities at the local level, as well as in government at the national level, to act in the public interest. If this is done, investments in infrastructure will surely follow.

GLOSSARY

Calamities

According to the *World Disasters Report*, 641,417 people on an average are affected by disasters every year in Pakistan. While these are natural calamities caused by geological or topographical dislocations, the indirect influence of human interference of nature through developmental activities cannot be entirely ruled out. Frequent floods in some areas of the country is a clear example of human-made disaster.

Avalanche: Avalanche and snowslides are frequent in the mountainous region in NWFP. On May 26, 1988, an avalanche in village Daro, killed 50 and injured another 50, followed by another accident on February 6, 1991, in which 25 people lost their lives.[1] On March 17 1993, 36 died and nine were injured and barely 12 days later, 22 people were killed and 5 injured when an avalanche struck Shoota Das and Gutlari.[2]

Earthquake: On February 1, 1990, a severe earthquake shook NWFP and Punjab. At least 300 were reported dead, 574 were injured, and 550 affected. A month later on March 4, another severe earthquake shook Kalat in Balochistan, destroying several houses, killing 11 and injuring 40.[3]

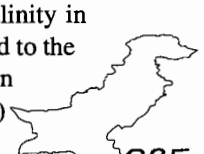
Floods: Among the calamities that hit Pakistan frequently and repeatedly, destruction on the largest scale has been wrought by floods. Within the Indus Basin, floods are an annual occurrence and, in all, nearly 15mha of terrain are subjected to inundation.[4] During the last 10 years, 3843 persons have lost their lives due to floods.[5] The 1988 floods affected 9195 villages over an area of 11000km^2 and caused property damage of Rs13,965m. The floods four years later were the worst in Pakistan's history. The total estimated damage was about $800m.[6] In Punjab, most of the damage was due to the sudden opening of the spillway gates of the Mangla Dam, which inundated villages in riverine areas, while in NWFP, bulk of the infrastructure destruction was due to felled trees. In 1994 floods affected 4499 villages and 329 people lost their lives while as many as 864,287 were affected.[7] The 1995 floods led to the displacement of more than 500,000.[8]

Storm: On May 31, 1986, a severe storm in Muzaffargarh, DG Khan and adjoining areas killed 11 persons and 250 were injured.[9] On March 29, 1992, 55 persons lost their lives in a storm.[10] Ten people died and 20 were injured in a storm in May 1994.[11]

Dams

Dams are few and far between in Pakistan but, as everywhere, they have been the major reasons for largescale destruction of the environment and displacement of people. Compensation for the oustees and rehabilitation packages have generally been inadequate.

Chotiari: Pakistan's third-largest reservoir, Chotiari, being constructed in Sanghar under the Left-Bank Outfall Drain Project, was started to combat the problem of salinity in Sindh. Though it may bring some benefits to the semi-arid region, it will lead to the displacement of 594 families. The would-be oustees were not consulted on resettlement and their compensation rates have been lowered. (*See case study*)



Tarbela: Pakistan's largest dam is the Tarbela dam, which was completed in 1975. It led to the displacement of 90,000 people, some of whom are still awaiting compensation.

Deforestation

Pakistan had a total forest area of 1.4mha in 1947.[12] Government sources claim that the forest cover now is 4.57mha, the province-wise breakup being: Punjab 0.63mha, Sindh 0.68mha, Balochistan 0.72mha, NWFP 1.41mha, NA 0.77mha.[13] A nationwide deforestation rate of 7000-9000 ha per annum has been recorded, which equals a 0.2% decline in forest cover. In Pakistan 39% forest destruction has taken place in the catchment of river Indus and its tributaries, leading to severe floods and landslides.[14] (*See case study*)

Desertification

Thal and Cholistan in the Punjab, Thar in Sindh and Kharan in Balochistan are the three major desert areas in Pakistan. A sampling of 2100 sq. km sites in the Cholistan at Dingarh and Fort Abbas reveals the extent of desertification. About 70% of the area in Fort Abbas and some 87% of the sample area in Dingarh has been desertified.[15]

Industrial Mishaps

With few industries, industrial accidents are rare in Pakistan and those that have occurred have not taken a severe toll of human lives. Yet the conditions at the workplace is not always safe and mandatory regulations are not abided by.

Fertiliser plant: In 1964-65, at Pak American Fertiliser Ltd (NFC), Iskandarabad, Daud Khail, high back pressure in a pipe blew out a valve, and killed a chemical engineer instantaneously.[16]

PVC plant: At the PVC plant in Gharo, near Karachi, high pressure in a reactor vessel caused by a runaway reaction led to an explosion which completely damaged a sizeable portion of the plant and everything within a radius of 50m. The body of the only operator was completely disintegrated.[17]

Industrial Pollution

Limestone quarrying and manufacture of cement are mainly responsible for the very high degree of dust and noise pollution in several areas. The chemicals used in the fertiliser industries and in upgraded tanneries have also affected the health of workers while their effluents have severely polluted surrounding areas. (*See case study*)

AC Wah: Associated Cement and Mustahkem Cement affect the health of a population of 35,000 by releasing 130t of cement dust. Noise pollution is also caused due to the quarrying of limestone from the nearby mountains. In addition to this AC Wah has been dumping its waste in the nearby stream.[18]

Javedan Cement: The Javedan Cement Factory is in the north of Karachi, spread over an area of 22.66 ha, in the Manghopir hills. The factory produces over 2000t of cement a day and emits huge amounts of dust in the air as a result of its processes. The factory is a serious health risk to the 1.5m residents of the area.[19]

Pak-Arab fertiliser: Statements of workers suggest that Pak-Arab fertiliser factory in Multan produces high levels of pollution which affects its labourers adversely. The workers in the factory are the worst sufferers of its negligent practices. However, no specific indicators of the level of pollution could be obtained. There is no safety regulations for workers to wear helmets or gas masks wherever necessary.[20]

Pak-China fertiliser: Pak China and Hazara Phosphate emit hundreds of tonnes of urea and phosphatic fertiliser, causing morbidity and early death for thousands of people. On January 10, 1994, nauseous fumes pervaded the atmosphere around several villages in the area. Two NGOs Sungi and Oxfam called a public hearing to discuss the issue but the management of both the factories refused to attend.[21]

Tannery: Leather tanneries in Kasur district, pose a serious health hazard to its 250,000 inhabitants.[22] Although tanning is an old profession in Kasur, the pollution caused by it began only after the tanners started using chemicals instead of tree bark.[23] Apart from losses in agricultural productivity, health problems have also been reported.

Pesticide Hazards

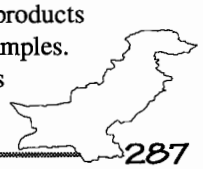
The pesticide business in Pakistan started in 1954. Over the last four decades pesticide pollution has generated hazards for field applicators, food consumers and dealers. A survey by Masud and Hasan (1992) on 59 different fruits and vegetables procured from the wholesale market of Karachi during July 1988-June 1990 revealed that out of 250 samples screened, 93 were contaminated with a variety of pesticides,[24] while 45 were found to contain residues above the maximum residue limit proposed by FAO-WHO. According to another study, out of a total of 88 female cotton pickers, only 1% could be termed as out of danger.[25]

Toxic Dumping

In the absence of any regulation or their strict adherence, toxic waste dumping has become a menace for the people living around chemicals or explosives factories. Multinationals have been discharging their effluents in the sea with impunity, destroying marine life since government itself has been the culprit in polluting rivers and aquifers with toxic chemicals.

Clinical waste: Karachi, Pakistan's biggest metropolis, does not have a designated piece of land for dumping hospital waste. It, therefore, ends up in garbage dumps, sometimes in the centre of the city. The Civil Hospital generates around 1500 kg of highly toxic waste on a daily basis, but has no safe disposal system.[26] The waste comprises infected blood, sputum and pus, which not only provide growth culture to germs of tuberculosis, hepatitis, AIDS but can also cause various kinds of metabolic and skin diseases. Rarely are disinfectants used to minimise the effects of the toxic nature of the waste produced by the blood bank, operation theatres and laboratories.[27]

ICI: In 1984 and again in 1986, ICI, a well-known multinational, dumped its waste in the sea with government permission. The third time in 1994 it had Federal Government permission, but before it had a chance to dump effluents from its plant, the Sindh Environmental Protection Agency insisted on conducting tests. Samples were sent to different scientific organisations and the results were alarming. A safe concentration level of antimony in seawater is only 0.05ppm, whereas the concentration level for ICI waste products was 6400ppm, 5786ppm, 5201ppm, 1227ppm and 466ppm for the different samples. The safe level of cadmium in seawater is 0.05ppm, while the four samples



contained 93ppm, 77ppm, 75ppm and 52ppm respectively. If even 1kg of this deadly substance were dumped into the ocean without pre-treatment, it would have contaminated over half a million litre of water. The ICI waste comprised 4000 drums of 200 litre each. In the end the multinational was told to pre-treat and remove both these substances before dumping its waste.[28]

Lyari: In May 1993, 2.5t of meta-dinitrobenzene were dumped in river Lyari in Karachi by the local administration. Fumes from the chemical had already killed two people and caused at least nine others to be taken seriously ill. With an explosive content of 86%, the material rested for days on the bed of the Lyari, which flows through one of the city's most densely populated areas. Following the furore created by NGOs, it was eventually removed and detonated.[29] (*See case study*)

Water Pollution

Industrial dumping, pesticide seepage and ill-planned sewerage systems have contaminated virtually every source of drinking water in Pakistan. As much as 98% of the water samples drawn in Karachi were polluted in one way or the other. Research has also shown polluted water to be the most probable cause behind such diseases as kidney failure, hepatitis, and even mental disorders. These diseases account for 57% of all deaths in the country, 60% being children.[30] (*See case study*)

Coastal contamination: Extensive pollution from sewage and industrial waste discharged untreated into the coastal waters of Karachi is endangering the entire marine ecosystem.[31] The extent of this pollution can be gauged from the fact that the fish catch in the coastal areas of Karachi has dropped by one third during 1995-96.[32]

CASE STUDIES

Canal Irrigation System: Huge Investment, Poor Performance

The Indus Basin irrigation system, one of the world's largest contiguous irrigation systems, covers more than 70% of Pakistan's agriculture.[33] It consists of the river Indus and its tributaries, three major storage reservoirs — Tarbela, Mangla and Chashma — 19 barrages or headworks, 12 link canals and 43 canals covering about 43,000 village settlements. The total length of this canal system is nearly 65,000km with over 80,000 water courses, field channels and ditches running for another million miles.[34]

With the World Bank as donor, Rs12.4bn were spent on developing this irrigation system.[35] However, despite the huge investment, not only is the efficiency of the system low but it has also aggravated the problem of waterlogging and salinity. This, in turn, has affected agricultural productivity and farmers' incomes. Soil salinity alone is estimated to rob farmers of 25% of potential production of major crops.[36]

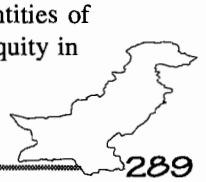
According to some experts, 'that the Indus Basin irrigation system is performing poorly is now a conventional wisdom.'[37] and the efficiency of the canal system stands at 40% from canal head to the root zone.[38] The reasons cited for this deteriorating system efficiency are age, overuse, poor operation and maintenance and defective management.

Land degradation through waterlogging and salinity is another problem whose implications for Pakistan are very serious, since agriculture is the mainstay of the economy. It not only affects the efficient utilisation of scarce resources but also reduces the income of farmers as well as the national income.

Before the introduction of irrigation into any area, there exists a water balance between rainfall on the one hand and evaporation on the other. This balance is disturbed with the mismanagement of surface irrigation including poor drainage in an area of high seepage from unlined canals, distributaries and the fields causing water tables to rise. The rise in water tables, in turn, is due to over-supply of water from surface irrigation than that utilised by the crops.[39]

As many as 2.2mha land, forming 13% of the cultivated area in Pakistan, suffer from an acute problem of waterlogging and salinity, i.e. water table is less than five feet from the normal surface level in these areas.[40] Waterlogging and salinity are particularly acute in Sindh and Punjab. In Sindh, about half of the soils are saline, of which 18% is strongly saline. According to an estimate by Government of Pakistan, almost one-tenth of the country's best agricultural land are affected by salinity.[41]

Inequity among the users in the canal command area is yet another problem of the system, in fact, of Pakistan's agriculture and economy. Command area water delivered to the farmers upstream is generally 32% and 11% more than to those downstream and in the middle reaches respectively. Similarly, outlet through a minor channel or distributary receives different quantities of water. Besides, Illegal pumping from canals and excessive losses add to the inequity in distribution.[42]



Pakistan has maintained a growth rate in agricultural GDP of over 4% for the past two decades which places it among the fastest agriculturally-growing countries. However, the growth rate would have been much higher if institutional reforms had been carried out in irrigation.[43] The depressing effect on agricultural growth rate has been masked by three major counter forces: a continuous addition to the volume of water available for irrigation; major improvements in crop yield through agricultural research and extension of fertilisers.[44]

Industrial Pollution: Polluters Do Not Pay

Studies on industrial pollution in Pakistan that have been carried out are mostly at a micro level, dealing with factories separately. To mitigate the level of pollution through a legal framework, the National Environmental Quality Standards (NEQS) were implemented in July 1996. However, at the time of writing this report, significant details such as the level of fine to be levied on polluting industries are yet to be worked out. The NEQS, as well as the draft Environmental Protection Act (EPA) have been formulated through a participatory process. The draft Act was circulated among 5000 individuals, including industrialists, and NGOs. Following is a case of four factories, two of them in the north, one in the south and one in central Pakistan.

Choked by Cement

The Associated Cement Factory located in Wah releases 90t of dust every day into the atmosphere.[45] This cement dust contains silica which is reported to cause respiratory problems and is a potential health hazard for the 35,000 inhabitants in the area. This dust emission could have easily been controlled by a 'dust collector' system, but reports published in 1993 revealed that it had remained out of use since the 70s.[46] Mustahkum cement factory, located 7km away, also releases 40t cement dust, thereby totalling 130t dust which continuously pollute the area.[47] A survey of the clinics around the AC factory showed that the following problems were very common:

Chronic bronchitis	7%
Asthmatic diseases	15%
Tuberculosis	2%
Cancer	0.5%
Sore throat	7%
Skin allergy	20%
Eye irritation	5%

Not only does AC Wah dump its waste in the stream nearby, it also uses 900-1000t raw material including limestone, clay and gypsum every day.[48] Limestone is quarried from the nearby mountains which causes noise pollution.

After a public hearing held to gauge the level of pollution in these areas submitted its report, the EPA Peshawar gave a reassurance that the NEQS would be imposed on all the factories. However, it was announced recently that five more cement factories are to be set up in Wah and 94.39ha of good agricultural land has already been acquired for this purpose.[49]

Deadly Dust

The Javedan Cement Factory is located in the north of Karachi, in the Manghopir hills. When the factory was set up, it was 20km away from the city, but villages had existed for centuries

in the area. Construction of the factory — known at that time as Valika Cement Factory — began in 1961 and it started operations four years later. It initially produced 1000t cement a day using the semi dry process.

After 1972, the plant was nationalised as part of the economic reforms introduced by the Bhutto government and renamed Javedan Cement Factory. Following this, government installed in 1979 an additional unit, comprising a dry process four-stage preheated kiln providing additional capacity of 1000t a day.[50]

Over the years, the city of Karachi expanded and the 20km-chasm was filled with residential houses and *katchi abadis* (temporary hutments). In all, about 1.5m people live in close proximity to the factory, their health at grave risk from cement dust, carbon oxides, hydrocarbons, aldehydes, keytones and oxides of sulphur and nitrogen emitted from the factory. Dr Khalid Shehzad, who practices near the factory, reported that almost 90% of his patients have respiratory tract infections. They have congested lungs and chests and infected throats, and they find it difficult to breathe normally, women and children being the worst-affected. Although the patients recover after being treated with antibiotics, the illness reappears in less than a month.

The local people held demonstrations demanding that pollution control systems be installed at the factory. Management's response, however, was that it would sooner shut down than invest in dust control devices. The protesters were in no position to take a stand against such a crafty move since most of them were employed with the same factory and earned their livelihood from it.

The Sindh Environmental Protection Agency wrote a letter on May 11, 1994, inquiring about the dust emission and directing the factory management to adopt a method for controlling the particulate matter. The factory's managing director replied that the dust emissions from the plant were within the limits specified by law, that there was a built-in dust control system in the double-pass Leopol kiln, and the dry-pass kiln had an electrostatic precipitator which was working normally. However, a year later, after government decided to privatise the factory, management changed its stand. It maintained that pollution control would cost over Rs80m, an amount government could ill-afford, and since the equipment that had been installed was not working properly, the private party which bought the plant would be responsible for installing new equipment.[51] The factory has not been privatised till today.

Poisoning Waters

Kangra, a large village 4km from Haripur, has two fertiliser factories — Pak-China and Hazara Phosphate. The hundreds of tonnes of urea and phosphatic fertiliser produced by these highly-polluting plants have led to morbidity and early death for thousands of people in the area.

The Pak-China factory, spread over an area a little over 120ha, has a daily production capacity of 300t and uses natural gas, ammonia, carbon dioxide and other chemical substances for the production of urea. In the early 80s, it started pouring its untreated effluents directly into a nearby stream. The then public sector management paid compensation to the affected farmers and arranged for a pond to be dug within the factory premises for use as a receptacle of liquid effluents. The factory was privatised later on.

Hazara Phosphate, producing single super-phosphatic fertiliser from phosphatic rock and sulphur, was established in 1989. It went into private hands in 1995 when it was bought by the Schon group. According to a UN report, the factory discharges 52m^3 of contaminated water every day which is released into open drains emptying into the stream. It also releases sulphuric acid fumes through its chimney.[52]

On January 10, 1994, noxious fumes suddenly pervaded the atmosphere of Kangra Abdullahpur and other villages in the area. The residents, suffering from itchy eyes and choking throats, tried to take refuge behind closed doors but that did not help. Next morning, they found that the air was still heavy with a whitish gas over fields and orchards close to the stream. There was extensive damage to crops and orchards spread over 41.49ha as well. The emission of gases and flow of hot effluents continued for two days.

The affected people asked the management of the two factories for compensation of Rs1.4m, as their crops had suffered extensive damage. Since both managements ignored these appeals, the victims turned to Sungi, an NGO, which arranged a public hearing at Kangra on not getting a response from the management to its own appeal.

The following facts came out in the public hearing: the Deputy Director, EPA, North West Frontier Province, stated that an analysis of end-of-pipe emission of Pak-China factory found its pH value to be 10.10, which is higher than the international standard of 9, indicating a level of alkalinity beyond the permissible limit. It was possible that the downpour next day was acid rain due to the presence of sulphuric acid in the atmosphere. The analysis of the effluents of Hazara Phosphate was 2.8 — a pH value lower than 6 indicates a high level of acidity. Four to five tonnes of ammonia-laden water had also been emptied into an unlined pond by the Pak-China factory.[53]

Safety Given the Go-By

Workers at the Pak-Arab fertiliser factory in Multan are the worst sufferers of its negligent practices. Although no specific indicators of the level of pollution from this factory could be obtained, the workers' statements and testimony of the doctors indicate that it is dangerously high. An engineer working with the organisation described it as an environmental disaster as the factory's production process was based on obsolete technology discarded by others decades ago. According to him, the factory spewed out pollution in all forms — solid, liquid as well as gas. A foreman reported that workers were rarely provided with helmets, and there was no regulation ensuring that earplugs and gasmasks were to be worn wherever and whenever necessary.

According to news reports, the doctor working in the factory's medical centre supported these statements. General allergies, asthma, bronchitis, conjunctivitis, dermatitis and other effects of pollution on the eyes and the respiratory system were cited by him as the most frequently encountered diseases in the colony. However, he added that although pollution had definitely crippled the lives of a large number of people, and may trigger other diseases which are fatal, it did not actually cause death. But a worker of a neighbouring factory tried to bring home the dangers of pollution by pointing out that if the chemical moisture in the air could rust the television antennae in the vicinity, one could only imagine what it did to the respiratory system. Inhabitants of the colonies surrounding the factory had similar complaints.

The factory empties its liquid waste into a reservoir behind the premises. The effluent traverses some distance through an underground channel before surfacing in Samejabad, a colony of working-class people, where it flows through an open sewer. A pumping station has been set up in the colony to pump the liquid into a pipeline, but its carrying capacity is only one-fourth of the total effluent released.[54]

Lyari Dumping: River of Death

In May 1993, 2.5t of meta-dinitrobenzene were dumped in Karachi's Lyari river by the local administration. The dumping order was issued despite the fact that the fumes emanating from the

chemical had already killed two persons and made nine others, including six members of the fire brigade, seriously ill. The two who lost their lives in the action were a junk dealer and a driver.

Eking out a subsistence, Ali Mubarak, the junk dealer had just picked up dark bricks composed of meta-dinitrobenzene while driver Saif ur Rehman was transporting the chemical. What added to the tragedy was the fact that Mubarak's life could have been saved had the police not insisted on taking him to the police station for interrogation. They forcibly took him, despite doctors' orders to the contrary and the junk dealer died a few hours later.

Meta-dinitrobenzene is primarily used in the manufacture of explosive devices. The material biodegrades very slowly, remaining on the surface long enough to seep into the earth and poison the subsoil water. Once it dissolves into the sea or river water, even in minute quantities, the chemical kills the natural water purifiers such as oxygen-producing algae and rotifers, subsequently destroying all aquatic life in its area of influence. Inhalation of the fumes emanating from the chemical or absorption of the substance through the skin has a lethal effect on blood haemoglobin and drastically reduces the oxygen-carrying capacity of blood.[55] The first symptoms of such poisoning could range from simple skin irritation to blurred vision, headaches, dizziness and vomiting. Soon, however, the liver becomes affected, resulting in death within a few hours. In fact, the similarity of these symptoms to cyanosis (cyanide poisoning) initially misled experts into classifying the material as cyanide.

Despite the fact that this lethal substance had caused two deaths already, the local administration casually ordered its dumping into the Lyari river. When questioned, the then city commissioner said, 'We do not know what kind of effluent is already being discharged into the sea via the Lyari river. So this small amount of waste could not appreciably worsen the quality of water.' Another official, who was a part of the contingent summoned to destroy the toxic material, suggested that it be loaded onto a ship and then dropped into the high seas. His logic was that since the developed world had been dumping all kinds of waste into the sea, the worse that could happen by adding something to it was killing of a few fish.[56]

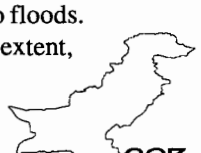
The toxic material lay for days on the bed of the river that flows through one of the city's most densely populated areas. Given its 86% explosive content, an accident could have resulted in a catastrophic explosion, as destructive as 2000kg of TNT.

News about the toxic dumping led to a public outcry spearheaded by several NGOs, particularly the IUCN-World Conservation Union. As a result, the city administration ordered the fire brigade to retrieve the material, identified by this time as meta-dinitrobenzene. On being lifted from the riverbed, it was carefully wrapped in foam and then loaded onto a truck. The truck driver, however, became so dizzy on inhaling the chemical fumes that he was rushed over to the civil hospital.

The Lyari dumping exposed the absence of any checks on the disposal of industrial effluents in Pakistan, while the attitude of the officials responsible for handling the situation revealed their incompetence in dealing with such crises. The dumping occurred in the largest metropolis of the city, and was highlighted in the media; one can only speculate on the number of such incidents in small towns which go unreported.

Deforestation: Felled Trees and Floods

Due to its geography and diverse topography, Pakistan is highly vulnerable to floods. Floods are a natural phenomena but the extensive damage caused can be, to a large extent, attributed to deforestation.



Pakistan has only 4% forest cover whereas 20-25% is the requirement for protection from soil erosion.[57] The mountain ranges in the extreme north of the country provide a perennial source of water into the rivers, and their foothills were previously shrouded in dense vegetative cover. This helped prevent soil erosion and curb the flow of monsoon waters. However, the presence of powerful timber companies in the northern areas has led to systematic destruction of this natural advantage and the consequent rise in the intensity of water flow. In the absence of a barrier, the monsoon rains gain momentum as they flow down the steep mountain slopes, while continuous flash and sheet erosion lead to landslides which at times chunk out entire villages.[58]

The 1992 floods, the worst in Pakistan's history, was triggered by heavy rains that began on September 8, hitting Azad Kashmir and Hazara. Massive landslides in parts of Abbotabad and Kalabagh in Hazara and the Neelam Valley in Azad Kashmir, killed 56 people,[59] while floods affected some 15,000 families in just 22 villages in Hazara division.[60] As the rain subsided after 48 hours, bloated hill torrents spewing water with heavy silt took over, the consequent landslides wiping out entire settlements on hillsides and gullies. Villages lost vast tracts of cropped land in Kaghan, Siran valley and Mansehra district.

The largescale destruction of infrastructure was primarily due to clearing of forestland. The extent of deforestation in Hazara alone can be gauged from the fact that its forest cover decreased by 50% from 84,966ha in 1979 to 46,929ha in 1988. In the first six years (1979-85) in Mansehra district, an area of 5732ha was denuded of forest cover and the next four years (1985-88) saw another 7016ha obliterated.[61] The felled timber flowing down the rivers dismantled about 30-35 mills situated along their banks and destroyed dozens of bridges.[62]

In Upper Punjab, the floods were basically man-made, that could have been avoided. On September 9, engineers at Mangla Dam in nearby Azad Kashmir let loose a 900,000 cusec tidal wave. The water had been stored, apparently unmonitored and at extraordinarily high levels, since April. In an attempt to save the country's second-largest hydraulic project, nine of the dam's emergency spillways were opened. The washing away of the Kuhala Bridge upstream between Mangla and Muzaffarabad by the strong torrent sparked panic among the Water and Power Development Authority (WAPDA) engineers who had released the waters when the level began to reach the 1208 feet mark. In normal circumstances, this is considered to be the danger mark though the reservoir had the capacity to withstand a level of 1228 feet without any risk of damage to the dam structure. The WAPDA authorities, too, maintained in their clarification that 'raising the reservoir level to 1228 feet is disallowed unless this rise is involuntary and is due to greater flows coming into the reservoir than the total outflow capacity.' On September 11 an engineer was arrested for negligence but disagreement still exists on whether the engineers were simply acting on orders from the WAPDA headquarters, or whether it was their own fault. What is clear is that the spillways were opened without issuing a warning to the people of the adjoining areas.[63]

The three areas worst-hit by the tidal wave were the island of Bela, and the districts of Jhelum and Pind Dadan Khan. All the seven villages in Bela were submerged in just three hours. Water started overrunning the island at about noon on September 9 and by three in the afternoon had turned into a full-fledged flood. According to reports published nine days later, the villagers had received next to nothing in the way of aid. In Jhelum district, the deluge killed at least 45 people according to the military authorities involved in the rescue operations, who also reported that 178 people were missing.[64]

In lower Punjab, where warnings were taken seriously by the administration, there was little loss of life and livestock but massive loss to houses and crops. Many farmers who were previously prosperous became destitute overnight. The *katcha* areas — the pieces of land which appear where the river divides into streams and where the poorest people live — completely disappeared.[65]

The disastrous floods occurred at a time when the 14mt record cotton crop was partially harvested, and between 20-50% was estimated lost. It was a calamitous event since half the mainstream economy in Pakistan is dependent on cotton. In total, around 700,000ha land was destroyed in Punjab.[66]

Water Pollution: Contaminated Rivers, Thirsty Populace

According to government statistics, 53% of Pakistan's total population has access to safe water, 79% of those in urban areas and 40% in rural areas.[67] Independent studies reveal that industrial dumping, pesticide seepage and ill-planned sewerage system has contaminated virtually every source of drinking water in Pakistan. At least 98% of the samples drawn from Karachi were polluted in one way or the other. Research has also shown polluted water to be the most probable cause behind diseases like kidney failure, hepatitis and even mental disorders, which account for 57% of all deaths in the country, 60% of these being children.[68]

About 55% of Pakistan's drinking water requirement is met from ground sources, while the remaining 45% is derived from the surface.[69] In Punjab as much as 90% and in Sindh 9% of the drinking water requirement is met from ground water. Balochistan and the Frontier Province NWFP meet their drinking water requirements mostly from groundwater, although in some areas surface water is also available. The main source of surface water is the country's network of rivers, canals and tributaries. Water is either drawn directly from these sources or is supplied through pipelines. In the more arid and *barani* areas of the country in particular, water is a very scarce commodity. People in these area often depend on stagnant ponds for their drinking water needs.

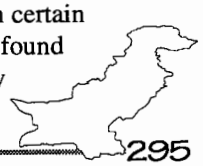
Both ground as well as surface water are polluted either at the source or during distribution. A major pollutant of surface water is the chemical discharge from industries, tanneries and other polluting industries. In areas like Karachi, the industrial effluent is not dumped directly into any water source, but it flows into the sea. The extent of this pollution can be gauged from the fact that a report by a London laboratory, which was sent a sample of Karachi coastline water for testing, described it as 'untreated sewerage' and not seawater at all.[70]

The other major source of pollution in surface water is the runoff from agriculture. The use of chemical fertilisers, pesticides and fungicides has increased tremendously in Pakistan over the last few years and, since many of them are not biodegradable, they become persistent pollutants.[71] Although research is still being conducted on the long-term effects of such toxins, autopsies and biopsies of human 'depot fat' have revealed that the concentration of DDT in the body fat of the population of Pakistan is among the highest reported in the world.[72]

Heavy use of chemicals in agriculture also pollutes ground water. A large proportion of the chemical fertilisers seeps into the soil and subsequently goes into the water to the nearby canals, wells or tributaries. A study by the Public Health Engineering Department of Government of Punjab claims that 72% of the samples collected from wells and tubewells across the province were found to be biologically contaminated.[73]

About 4% of the population in Pakistan is estimated to be deprived of sewerage facilities. Municipal waste is often disposed close to water sources which are contaminated by leachate of pathogenic substances.

The discharge of chemical waste has also severely affected subsoil water in certain parts of the country. In Multan, for example, drinking water from certain areas is found to have caused severe intestinal disorders resulting in countless cases of dysentery



and chronic diarrhoea. The Pak Arab factory in the area was found to have been discharging highly polluted water into the nearby river.

Waterlogging and salinity are also major contributors to the steadily deteriorating quality of groundwater. It is estimated that inhabitants of 45,000 villages and small towns, spread across the country are affected by this. Of 21mha of cultivated land almost 24% has been affected by salt and another 2.1mha by waterlogging.[74] Excessive amounts of salt in the water render it not fit for drinking. According to a document by the Environment and Urban Affairs Division, the salinity levels found in underground water have, on an average, risen far above standards and is estimated to touch danger levels in the next ten years or so.[75]

In urban areas, drinking water is polluted during distribution through pipelines which are usually laid close to those carrying wastewater and sewage. During periods of low pressure or stoppage of water supply, effluents leaking from damaged wastepipes are sucked in through cracks in the watermains. Besides human excreta, sewerage lines carry domestic garbage, the microbes present in it causing stomach and intestinal disorders as well as typhoid. Even in urban areas where water and sewage lines are laid at a safe distance from each other, the water is contaminated through seepage as old pipes decay from the corrosive effects of chlorine.[76]

The city of Karachi, Pakistan's biggest metropolis, receives most of its water from the Indus river and partly from the Hub dam and Dumlotee wells. The river has become the repository of the sewage from the cities and villages along its course. During the rainy season when the level of water rises, contamination is reduced because the pollutants are diluted. However, in the hot months when the flow is reduced to one-tenth, the water becomes saturated with contaminants, reaching levels as high as 1110ppm against the permissible 50 ppm.[77]

In 1992, samples of water taken from various localities in Karachi, tested independently, were found to contain colony-forming organisms in large amounts. Around 52% contained faecal e.coli, while enterococci, klebsiella, pseudomonasa, enterobactor, aerogenes, staphylococcus faecalis, were found in all the samples except one, making the average count of bacterial contamination 98%.[78] The Karachi Water and Sewerage Board (KWSB) is the main body responsible for supply of water. Since there is no independent and regular check on KWSB's activities, the quality of the water it supplies is left to the discretion of the board. Reports prepared by organisations other than the KWSB, including the Pakistan Council of Scientific Industrial Research, show that 70% of water samples collected and tested in Karachi are polluted.

Chotiari Reservoir: Nothing Can Compensate for Loss

Pakistan's third-largest reservoir, Chotiari, is being constructed as part of the Left-Bank Outfall Drain Project (LBOD), primarily to mitigate the waterlogging and salinity problem in Sindh.[79] The other purpose of the reservoir is to provide increased water supply to the lower Nara system.[80]

Here are the basic facts about the project:

Location:	20km north of Sanghar town in interior Sindh
Capacity:	0.84m acre feet
Funding agency for construction:	Saudi fund
Primary funding agency for supervision:	World Bank
Contract price:	Rs1.675bn
Order to commence:	August 6, 1994

Date of completion:	mid-1998
Total area to be submerged:	259km^2
No. of affected:	3012

The construction of this reservoir will lead to several adverse environmental effects, apart from submerging 43 villages spread over 259 km^2. The submergence zone comprises thick forests, 20 small water lakes and agricultural land, including the best cattle grazing ground in Sindh.[81]

According to the EIA, the only wildlife at risk are two small herds of hog deer, breeding teals and probably a small population of crocodile. However, the fishing cat, otter, python, and other species of waders and wildfowl are sure to lose their only habitat since the area adjacent to the reservoir is mainly desert or agricultural land.[82] Marbled teal and lesser whistling teal, two rare bird species that breed in this area, will also be endangered.

With the presence of huge salt deposits at the salt mines nearby, there is a strong possibility of salination of the reservoir and the land it will water. Local people have expressed their concern over this but it was not mentioned in the EIA nor has any inspection been carried out.[83]

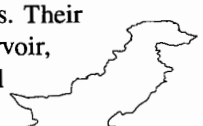
Inevitably, wildlife is not the only victim of the project: Chotiari will displace at least 594 families from 43 villages. According to the resettlement package, every ousted family will be getting 3.24ha and Rs43,500 for transportation, temporary housing and agricultural development, while 0.1ha will be provided for the homestead. The resettlement colony is also expected to have schools, community centres and healthcare facilities.

However, interviews with the would-be oustees paint a drastically different picture. Initially the compensation rates set for plots acquired along the Spinal drain or Saim nala were Rs40,000-50,000 per acre of cultivated land and Rs30,000 for uncultivated land, but were later reduced by the land valuation committee to Rs30,000 and Rs10,000 respectively.

Furthermore, there were reports of widespread corruption and mismanagement by the resettlement agency. Villagers have reported that the officials concerned demand 20% commission before they agree to award compensation money. Apparently, outside contractors have acquired powers of attorney over a large amount of land at half the compensation rate, making huge profits overnight. While these have not been proven conclusively, the attitude of the authorities can be gauged from the fact that they have been trying to intimidate villagers to voluntarily leave the area. Even before any compensation had been paid, a cut was made in the canal to start filling the reservoir that flooded inhabited areas. Besides, two diversions in the feeder system were ordered, which were stopped by the villagers in time. Had the diversions gone through, they would have drowned. [84]

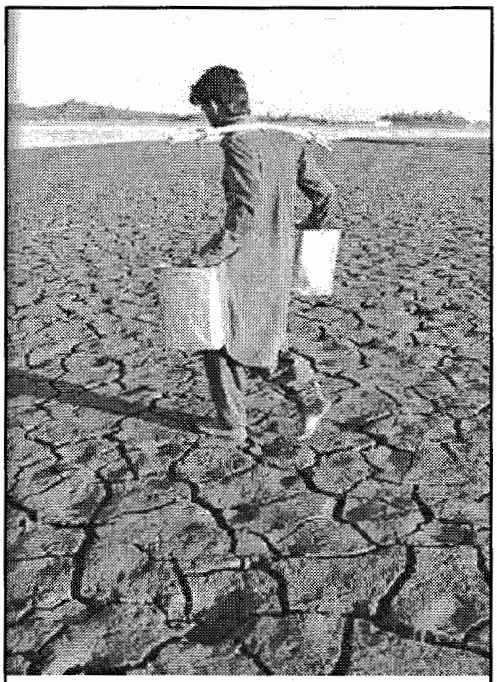
'We objected to the *gharo* (cut) but the land acquisition officer threatened us. He said, "We will beat you and throw you out. How dare you put hurdles in the way of our work,"' said one of the would-be oustees. The affected villagers called a press conference and brought forward the fact that a population of 8000 villagers would be drowned. The land acquisition officer responded by saying that for two months no water would flow from the canal since there was no water in Tarbela dam. This proved to be false and the cut nearly drowned the villagers. But they stood up for their rights and approached the District Commissioner who blocked it up again.

The people of the reservoir area were not consulted on the resettlement plan, including on the site where they were to be shifted. The affected landowners are being offered compensation while the herdsmen and small farmers have only been allotted alternative land at Pate Pota.[85] The residents of Deh Akanwari comprising four villages will be the worst sufferers. Their agricultural lands will be submerged soon because, though excluded from the reservoir, they are surrounded by water. Since it does not fall in the reservoir area they will



not be given any compensation.[86] The bitterness and helplessness they feel can be gauged from the statement of one such victim.

Look at the houses that we have built. Look at our land and the marvels that grow on them. Look at our grazing grounds and livestock. We have been here for generations. Even if they give us the whole of Pakistan, they cannot compensate for our loss. But if they throw us out, what can we do?[87]



A man carries two empty cans to collect water as he walks accross the dry bed of the Rawal Lake near Islamabad. Islamabad faces its worst water shortage after months of drought that virtually dried up the two main reservoirs supplying the Pakistani capital. Mazummil Pasha, Reuter.

STATISTICS

Population & Labour
(in million)

	1986-87	1988-89	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96
Population	100.70	107.04	113.78	117.31	120.83	124.45	128.01	131.65
Rural	72.20	75.35	77.94	80.36	82.77	82.25	87.69	88.99
Urban	28.50	31.68	35.84	36.95	38.06	39.20	40.32	42.65
Working age population	67.37	71.40	73.73	76.84	79.54	81.32	84.26	86.64
Rural	47.36	49.51	49.51	52.44	53.34	54.94	36.51	58.10
Urban	20.01	21.89	24.22	24.40	26.20	26.98	27.75	28.54
Labour force	29.60	30.87	31.83	32.97	33.68	34.70	33.69	36.70
Rural	22.24	22.54	22.37	23.30	23.81	24.49	25.20	25.91
Urban	7.36	8.33	9.46	9.67	9.98	10.21	10.40	10.79
Employed labour force	28.70	29.90	29.83	31.04	32.08	33.02	33.96	34.92
Rural	21.69	21.95	21.15	22.04	22.79	23.56	24.23	24.92
Urban	7.01	7.95	8.68	9.00	9.29	9.46	9.72	10.00
Unemployed labour force	0.90	0.97	2.00	1.93	1.60	1.68	1.73	1.78
Rural	0.55	0.59	1.23	1.26	1.03	1.04	1.06	1.09
Urban	0.35	0.38	0.77	0.67	0.57	1.64	0.68	0.69
Unemployment rate(%)	3.05	3.13	6.28	5.85	4.74	4.84	4.84	4.84
Rural	2.50	2.60	5.48	5.40	4.29	4.22	4.22	4.22
Urban	4.51	4.58	8.19	6.97	5.88	6.31	6.51	6.51
Labour participation (%)	29.40	28.83	27.97	28.11	27.87	27.88	27.88	27.88
Rural	30.81	29.90	28.70	28.99	28.77	28.73	28.73	28.73
Urban	26.26	26.28	26.37	26.08	25.83	25.79	25.79	25.79

Source: Economic Survey, Finance Division, GOP

Unemployment
(*in million*)

Year	Population	Crude Activity Rate %	Labour Force	Unemployed
1985-86	97.67	28.72	28.05	1.02
1986-87	100.70	29.40	29.60	0.90
1987-88	103.82	28.83	29.93	0.94
1988-89	107.04	28.83	30.87	0.97
1989-90	110.36	28.83	31.82	1.00
1990-91	113.78	27.97	31.83	2.00
1991-92	117.31	28.11	32.97	1.93
1992-93	120.83	27.87	33.68	1.60
1993-94	124.48	27.88	34.70	1.68
1994-95	128.01	27.88	35.69	1.73
1995-96	131.63	27.88	36.70	1.78

Source: *Economic Survey of Pakistan 1995-96, GOP*

DEFORESTATION
Forest Area by Vegetation Type
(*in mha*)

Forest type	Total	Production forest	Protection forest
Coniferous Forests	1959	867	1092
Scrub Forests	1726	158	1568
Riverine Forests	296	158	138
Mangrove Forests	347	-	347
Irrigated Plantations	234	151	83
Linear plantations	17	-	17
Total Area	4579	1266	3313

Source: *NCS Secretariat*

Deforestation Rate

Year	Average annual deforestation as %age of forest area
1980-1988	0.4
1980-1990	0.4

Source: *Human Development Reports, United Nations Development Programme*

FLOODS
1992 Impact

Province	Villages affected	Persons affected	Houses demolished (brick)	Houses demolished (clay)	Lives Lost	Cattle heads lost
Punjab	6474	4192930	67099	108451	381	39126
Sindh	5033	3233103	-	276369	223	85337
NWFP	945	120010	10615	13047	386	5464
Balochistan	5	-	12	-	-	2
A J & K	261	12342	1945	4138	304	5425
N Areas	-	5762	-	8561	37	26292
Islamabad capital territory	57	438	39	29	1	41
TOTAL	12775	7625354	79710	410595	1332	161687

Source: *Emergency Relief Cell, Cabinet Division, Islamabad. (-) means officially no damages were reported*

1994 impact

Province	Villages affected	Persons affected	Houses demolished (brick)	Houses demolished (clay)	Lives Lost	Cattle heads lost
Punjab	1584	224095	483309	129027	77	117
Sindh	2058	552834	227191	187806	126	3181
NWFP	166	70000	1436	70500	32	336
Balochistan	691	17358	19441	13509	94	10663
TOTAL	4499	864287	731377	400841	329	14297

Source: *Emergency Relief Cell, Cabinet Division, Islamabad*

1995 impact

Province	Villages affected	Persons affected	Houses demolished (brick)	Houses demolished (clay)	Lives Lost	Cattle heads lost
Punjab	4912	1638131	1395988	559209	179	574
Sindh	647	511149	273788	35983	58	5150
NWFP	62	4475	-	1502	160	889
Balochistan	1538	75026	269862	79456	107	12028
A J & K	295	34300	2226	443	61	1250
N Areas	226	19251	587	2751	14	8051
FATA	28	219	2918	1332	35	656
TOTAL	7708	2282551	1945369	680677	614	28598

The 1995 floods, led to the displacement of more than 500,000

Source: *Emergency Relief Cell, Cabinet Division, Islamabad*

ENDNOTES

[1] *Statistics compiled by Emergency Relief Cell, Government of Pakistan.*

[2] Ibid.

[3] Ibid.

[4] Beyond Shifting Sands: The environment in India and Pakistan, *IUCN and Centre for Science and Environment, May 1994, p234.*

[5] *Statistics compiled by Emergency Relief Cell, Government of Pakistan.*

[6] *Semple, Michael,* Oxfam's Response to Pakistan 1992 Floods, *p6.*

[7] *Statistics compiled by Emergency Relief Cell, Government of Pakistan.*

[8] Ibid.

[9] Ibid.

[10] Ibid.

[11] Ibid.

[12] *Beyond Shifting Sands, op cit, p237.*

[13] *Ahmed Khurshid, 'Deforestation in Pakistan',* The Nation, *4 June 1996.*

[14] Ibid.

[15] *Beyond Shifting Sands, op cit, p239.*

[16] *Survey Report on Hazardous chemical industries and safety measures in Pakistan, Pakistan Council of Scientific and Industrial Research, for the Ministry of Housing and Works, Government of Pakistan, Dec. 1987.*

[17] Ibid.

[18] *Industrial Pollution: Wah Public Hearings, 27 August 1993 & Kangra, 11 February 1994, Sungi Development Foundation.*

[19] *Bhagwandas, 'The Javedan Cement Factory Saga,'* The Way Ahead, *Sept. 1994, pp33-5.*

[20] *Khan, Zaigham, 'The Shadow of Death',* The Herald, *Jan. 1994, pp144-5.*

[21] *Industrial Pollution: Wah Public Hearings, 27 August 1993 & Kangra, 11 February 1994, Sungi Development Foundation.*

[22] *Khan, Rashid Mohammad, 'A Messy Business',* The Nation, *22 March 1996.*

[23] *Zaidi, Mazhar, 'Kasur's Operation Clean up',* Newsline, *June 1995, p79.*

[24] *Jabbar and Mallick, 'Pesticides and the Environment Situation in Pakistan', SDPI, 1994.*

[25] Ibid.

[26] *The News, 17 Feb. 1994.*

[27] *Nazar, Bina, 'The International Waste Trade and its policy Implications for Pakistan' p6.*

[28] *Bhagwandas, 'ICI told not to pollute anymore',* Dawn, *5 Feb. 1994.*

[29] *Bhagwandas, 'Toxic Scare',* Newsline, *June 1993, pp76-7.*

[30] *Bakhtiar, Idrees, 'Killer on the Loose',* The Herald, *April 1992, pp26-35.*

[31] *Agha, Aziz Syed, 'Killing of Karachi's underwater life',* Dawn, *19 July 1996.*

[32] Business Recorder, *Karachi, 23 May 1996.*

[33] *Mustafa, Usman & P L Pingali, 'Intensification Induced Degradation of Integrated Infrastructure: The Cause of Water Logging & Salinity in Pakistan,'* PIDE *April 1995.*

[34] *Hussain, Zakir & Sarfaraz Khan Qureshi, 'An Assessment of Warabandi in Pakistan: A Preliminary Analysis,'* PIDE, *April 1994, p1.*

[35] *Afzal, Muhammad, 'Managing Water Resources for Environmentally Sustainable Irrigated Agriculture in Pakistan,'* PIDE, *December 1996, p9.*

[36] Ibid, *p11.*

[37] *Qureshi, Sarfaraz Khan; Zakir Hussain, & Zeb un Nisa, 'An Assessment of Warabandi in Pakistan: A Preliminary Analysis,'* PIDE, *April 1994, p2.*

[38] Ibid, *p2.*

[39] *Mustafa, Usman & P L Pingali,* op cit, *p4.*

[40] *Kemal, A R & Faiz Bilquees, 'National Income Accounting & Environment: A case study of waterlogging & salinity in Pakistan,'* PIDE, *April 18-21, 1995, p1 .*

[41] *Mustafa, Usman & PL Pingali,* op cit, *p3.*

[42] *Afzal, Muhammad, 'Managing Water Resources for Environmentally Sustainable Irrigated Agriculture in Pakistan,' p12.*

[43] *Mellor, John, 'Accelerating Agricultural Growth — Is institutional reform in irrigation necessary?,'* PIDE , *14-16 December 1996, p3.*

[44] Ibid, *p4.*

[45] *Industrial Pollution: Wah Public Hearings (27 Aug. 1993) & Kangra (11 Feb. 1994), Sungi Development Foundation, p3.*

[46] Ibid, *p4.*

[47] Ibid, *p4.*

[48] Ibid, *p4.*

[49] *Report of the sub-committee of the Standing Committee no.12 on industries, Commerce, Mineral Development, Labour and Transport.*

[50] *Bhagwandas, 'The Javedan Cement Factory Saga,'* The Way Ahead , *Sept. 1994, pp33-4.*

[51] *Bhagwandas, 'The Dust Demon Lives On,'* The Way Ahead , *Sept. 1995, p10.*

[52] *Industrial Pollution: Wah Public Hearings (27 Aug. 1993) & Kangra (11 Feb. 1994), Sungi Development Foundation, p1.*

[53] Ibid, *p2.*

[54] *Khan, Zaighan, 'The Shadow of Death,'* The Herald , *Jan. 1994, pp144-5.*

[55] *Bhagwandas, 'Toxic Scare,'* The Herald, *June 1993.*

[56] Ibid.

[57] *Semple, Michael,* Oxfam's Response to the Pakistan 1992 Floods, *A preliminary report, Islamabad, June 1993, p13.*

[58] *Khan, Arif Jabbar. 'Oxfam Gender and Emergencies Workshop, Pakistan's Case study,' Nepal, Dec. 1995, p3.*

[59] *Jafri, M Hasan, 'The Floodgates to Disaster,'* The Herald, *October 1992, p2.*

[60] *Semple,* op cit.

[61] *Public Consultation on Deforestation, Dec. 9-10, 1993, Abbotabad, Sungi Development Foundation, p2.*

[62] Ibid.

[63] *Jafri, M Hasan, 'The Floodgates to Disaster,'* The Herald, *October 1992, p29.*

[64] Ibid, *p25.*

[65] *Semple,* op cit, *p7.*

[66] Ibid.

[67] *The Pakistan National Conservation Strategy, p76.*

[68] *Bakhtiar, Idrees, 'Killer on the Loose,'* The Herald, *April, 1992, p24.*

[69] Ibid, *p25.*

[70] Ibid, *p27.*

[71] Ibid, *p25.*

[72] Ibid, *p28.*

[73] Ibid, *p25.*

[74] Ibid, *p26.*

[75] Ibid, *p25.*

[76] Ibid, *p33.*

[77] Ibid, *p32.*

[78] Ibid, *p26.*

[79] *Shah, Nafisa, 'No Place Like Home,'* Newsline, *March 1996, p94.*

[80] *Inception Report Chotiari Affectees Resettlement Plan by SAFWCO.*

[81] *Report by Dharti Dost Sanghat.*

[82] *Shah, Nafisa,* op cit, *p96.*

[83] Ibid.

[84] Ibid, *p98.*

[85] Ibid.

[86] *Report by Dharti Dost Sanghat.*

[87] *Shah, Nafisa,* op cit.

REFERENCES

Bajwa, Imran, 1994, 'Death on the Rocks', Newsline *(June).*

Bakhtiar, Idrees, 1992 'Killer on the Loose', The Herald *(April).*

Bhagwandas, 1994, 'The Javedan Cement Factory Saga', The Way Ahead *(September).*

_____, 1995, 'The Dust Demon Lives On!' The Way Ahead *(September).*

_____, 1993, 'Toxic Scare' The Herald *(June).*

Jabbar, Abdul and Mallick, Seeme, 1994, Pesticides and Environment Situation in Pakistan, *Islamabad: Sustainable Development Policy Institute (Working Paper # 18).*

Jafari, M Hasan, 1992, 'The Floodgates to Disaster', The Herald *(October).*

Khan Arif Jabbar, 1995, Pakistan case study Oxfam Gender and Emergencies Workshop *(Dec 10-14, 1995), Nepal.*

Khan Mohd Rashid, 'Kasur Noxious Industry: A Messy Business' The National *(Islamabad) 22 March, 1996.*

Nazar, Bina, 1995, International Waste Trade and its Policy Implications for Pakistan, *Islamabad: Sustainable Development Policy Institute (Working paper # 23).*

Shah, Nafisa, ' No Place Like Home' , Newsline March 1996.

Semple Michael, 1993, Oxfam's response to the Pakistan 1992 Floods (Islamabad).

Industrial pollution WAH public Hearings (27th August 1993) and Kangra (11th February 1994), by Sungi Development Foundation.

Public Consultation on Deforestation, Dec. 9 and 10, 1993, Abbotabad, by Sungi Development Foundation.

Report of the Sub-Committee of the Standing Committee No. 12 on Industries, Commerce, Mineral development, labour and Transport.

PHILIPPINES

"Thus, even as Philippine economic accounts grow under the stimuli of international trade liberalisation and private sector investments, natural resource extraction also grow and environmental quality degradation worsens."

PHILIPPINES

Vicente Paolo B Yu III
& Marvic M V F Leonen

The Regalian Doctrine of Development in the Philippines: Wreaking Havoc

The Philippine environment is under siege. Pollution in all its unwanted aspects has reared its head to blight the urban landscape and the lives of the urban inhabitants. Metro Manila has one of the highest air pollution index rates in the world, resulting in increased respiratory ailment and lung cancer incidence rates. In cities and towns all over the country, urban area floods have occurred with increasingly devastating frequency, brought about by inadequate and often out-of-order drainage and sewage systems clogged by household and industrial refuse. Rivers and streams passing through Philippine cities, pristine in freshness half a century ago, are dying, if not already dead.

The Philippines observes the Regalian Doctrine as the basis for natural resource ownership and use, disregarding the fact that for thousands of years prior to the arrival of the Spaniards,[1] communities of Filipinos have already been using the country's bountiful natural resources under traditional common property regimes that are distinct from the positive law concept of private ownership. This has made natural resource use subject to patronage politics and commercial exploitation for short-term gain.

Natural resource exploitation was *de facto* reserved for those persons whose primary interest in the exploitation of the resource concerned was for profit and not for sustenance. Furthermore, rules and regulations imposed on the use of natural resources were made and implemented by government, both colonial and Republic, without consideration for the rights of indigenous communities who have their own existing customary laws governing such use.

To conclude, the commodification of natural resources implicit in the Regalian Doctrine and the individual ownership orientation recognised by the Philippine legal system has made environmental degradation closely linked with the growth of trade and commerce and the search for profit within a market-oriented economic system.

A Century of Free Trade[2]

The Philippine experience with free trade in the twentieth century started in 1909, when the US Congress enacted a law making free trade the economic basis for Philippine-American relations. The result was predictable. By 1941, the Philippine economy continued to be a completely agricultural one, importing virtually all finished goods and paying for these with agricultural exports. After World War II, as a condition for the provision of war rehabilitation funds from the US to the Philippines, free trade with the US continued by virtue of the Bell Trade Act of 1946 enacted by the US Congress.

Free trade with the United States, however, soon created an economic crisis in the war-ravaged Philippine economy, such that by 1950, Philippine Government put in place foreign exchange and import controls to stop the economic haemorrhage. Thus, during 1950-61, Philippine industries mushroomed and flourished, making the Philippines the second-most industrialised country in Asia after Japan for that period.

Under pressure from the United States, import controls were lifted in 1961, returning the country to a free trade regime which emphasised the absence of foreign exchange controls and an open-door policy for foreign investments. The flood of low-cost imports wrought havoc on fledgling Filipino industries.

To pay for these imports, the Philippines started resorting to borrowing from international financial institutions such as the World Bank (WB) and Asian Development Bank (ADB), as well as commercial banks, submitting itself to the economic dicta of the IMF as conditionalities for its accession to foreign loans from the WB.

Under the tutelage of the IMF and WB, trade liberalisation became the battlecry of Filipino economic policymakers. In 1981, under Marcos, the Philippines expanded the trade liberalisation programme started in 1961. This expansion was interrupted by the economic crisis experienced by the country during the turbulent years between 1983-86, but was resumed by the Aquino regime in mid-86. The drive continues to be expanded at a faster rate by the Ramos regime, which is focusing on further liberalisation of tariff and quota restrictions on imports.

The Era of Trade Liberalisation

The free trade market orientation of government that is being used as the basic premise for its economic development programme, is one of the biggest policy barriers to environmental protection and social equity. This is clearly stated in the Ramos administration's 1993-98 Medium-Term Philippine Development Plan (MTPDP) where one of the two strategies to be used for human development is that of international competitiveness.[3] This orientation emphasises private sector economic activity, export, and foreign investments as the keys to economic growth. As stressed by the Executive Department through the Department of Budget and Management (DBM) in one of the explanatory volumes to the 1995 Budget proposal submitted to Congress:

> The country's macroeconomic policy objective for the next four years is ... to pave the way for a strong economic growth comparable with that of the other ASEAN countries. Learning from unsustainable growth policies pursued in the past, the economic programme has been anchored on the winning strategy of open competitive economies that has spelt spectacular growth for

the East Asian NICs in the 1980s. These so- called 'miracle' economies are outward-looking, are underpinned by macroeconomic stability and rely on private industry, export activities and foreign investments to propel growth.[4]

The explicitly free trade and foreign investments-based economic growth strategy undertaken by government assumes that international trade is based on international specialisation in the production and free exchange of products according to comparative advantage. Further, it assumes that the other ASEAN and East Asian countries' growth is the proximate result of import-liberal national trade policies. And it assumes that foreign investments will provide the capital necessary for sustained economic growth and development.

However, international trade is anything but free-flowing, although there are now increasing trends towards liberalisation under the GATT. The major trading players, i.e. the developed countries of the North, are the best examples of countries that engage in protecting, through various means, their economies from foreign imports and control.[5] Indeed, these countries developed not because of free trade but because they actively protected and nurtured their domestic industries from foreign competition until such industries were strong enough to face the pressures of international trade.[6]

The embracing of free or liberalised trade and foreign investments as a trading regime for the Philippines carries with it hidden environmental as well as economic costs.[7]

Export Prioritisation

Furthermore, the drive to increase the GNP through exports falls flat in the face of the fact that most Philippine exports have high imported contents,[8] i.e. more exports will also mean more imports. Even Philippine exports of natural resource-based items such as coconut and copper products have little or no value added from their original states, since exports of such items "generally take the form of raw materials or semi-manufactures."[9]

Further, the dramatic growth of the Philippines' ASEAN neighbours was engineered not through reliance on foreign investments for capital formation but on economic policies designed to stimulate domestic public and private investment and capital formation from domestic sources. Hence the increasing fitness of these countries to engage in the rigours of international trade as shown in their aggressive export drives and deregulation measures.[10]

Ironically, it is these East Asian countries that are held up by the Philippine government and multilateral lending institutions to be models of development processes.[11]

Privatisation and Investment

It should be stressed that no argument is being presented here against private sector involvement in industrialisation. What is being argued against is the explicitly foreign investment-dependent growth strategy being espoused by the Philippine government in the guise of free trade without the prerequisite of having a strong and stable domestic economy fuelled and sustained by domestic industries and capital formation.

The assumption that foreign investments will lead to sustainable capital formation for domestic industrialisation purposes in the Philippine context is also mistaken. Instead of aiding capital formation in the host country, foreign investment[12] by MNCs de-capitalise the economy of their host country through profit repatriations to their mother countries, utilisation of domestic capital for investment purposes and transfer pricing. It also discourages the development of domestic entrepreneurial talent because of the unequal competition between wealthy foreign multinationals and fledgling domestic corporations.[13]

Despite the negative economic implications of reliance on foreign investments as a development strategy, the Philippines has thrown open all its doors to foreign investors, almost without limitations and in virtually all sectors of the economy under the Foreign Investments Act of 1991 (RA 7042).[14]

A liberalised trading regime that promotes the internationalisation of domestic markets through export-orientation, import-dependence, and foreign investments attraction has grave environmental costs.[15]

However, it is this characteristic of liberalised trade that the Philippine economic planners rely on to lure foreign investments. Through various measures such as programmatic compliance procedures within the EIA system of the Department of Environment and Natural Resources (DENR), government eases environmental protection standards and, hence, provides investors more opportunities with which to externalise some of their production costs inherent in environmental standards compliance.

Regional Industrialisation

One of the major policy features of the MTPDP is the development of so-called Regional Industrial Centres (RICs) under the Regional Agri-Industrial Centres (RAICs) programme designed to stimulate private sector-led on-site investment and development therein, and thereby raise economic activity in the region.[16] The basic idea behind the RAICs is that government will identify and set aside a specified city or municipality per region and develop off-site infrastructure therein and then invite investors to develop the area as industrial estates.

As an incentive for investors to set up shop in these RICs and elsewhere, government has provided for speedier processing of Environmental Compliance Certificate (ECC)[17] applications through the adoption of a 'programmatic approach'[18] to the issuance of ECCs.[19] As expressly stated by government officials, "(t)his measure is expected to cut the large number of project-specific ECC applications which the DENR-EMB processes."[20]

Such an approach to assessing the environmental impact of industrial development carries the risk of being overly broad and too general in scope as to create an inability to accurately assess the environmental impact of specific industries or projects, or subsequent stages thereof, encompassed by the ECC.

Not only does this shortcut the EIA process but it also enables the investor to cut costs involved in the formulation of the EIA for the project or programme. In the process, hidden environmental costs and effects that can be revealed only by a thorough and in-depth study of each enterprise's environmental impact will go unrevealed, to come to light later in more malignant and unmanageable form.[21]

Clearly, government, through DENR Administrative Order No. 11 (Series of 1994), is setting aside environmental considerations in order to encourage foreign and local capital investments as a major factor for economic development and international competitiveness. This negatively impinges on the protection of the environment through the legal regime.

Omnipresent International Financial Institutions

Lending policies and conditionalities imposed by multilateral lending institutions such as the IMF and WB,[22] as well as regional multilateral lending institutions such as ADB on borrower countries like the Philippines also play a key role in determining the policy and institutional

environment for the formulation of an ecologically-sustainable and socially-equitable development programme.

Intricately connected with the liberalisation of the global trade regime, IMF-WB policies and conditionalities tend to skew national government economic policies in favour of increased trade, export and foreign investment, increasing, in the process, trade-related environmental damage. Though IMF action with respect to borrower countries are primarily in the areas of fiscal and trade deficit adjustment policies — allowing it to disclaim great involvement in the environmental costs of such policies — it must be stressed that economic policies do not operate only in the realm of abstract economics. They have real effects on real people and the environment that may not have been accounted for in the formulation of such policies.[23]

IMF stabilisation programmes have been primarily focused on reducing domestic demand for domestic monetary resources so as to bring about increased ability of the borrower government to make payments on its incurred debts and, hence, improve its credit viability.[24] The acceptance of an IMF stabilisation programme by a borrower government (such as the Philippines[25]) and the extension thereto by the IMF of a good credit rating — its 'seal of good housekeeping' — is closely connected with the approval by the WB of Structural Adjustment Loans (SALs) for that borrower country.[26] According to a study, there are three types of changes typically sought by structural adjustment under SALs:

> • Financial — resources are provided to ease debt and balance of payments problems over the medium-term;
>
> • Macroeconomic adjustment — management of aggregate demand so as to optimise medium-term growth prospects; and
>
> • Microeconomic adjustment — improving supply-side performance through removing market distortions thereby improving resource allocation.[27]

It is the last type of adjustment that carries adverse environmental costs. Emphasising liberalisation of the domestic economy — through privatisation and the reduction of trade barriers, sectoral subsidies and other market-distorting protective mechanisms — and export-led growth, the WB claims that "adjustment will improve the capacity of the recipient nation's economy to withstand external shocks." By emphasising economic measures as determinants and indicators of a nation's prosperity, it de-emphasises environmental sustainability as the primary determinant for the long-term success of any economic programme.

The essential interrelatedness of IMF-WB lending policies — the IMF stabilisation programmes and the WB structural adjustment programmes — with respect to borrower countries is shown by the following quote:

> (T)he purpose of a stabilisation programme is to correct a balance of payments deficit, while structural adjustment works simultaneously towards payments deficit reduction, the resumption of output growth, and the achievement of structural changes needed to prevent future payments and stabilisation problems ... Stabilisation programmes take the parameters determining an economy's response to policy instruments as given, and attempts to manipulate these policy instruments exclusively to achieve stabilisation objectives within relatively short time horizons. Conversely, a structural adjustment programme not only manipulates primary policy instruments, but exploits a longer time frame to increase the responsiveness of the stabilisation objectives to those instruments.[28]

Furthermore, as the key institutions created to manage an international economic system patterned on the free trade economic model, the IMF and the WB's lending policies are also closely linked to the lending policies enunciated by global commercial banks and individual lending governments.[29]

These global multilateral institutions are aided in their efforts to maintain the global capitalist economic and monetary system by the regional multilateral development banks (MDBs) such as, for Asia, the Asian Development Bank. The clear ADB bias for policy intervention in favour of economic liberalisation on the free trade model is expressed in its reliance on commercialisation and private sector-led investment as mechanisms for infrastructure development.[30]

Environment-destructive Conditionalities

This discussion of the institutional and structural linkages between the IMF and WB is especially important in view of the impact of the conditionalities accepted by the Philippine government under the IMF's stabilisation programmes and its availing of the WB's SALs to obtain additional funds to service its recurring budgetary and trade deficits, as well as its domestic and foreign debts. The Philippines is now on its exit programme from the IMF, an indicator that the economy has substantially in place all structural reforms that the IMF has promoted under its various structural adjustment programmes.

In recent years, there has been a growing incidence of recognition by institutions such as the WB, IMF and the ADB of the close linkage between poverty and environmental problems and that attacking poverty is essential for environmental stewardship. Indeed, the WB has issued several Operational Directives (ODs) stressing its commitment to the environment and sustainable development as well as enunciating its 'Fourfold Environmental Agenda.'[31]

However, WB lending with respect to the environment are made on a per project basis, with little or no structural policy conditionalities imposed, unlike the SALs. This is indicative of a *de facto* arrangement in WB lending orientation divorcing economic policy factors from environmental policy factors, leading to an unintegrated approach in development lending policies.[32]

In effect, environmental impacts are not factored in when SAL conditionalities are imposed, while WB lending for 'environmental' projects are seen as distinct from the SALs. At most, WB-promoted structural environmental policy changes are subsumed within the ambit of national level 'economic and social development programme(s).'[33] But then, where a country's economic and social development programme, such as the Philippines', is determined by IMF-WB imposed conditionalities, country-based WB environmental action lending will always remain tied to the economic requirements mandated by such conditionalities.

Since these conditionalities provide the external policy environment around which the Philippine government formulates its development programmes, we can hence trace environmentally-destructive policies embarked on by government pursuant to its development plan such as the MTPDP, to the conditionalities imposed by the IMF-WB.

Coupled with the operationalisation of a further liberalised, rules-based trade regime under the Final Act of the Uruguay Round of the GATT, and the creation of a watchdog institution for the furtherance of liberalised trade in the form of the World Trade Organisation, the treatment of natural resources as tradeable commodities rather than as non-renewable resources that need to be utilised in the concept of stewardship seems to become paramount.

More Degradation, More Poverty

Development activities under the 1993-98 MTPDP is focused on infrastructure construction aimed at improving supply-side capabilities of the economy. This focus seeks to enable the Philippines to effectively compete in the world market in those primary export products in which it has comparative advantage.[34] But the infrastructure and low- to medium-level technological and

industrial capacity needed for such products necessarily entail start-up and continuing ecological costs such as land degradation, soil, water and air pollution, urban congestion, toxic waste production, and other environmentally-destructive industrial byproducts.

Poverty alleviation under such a development programme is sought to be achieved through the 'trickle-down effect.' In other words, as the GNP increases through increased exports — and assuming that such GNP increases are more than the average annual 2.4% Philippine population growth rate — the GNP per capita will also increase, ostensibly reflecting higher standards of living for the average Filipino as the benefits of increased trade raises income levels through the generation of additional job opportunities due to the opening of more export-oriented industries.

Ironically, however, the projects and policies undertaken to foster economic growth and hence poverty alleviation often tend to have drastic environmental and economic costs for the communities affected by such projects. Indeed, while there may be a causal relation between poverty and environmental degradation, there is definitely also a causal relationship between efforts to achieve economic growth and environmental degradation. If anything, poor communities such as unassimilated indigenous peoples who depend on the continued provision of resources from their natural environment for their survival, have higher stakes in practising sustainable natural resource extraction methods.[35]

State Determines All

Although government posits as a factor in development strategies 'more environmental sensitivity' in policy-formulation,[36] the question still remains whether such rhetoric constitutes a seminal exercise of political will to move away from the implicit individualist, profit-oriented premises behind natural resource use laws and policies.

Its development strategy of enhancing global competitiveness through exports and foreign investments ensures the environmental death of the Philippines rather than its survival. Its overall legal policy regime of individual ownership militates against the realisation and recognition of the long-term viability of environmentally-sustainable methods of indigenous people, common property possession and community-based resource management.

The official Philippine legal system has made it easier for natural resource exploitation to be made for purposes of profit. When placed in the context of the political patronage system wherein the disposition of state-owned resources are made according to patron-client requirements for continued political power by those currently in control of state power, the relationship between political power, profit, and environmental destruction can easily be seen.

Those who control state power hence gain the ability to control to whom and for what consideration, economic or political, such grants for natural resource extraction activities should be made. Further, because of the nature of the political cultural system, those who gain State power are generally those economic elites whose interests lie in perpetuating the current economic and political structure. Finally, the free market economic orientation being espoused by national government — under the guidance of and abetted by the IMF-WB through stabilisation programmes and structural adjustment — provide the paradigm for continued exploitation of natural resources without regard for their environmental costs, and allows economic planners to isolate economic activity from its environmental context.

Given the legal and policy regime governing economic development and natural resource use in the Philippines, can we say that there is reason to be optimistic about the ecological future of the country? It can be said that government has recognised the link between human activities and environmental sustainability, for example through

the formulation of the Philippine Strategy for Sustainable Development and its creation under Executive Order No. 15 in 1992. The 1993-98 MTPDP itself states that:

> A genuine threat to development exists, therefore, if policies unduly emphasise current incomes and the welfare of existing generations without properly valuing the stock of the country's natural resources, leading to their more rapid depletion. In this context, government must play its role as custodian of the environment for future generations and give the attention needed to rehabilitate and preserve it. It also means giving full play to the efforts of households, communities, firms, and nongovernmental organisations to serve as stewards of the environment to the extent that these coincide with their genuine interests.

This enunciated policy recognition of the link between development, environment and social equity is, however, not borne out in practice as will be clarified in the case studies that follow.

Destruction and Unsustainability

In the Philippines, the ecological costs of industrialisation and economic growth along the traditional IMF-World Bank charted path of development are often disregarded, and the quality of the environment sacrificed to the promotion of industrial investments in natural resource exploitation and extraction. Furthermore, this development path has resulted also in the diminution or even total extinction of the ability of local communities to effectively control the use of their land and resources and plan their own development.

Thus, even as Philippine economic accounts grow under the stimuli of international trade liberalisation and private sector investments, natural resource extraction also grow and environmental quality degradation worsens. This directly proportional relationship between the Regalian doctrine of economic growth and environmental destruction arises out of the causal link between modern industrial production and consumption processes and raw materials obtained/extracted from natural resources.

In the Philippines, environmental degradation has resulted from agricultural practices involving increased use of pesticides and fertilisers to boost production. Likewise, an increasingly large number of prime agricultural lands that could be used for environmentally-sound agriculture are being converted into environmentally-dead residential subdivisions and industrial estates, especially in the growth areas identified by government for priority industrial development. Soil erosion due to improper agricultural practices, denuded watersheds, and misguided or improper development projects, has increased and washes down to the rivers and seas millions of hectares of valuable and fertile topsoil annually.[37]

Commercial loggers have launched over the past four decades an increasingly rapacious assault on forest areas and forest resources. With the lowland frontier for expansion and settlement having been reached, the only areas left for further exploitation are the upland areas. Population growth also resulted in increased population density per square kilometre — 202.3 persons per km^2 in 1990 as opposed to 90.3/km^2 in 1960 — increasing environmental degradation through increased demand for housing, infrastructure, arable land and use of other natural resources to sustain life.

Over the 20th century, Philippine forests have disappeared at an increasing rate. Such disappearance carried with it incalculable loss of biodiversity and ecological balance, not to speak of grave cultural and sociological disruptions in the lives of the indigenous Filipino peoples.[38]

The disappearance of the Philippine forests have had a negative multiplier effect on the ability of the environment to adjust to natural phenomena, resulting in an increasing number of natural disasters such as massive regional floods and landslides accompanying tropical typhoons,

earthquakes, drought, insect infestations, etc. and causing massive population relocations and billions of pesos worth of property damage.

Because of increased soil erosion as well as development projects, inland waterways are silting up or are being filled in. Tonnes and tonnes of untreated industrial and household wastes pour into our rivers and thence into the sea from the cities. Pesticides used in agriculture seep into groundwater and running water sources. In many parts of the country, rivers and streams can no longer support aquatic life.[39] Coastal flora and fauna dependent on mangrove forests for their survival are dying due to indiscriminate destruction of mangrove forests to give way to commercial fishponds and prawn farms.[40] Due to blast fishing and other destructive fishing practices, Philippine coral reefs are on the verge of total eradication.[41]

It is, therefore, clear that the pattern of development in the Philippines is ecologically and socially unsustainable. This unsustainability, and the consequent environmental destruction, is directly traceable to the development paradigm being followed by Philippine government as expressed in its laws relating to natural resources use and its policies and plans relating to environmental protection and economic development.

GLOSSARY

Air Pollution

Air pollution in heavily-urbanised areas of the Philippines, such as Metro Manila, is counted as among the worst in the world and continues to worsen at an alarming rate. Air pollution arising from human activities have been increasing with increasing urbanisation and industrialisation.

***Metro Manila*:** The primary reason for urban air pollution is the increasing vehicle population. Motor vehicles emit the largest amount of carbon monoxide, total organic gases, and oxides of nitrogen. Industries contribute the most sulphur oxides while area sources such as construction sites generate the most particulate matter. Old diesel engines — used mostly in jeepneys and buses, the main modes of urban transport — form part of the problem. Pollution is further aggravated by the continued use of cheap, low-grade refined petroleum products that produce high levels of sulphur dioxide and contain dangerous amounts of lead. In 1988, the estimated damage cost of air pollution to human health amounted to P101.530m ($3.905m), covering lost hours of work, cost of medicine and premature deaths. There are about one million motor vehicles in Metro Manila, of which an estimated 400,000 are smoke-belchers. About 65% of Metro Manila residents live in areas where air quality guidelines and safety standards set by the DENR and the World Health Organisation is greatly exceeded. This figure, however, does not include exposure to industrial waste and road pollution.[42]

Biodiversity Loss

The Philippines hosts approximately 12,000 identified plant species. Many more remain unidentified and perhaps will never be identified or discovered due to rapid deforestation. The country also hosts around 170,000 species of insects, 500 species of birds, and 167 mammalian and 950 reptilian species. There are also around 500 species of corals identified. Unfortunately, about 50% of the country's forest flora are

extinct, 18 forest species are endangered, and 25 more are candidates for the endangered species list. The clearest indication, however, of the grave threat to biodiversity is indicated by the less than one million hectare of primary forests remaining. While it cannot be established at present the exact number of species that can be found in Philippine forests, one survey of just over a hectare of forest reserve has uncovered more than 100 species of trees. A basic rule in the extinction of species is that if a habitat is reduced by 10% in area, approximately one half of the species will be lost. At these terms, the Philippines may have lost more than 50% of its biological species.[43]

Child Labour

There were, in 1995, 3.7m Filipino children between 10 to 17 years of age in sweatshops and high-risk factories and the figure is steadily increasing, partly due to the local economic boom and the globalisation of the local economy, resulting in the entry of foreign capitalists and entrepreneurs. There is also a rise in labour-subcontracting of child labourers, whereby children are underpaid, overworked and without security of occupation. Almost all of the children surveyed receive a wage of less than P1 per hour (less than 4 cents), which is six times lower than the prevailing legal minimum wage. There were, in 1995, 2.2m children working in hazardous conditions in chemical industries, deep-sea fishing, factories, mines and quarries.[44]

Coral Reef Destruction

Coral reefs are colonies of corals usually found between 5-200 metre under the sea surface in tropical zones. They are among the most productive ecosystems on earth, serving as shelter and breeding grounds for fish and other marine organisms. There are almost 500 species of hard and soft corals in the Philippines, and about 2000 fish species are directly associated with coral reefs. Satellite data reveal that the Philippines has 3527 sq. km coral reefs existing, but only 30% of these can be considered in good to excellent condition. The other 70% have been destroyed by a combination of siltation from denuded forest lands, discharged mine tailings, and harmful fishing technologies such as drift nets, dynamite blasting, and cyanide fishing. About 150,000 kg of sodium cyanide are poured into the Philippine seas to catch fish. Coral damage has been estimated to reduce fishery production equivalent to P1.258bn ($48.385m) in 1989 and the economic dislocation of 137,000 small-scale fisherfolk.[45]

Energy Exploitation

Philippine energy resources, like all other natural resources, are considered owned by the state. This means that the state has the right to determine which and in what manner the country's energy resources are to be developed. Philippine energy policies and programmes are characterised by a heavy reliance on supply-side planning and fossil fuels for power generation. Philippine laws furthermore allow the state, and its private sector partners, to engage in energy resources development regardless of the adverse impact that development might have on local communities in terms of their environment and rights.

***Laguna de Bay*:** Oilspills usually occur when oil tankers and carriers meet with an accident causing them to spill their cargo into the sea. The environmental damage they could cause vary according to the location of the accident, and wind and sea conditions. Oil products are also relatively toxic to marine life. Oilspills destroy the eggs, larvae, and adults of plankton, coral, shellfish, and a wide variety of marine species. In July 1994, the Pililia, Rizal, oil-fired thermal power plant of the National Power Corporation spilled approximately 8700 barrels of bunker fuel oil into the Laguna de Bay, polluting in consequence around 300 ha of lakeshore.[46]

***Leyte-Cebu–Leyte-Luzon*:** The geothermal fields of Leyte province is the site of intense 'development' by the Philippine National Oil Corporation (PNOC). These two comprise two stages of the same power project. The Leyte-Cebu project is the 200-MW first phase of the 640-MW Tongonan, Leyte Geothermal Power Plant. This has been the focus of community opposition with respect to the toxic wastes and other environmental impacts of plant construction and operation as well as the lack of public consultations. The Leyte-Luzon project on the other hand is the 440-MW second phase of the plant. Like its sister project, Leyte-Cebu, this project is the target of community opposition not only because of its environmental risks but also because of the fact that the power to be generated by this project will be 'exported' to the rest of Luzon while leaving Leyte, already among the poorest provinces in the country, with one of the highest electric power rates.

***Masinloc*:** Masinloc is an on-going 600-MW coal-fired thermal power generation project located in Barangay Bani, Masinloc Municipality, in Zambales province. In this plant power will be derived from the combustion of imported coal. Financed by the ADB and the Export-Import Bank of Japan (Jexim) through a $200m sectoral loan package approved in 1989, the project proponent is the National Power Corporation (NPC). Under government's 'operate and maintain' scheme, it will be handed over to the Japanese Mitsubishi Corporation upon its actual construction. This project is intended by the Philippine government to provide baseload power to the NPC's Luzon grid. The land on which the power plant will be built was formerly a fecund area of prime agricultural land producing primarily rice and mangoes.

***Mt Apo*:** Mt Apo is a dormant volcano and the site of the last major forest cover in southcentral Mindanao. The mountain is sacred to the indigenous peoples that live there and is also one of the last remaining habitats of the Philippine eagle. In 1936, government declared it to be a national park, which by itself should have been enough to protect it from 'development' activities. However, in 1985, government-owned PNOC began exploratory drilling at the base of Mt Apo to test its potential for geothermal power development. By 1989, two test wells, each more than 2 km deep and 20 cm in diameter, and an 8.5 km road had been built. Mt Apo's Blue Lake, a sacred ceremonial site for the indigenous peoples, turned brown and muddy. Traces of arsenic and other toxic chemicals started showing up in water samples taken from streams and rivers near the test wells. Despite opposition from communities in the area, PNOC activities continue to take place.[47]

Forest Depletion

Philippine forests have been one of the major victims of 'development,' with millions of hectares of forest lands being cut over the past century, resulting in the consequent loss of biodiversity, soil erosion, more frequent floods, and the economic and social dislocation of upland indigenous peoples communities.

***Deforestation*:** The rate of deforestation in the Philippines over the past 60 years has been among the highest in the world. In 1934, more than 17mha or 57% of the country's land area was forested. Today, only about 5.7mha still retain forest cover, and this is decreasing at the rate of about 100,000ha per year. Of this steadily decreasing forested area, only about 800,000ha are virgin or old growth forests. At least 50-60% of these old growth forests are located inside timber concession areas. This depletion of the country's forest resources has resulted in a total annual loss of P30.6bn ($1.177bn) during the 70s and 80s. This figure does not include employment opportunities lost for thousands of persons in small industries, local communities, other environmental uses and non-monetary ecological values, biodiversity, and aesthetic and recreational uses.[48]

***Industrial plantation*:** Industrial tree plantations comprise a key programme that is intended by government to lead to the reforestation of the country while at the same time helping advance Philippine industrialisation. With respect to the forest environment, the use, for the most part, of non-endemic or endogenous tree species in industrial tree plantations on a monoculture basis have negative implications on the biological diversity of the area as well as on the cultural practices of indigenous peoples therein. Between 1975-91, a total of 367,522.25ha of forest lands were leased out by the DENR for industrial tree plantations, while between 1992-96, 162,180.75ha, or an average of 46,337.36ha per year, have already been subjected to the DENR's Industrial Forest Management Agreement (IFMA).[49]

***Mangroves*:** Like coral reefs, the existence of mangrove forests are vital to the health and stability of coastal ecosystems, providing rich breeding grounds and shelters for fish. However, of the mangrove swamps that existed in the Philippines in 1920, 92% had already been destroyed by 1985. It has been estimated that the Philippines originally contained a total of 450,000ha of mangrove swamps. About 95% of commercial fishponds were formerly mangroves swamps. As of 1994, there were only 120,500ha of mangrove swamps in the entire country.[50]

***Ormoc*:** Flash floods swept through Ormoc city in the province of Leyte on November 5, 1991, killing 6000 people, destroying houses, crops, livestock, and washing tonnes of soil into the sea. The flood was caused by the sudden release of built-up rainwater dumped by Typhoon Uring on the denuded mountains overlooking Ormoc city. Agricultural and road construction activity in the uplands surrounding the city had resulted in the creation of artificial dams consisting of discarded cut logs, silt, and assorted debris that blocked water run-off channels. As the dammed water volume built up and pressed on these artificial dams, the latter suddenly gave way, resulting in a downstream rush of water and mud that swept through the unprotected lowland barangays and Ormoc.[51]

Mining

The extraction of mineral resources is one of the most environmentally damaging human activities. Due to the abundance of mineral resources, the Philippine mining industry has been growing by leaps and bounds. With the passage and implementation of Republic Act No. 7942, the Mining Act of 1995, it is expected that more large-scale mining activities will take place in the country, and along with it increased environmental damage and social and economic dislocation of indigenous and other local communities.

***Beach mining*:** Being an archipelago, the Philippines has one of the longest coastlines in the world. In many areas, coastal beach zones contain important deposits of silica and magnetite sand. These minerals are mined by merely scraping them off from the beach. The island province of Palawan and Roxas city in the island of Panay are two examples of places where beach mining is practised by corporations, with consequent disastrous effects on the coastal waters and offshore coral reefs. Roxas is said to be sinking two inches per year due to two firms' digging and hauling silica from its beaches. About 200 tonne are being dug every day since the late 70s.[52]

***Benguet gold*:** The biggest gold mining operation in the Philippines thus far is done by Benguet Mining Corporation at the Antamok gold mines. The early years of the Benguet's operations characterised by underground tunnels buttressed by pine logs contributed significantly to the deforestation of the Cordilleras. In the late 80s, Benguet shifted to open-pit mining. Within a few years, mine wastes from its operations started showing up in noticeable quantities in Lingayen Gulf, 150km southwest of the site of operations, carried

down by the rivers from the Cordilleras. Rice farmers in Pangasinan and Zambales noted that, as the quantity of mine tailings in their irrigated fields increased, rice yields plummeted. Fisherfolk in the Lingayen Gulf reported a substantial reduction in fish catch as siltation from the tailings smothered the coral reefs.[53]

***Cordillera rivers*:** Four rivers in the Cordilleras are either dead or dying due to wastes and discharges from mining operations in the region. According to the DENR, the Agno, Ambalanga, Mankayan and Bued rivers, all in the province of Benguet, are classed as C or D, meaning dying or dead. DENR records show that about 100mt of mine tailings have been dumped into the Agno river by Benguet Corporation, Philex Mines and Itogon-Suyoc Mines. The total annual sediment load of Agno in 1985 was 5.5mt, of which 3.5mt were directly attributable to mine tailings. Mankayan river is now heavily silted due to the regular collapse of four tailings dams of the Lepanto Consolidated Mining Corporation during typhoons. Ten of 12 barangays in the area of the Mankayan river, as well as neighbouring Ilocos Sur and Abra provinces, were affected by severe ecological destruction caused by mine discharges of Lepanto.[54]

***Marble quarrying*:** Kantoh International Marble Corporation, partly Japanese owned, started marble quarrying operations at the foot of Mt Halcon in Baco, Mindoro, in 1990. Characterised by open-pit quarrying operations, Kantoh International's quarrying has resulted in the denudation of over 100ha of forestland. Operations commenced despite the opposition of Iraya Mangyan communities in the area, who were not even consulted by the corporation. As a result, the Iraya Mangyans were forcibly dislocated from their ancestral domains around Mt Halcon. By mid-96, the removal of the forest cover due to Kantoh International's quarrying operations have resulted in an increasing frequency of floods and soil erosion in the area. For farmers there, their crops kept on being washed out by the floods and rampant soil erosion, forcing them to make multiple plantings in one planting season as compared to only one planting per season prior to the arrival of Kantoh International.[55]

***Maricalum*:** The Maricalum Mining Corporation was held responsible for an oilspill in Bulata Bay, Sipalay, Negros Occidental. It was also held responsible for allowing its mine wastes to flow down from its tailings pond into nearby ricefields and the Tao-angan river, causing siltation of the latter. About 50% of the agriculture and fishing industry in the nearby areas have been affected by the firm's mine waste leak. An estimated 2209t of mine waste materials consisting of boulders have been dumped into the Tao-angan river. Maricalum Mining started its operations in the area in 1936, producing copper. It uses an open-pit mining method with a production rate of 17,000t per day.[56]

***Mercury poisoning*:** At least 12 elementary school students in Barangay Apokon, Tagum, Davao del Norte, were found to be positive for mercury poisoning. Eleven gold processing firms are located in or near the village. Local residents have been complaining that their waterways have become frothy. More cases of mercury poisoning have been reported in the area. Mercury is used to wash and separate gold from the ore in which it is found.[57]

***Perlite*:** Mining for perlite in three upland villages of the province of Albay in southern Luzon island has been destroying hundreds of hectares of farmlands and silting waterways, leading to flash floods in nearby Legazpi city. A local mining firm, Asaphil Corporation, is running the open-pit mining operations that extract at least 250t of perlite ore a day from a mining site in the villages of Lamba, Taysan and Estansa since 1977. Perlite or volcanic glass is a non-metallic mineral used as raw material for industrial filters. Most of the mine tailings from the open-pit operations of Asaphil end up in the ricefields and rivers of the surrounding barangays since the silt dam designed to

contain the mine tailings is already full, leading Asaphil to dump the mine tailings into the adjacent rivers and farmlands instead. In March 1993, 15 foot-deep floods caused by the heavy siltation of the waterways submerged four villages, resulting in the death of at least four people.[58]

***Philex*:** Philex Mining Corporation started its gold mining operations in Sipalay, Negros Occidental in 1993, expecting to extract more than 900,000 ounces of gold and thrice that amount of silver from tunnels and open-pit mines. As a result of Philex's operations, the once fecund river has lost its fish, and the farmers in the area consider themselves lucky to reap one or two meagre harvests a year, despite massive doses of chemical fertiliser. Massive floods have also become a frequent occurrence as the formerly four-metre deep channel of the Sipalay river silted up due to the mine wastes discharged into it. The river water has also become toxic from the toxic chemicals, such as cyanide, dissolved in it from the mine tailings discharges of Philex. The formerly clear waters of Sipalay river has turned into a toxic brown sludge, causing the death of riverside plants and animals.[59]

***Tailings leak*:** In March 1996, a drainage tunnel of the Marcopper Mining Corporation's Tapian mine tailings pit in the island province of Marinduque started leaking mine tailings at the rate of 5-10 m^3 per second into the Makulapnit river as a concrete plug inside the tunnel cracked open. Silt clogged up the river system and started discharging heavily into Calancan Bay. Approximately 2.4mt mine tailings had leaked into the Makulapnit and Boac rivers by the time the leakage stopped three days later. More than 4400 people were trapped in the remote villages of Marinduque province as the leakage caused the Boac river 'to overflow and threaten to swamp 20 villages alongside the river or near it.' Health authorities warned that the Boac river may have been contaminated with toxic materials from the mine tailings. Fishery officials estimated that the contaminated floodwater coming from the Boac river could have destroyed P1.8m worth of mature freshwater and marine life and P5m of bangus fry, a major source of livelihood along Marinduque's coastline. Other marine life killed by the mine waste included sardines, scud, tuna-like fish, seashells and corals.[60]

***Zamboanga*:** At least three rivers, three creeks and two bays of Zamboanga del Norte province are now contaminated with mercury, a toxic heavy metal. The pollution comes from three gold rush sites close to the waterbody — Lalab, Sibutad; Siocon; and Guinabucan. Among those contaminated were the Quipit river and the Siocon river.[61]

Natural Resources Laws

Philippine natural resources and environmental law and policy is characterised by a heavy reliance on the Regalian doctrine. The basic premises behind this doctrine, and thus behind these laws and policies, dovetail and coincide neatly with the neo-classical economic development paradigm of the Philippine government.

***Environmental laws*:** The Philippines has a large number of laws enunciating policies and programmes designed to address environmental and natural resource concerns. The 1987 Philippine Constitution, in Article II, sec. 16, recognises the 'right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature.' Exploitation of natural resources is governed by Article XII of the Constitution. Laws have been passed concerning energy resource exploitation and regulation, fisheries, flood control and natural calamities, forestry, landuse planning and management, mining, pollution and traffic management, waste management, water and water quality management, and wildlife flora and fauna, among others. The Philippines is also a signatory to several international conventions and treaties related to environmental concerns. However, the effective

implementation of these laws is sorely lacking. And even if they are implemented, the penalties provided for their violation do not act as effective deterrents to environmentally damaging activities.[62]

Toxic Wastes

The Philippines bans the import of toxic wastes and hazardous materials into the country under Republic Act No. 6969. However, the law does not tackle the subject of toxic wastes and hazardous substances already inside the country, such as those left behind by the United States military when they vacated their bases in the Philippines in 1992.

***Manila Bay*:** On October 11, 1996, at least 30,000kg fish were found dead floating on the surface of Manila Bay after the oxygen content of the water had gone down to 3 mg/litre as against the normal 7-8 mg/litre. Investigators from the DENR concluded that 'cyanide exposure' may have been the 'most likely' cause of the fish kill. However, they stressed that cyanide was not definitely tagged as the cause because laboratory results showed that the cyanide levels in the fish samples were 'not enough' to have killed the fish. The investigators, however, stated that 'the mere presence of cyanide aggravated the polluted and deteriorating state of the bay, thus triggering the mass mortality of the fish' and that 'apart from cyanide, other toxic heavy metals and chemicals were found in the water samples.'[63]

***Pangasinan rivers*:** Approximately 200kg fish being grown in fishpens along the Pugaro river in the province of Pangasinan were found floating dead on the surface of the river. A biopsy showed the presence of toxic chemicals in the fish. Fish kill had also occurred in other rivers of the province such as the Sta. Rita, Inerangan, Abunciang, Putot, Alaminos and Sinucalan rivers and the Alaminos Channel in Lingayen Gulf. According to the Lingayen Coastal Area Management Commission, a strong presence was noted of large amounts of ammonia, a very toxic chemical, 'probably spawned by the decomposing and fermented wastes and fish feed residue' from the overuse of fish feeds brought about by the intensive operation of fish pens in the area.[64]

***Toxic Clark*:** Clark Air Base used to be one of the biggest bases of the United States Air Force in the Asia-Pacific area before the Americans had to vacate it in the aftermath of the Mt Pinatubo eruption in 1991 and the rejection by the Philippine Senate of a new treaty which would have allowed the US to continue maintaining its military bases in the country. The US military used Clark Air Base since the early 1900s up to 1991. This long occupancy has left its mark. In early October 1996, health authorities in San Fernando, Pampanga, the host community of the air base, warned some 6000 families (almost 30,000 people) living in the Lahar evacuation centre inside the air base against drinking and bathing with water obtained from deep wells inside the air base because the water had been contaminated with oil and grease. The site of the evacuation centre used to be a motorpool facility, where military vehicles were repaired and cleaned, usually using hazardous solvents. Not far away from the centre is a landfill where various toxic wastes are believed to be buried. Philippine government has repeatedly ignored calls for it to ask the US government to clean up areas it used as military bases.[65]

Water Pollution

The quality of Philippine inland waters have been deteriorating at a rapid rate over the past half-century as a result of increasing industrialisation, urbanisation, deforestation, and pesticide-dependent agricultural practices. There is a looming water shortage in the country, evidenced by droughts and dry lakes and rivers. By the year

2000, some areas of the Philippines will be experiencing acute water shortage problems. Human settlements, industry and agriculture have considerably polluted both inland and coastal waters. Domestic sewage contributes approximately 52% of the pollution load while industry contributes the remaining 48%. The estimated damages due to water pollution in 1988 amounted to P2.506bn ($93.385m), covering damages to human health and physical features.[66]

***Laguna de Bay*:** Development pressures like population growth, industrialisation, urbanisation and resources utilisation are taking a heavy toll on Laguna de Bay's water quality. Domestic and industrial sources contribute 30% each to the total pollution load of the lake. Agricultural sources contribute the remaining 40%. Only 695 of the 1481 industries around the lake have wastewater treatment facilities. Among the industrial pollution threats the lake faces are thermal pollution from the discharge of industrial cooling water, toxic and hazardous wastes and oilspills from barging and oil transport operations. As of 1991, 69,600 barrels of fuel oil are transported daily through the lake. Approximately 60% of the 8.4 million population of the Laguna de Bay region discharge liquid and solid wastes directly into the lake or its tributaries. Domestic wastewater generated by the whole Laguna de Bay region is placed at 34.8m m^3 daily while solid waste generation is estimated at 3m m^3 per day.[67]

Old growth forest logged by SUDECOR logging company in Suba, Tandag, Surigao Del Sur.

***Pasig river*:** The Pasig river epitomises the fate of river systems traversing urban areas. Its quality has progressively deteriorated although efforts to rehabilitate the river were started in the late 80s. Based on monitoring conducted between 1990-95, there has been slight improvements in the river's water quality in terms of BOD and dissolved oxygen, indicating that rehabilitation efforts might be taking effect. However, these improvements are still not sufficient to sustain aquatic life, with coliform count remaining from 100 to 5400 times the criteria for Class C waters. There are also indicators that the eutrophication level of the river is increasing. Overall, the water quality of the Pasig river still does not meet the criteria for Class C waters, i.e. appropriate for fishery, recreational and industrial water supply purposes.[68]

CASE STUDIES

The Calaca and Mt. Apo Projects: Power Against the People

The Power and Energy Sector is viewed by Philippine government as one of the most important sectors that should be supported in order to attain the objective of the 1993-98 MTPDP.[69] Thus, investments in this sector are also encouraged and provided with incentives under government's annual Investment Priorities Plan (IPP). Investments in power generation and transmission are considered as support activities under the 1996 IPP that can avail of the incentives thereunder.[70] It, therefore, is not surprising to see government exerting all its effort to ensure that such projects push through. In fact, in a Delphi survey conducted by the Philippine Department of Budget and Management (DBM) in 1995 among the Cabinet members, the Power and Energy Sector ranked first out of 17 sectors to be prioritised for budget purposes 'according to the extent of their incremental contribution towards (the country's) goal of NIChood and sustainable growth.'

This high priority given to the Power and Energy Sector has had detrimental impacts on local communities that had to be displaced in favour of the construction and operation of large-scale power plants to fuel the industrialisation drive of Philippine government. The Calaca coal-fired power plant and the Mount Apo geothermal power plant highlight these adverse impacts.

The Calaca Power Plant

In line with government's development programme, industrial estates and zones are being set up all over the country. These are intended to attract industrial investors into setting up their factories and manufacturing ventures in the regions instead of concentrating in the Metro Manila area. Among the most prominent of these estates and zones is the Calabarzon industrial growth area, covering the provinces of Cavite, Laguna, Batangas, Rizal and some parts of Quezon.[71] To provide adequate power for the Calabarzon, government has expanded the generating capacity of the Calaca coal-fired thermal power plant, located in Calaca, Batangas, by building a new 300-MW coal-fired power plant, known as Calaca II, alongside the existing 300-MW one.

Calaca I was constructed in line with government's policy 'to utilise effectively domestic, natural, non-oil resources at a cheaper running cost.' Commercial operations for Calaca I started in November 1984, utilising the coal resources of Semirara island as its primary fuel. Calaca I was built by Mitsui and Co. Ltd of Japan and financed by the Export-Import Bank of Japan, Export of Tokyo Ltd, the Export-Import Bank of the United States, Foster Wheeler Energy Corp., Export Credit Guarantee Department of London and Kleinwort Benson Ltd of Hong Kong. The project site is along the shoreline of Balayan Bay, occupying approximately 167ha including the ash disposal area and the 31ha resettlement area. Calaca is also the site of a 90-MW diesel-fired power barge. The new 300-MW capacity addition, in the form of Calaca II was projected to have come on-grid in 1995.[72] Both Calaca I and II are owned and operated by the NPC.

Community Opposition

Both Calaca I and II have been the subjects of intense community opposition. To quote extensively from a support NGO publication:

> The people from fishing communities in the town of Calaca, Batangas — site of the National Power Corporation's (NPC) coal-fired thermal power plant — is now protesting against the pollution caused by operations in the plant.
>
> Citizen organisations like the Haligi ng mga Batangueñong Anak Dagat (HABAGAT), the Samahan ng Pinagbuklod na Damdamin (SAPIDA), and the Citizen's Movement for a Better Calaca (CMBCI) took the initiative in organising an environmental investigating mission (EIM) to further investigate the damage caused to persons and the environment by the pollution coming from the plant. These organisations have earlier conducted rallies in front of the plant in Calaca and have recently marched to Malacañang and the Senate because of the issue...
>
> Renewed protests against the Calaca plant has erupted because of news that the said plant would be expanded and that another (coal-fired power plant) will be constructed in Batangas....

Rolando Macatangay, chairman of the CMBCI, said government did not consider the impact of the plant to the communities. 'They said it would be a cheaper energy source. It now appears that it is more expensive than oil,' he said.[73]

Ecological Impact

An environment and health investigative mission conducted in May 1990 by several non-governmental organisations and people's organisations in the Batangas area to determine the impact of the operations of Calaca I on the local community's health, physical, socio-cultural and economic environment revealed very disturbing findings that served to fuel the community opposition to the Calaca II project. Among these findings were:

> • there was a rising incidence of skin, respiratory and heart ailments as well as eye irritations, especially during the months of November to March when the northeast winds blow coal dust towards their areas. The dust reportedly contaminated their food and water supplies and blanketed the surface of fishing areas with dark soot. In extreme cases, the people had to take their meals inside mosquito nets to avoid food contamination. To avoid inhaling visible dust particles, especially when the winds blew hard, the people opted to stay inside their houses, resulting into wasted economic hours;
>
> • extremely foul odour emanated from the exposed coal piles, causing severe discomfort;
>
> • loud, explosion-like noises frightened children, elderlies and animals, causing nervousness, dizziness and headaches. In a few cases, the explosion-like noises induced heart palpitation among the elder citizens. When plant operations are at its peak, the sound drowns out the people's voices and they could not converse normally. Class discussions grind to a halt. Again, this translates into wasted economic hours;
>
> • water from wells became murky due to vibrations associated with the loud, booming sounds. It has become increasingly difficult to find groundwater sources because the water table appeared to have sunk since the plant started operations. The residents are forced to purchase potable water from nearby barangays with secure water sources;
>
> • tailings from the plant find their way to the river of San Rafael, which eventually flows out to the Balayan Bay. Tailings and other liquid wastes were still being dumped in one tailings pond, despite the fact that it was already filled to the brim;
>
> • the use of the Cawong river as waste disposal area has brought down agricultural production in barangays Quisumbing and Pag-asa. Rice, corn and sugarcane crops wilt easily and soil crusts harden just as fast. The loss of the Cawong river as a primary source of water for irrigation significantly lessened the supply of irrigation water.[74]

Despite these findings and the intense opposition of the local community, the Calaca II project was approved and construction started in March 1993. Like its predecessor, Calaca I, Calaca II poses grave risks to health and environment once it starts operations. According to a research

team from the University of the Philippines at Los Baños, Calaca II would pose the following risks:

> • with two plants (in operation), SO_2 levels could double to 455.08μg/m³, or 85% higher than the tolerable level;
>
> • groundwater in (barangays) Dacanlao, Sampaga, Baclaran, Quisumbing and Camastilisan had higher pH levels than seawater. High pH or acidity levels could only come from the leaching of pond waste;
>
> • cadmium levels are also high in areas near the ashpond. Mixed with copper, cadmium has been suspected of causing bone disease in areas near coal plants in Japan.[75]

Opposition Overruled

Government has argued that it gained community acceptance for the construction and operation of the two power plants on the basis of statements from the barangay captains that they agree to the construction of these plants. However, given the political economy of leadership and power in local government politics in the Philippines, it can be gainsaid that the fact of agreement by the barangay captains to the construction of the power plants does not automatically reflect the consent by their constituencies to such construction. That community consent to the construction of Calaca II was lacking can be concluded from the following statements made by a group of Calaca-based non-governmental organisations and people's organisations:

> Fellow citizens, if we look back on the objectives of our struggle to defend Calaca from the destruction of our environment and way of life, we have already achieved many concrete gains due to our unity ...
>
> Above all, we have seen the value of united action. Had we not been united in our stand and had we not struggled, Phase II would probably have already been constructed and up to now, government would still not have done any attempt to respond to our situation.
>
> Our experience shows that it is through our united voices and arms that victory will be achieved.
>
> We are at present again being challenged. The NAPOCOR continues to press for the construction of Phase II despite our intense opposition...
>
> We must remember, fellow citizens, that our demands for an anti-pollution device (desulfuriser), rehabilitation, and alternative sources of livelihood have not yet been met. And above all, our position that *there will be no plant or Phase II will not be set up in our town continues to be disregarded by government.*
>
> We will achieve victory if the alliance that we have formed and the various initiatives against NPC Phase II will be united. This means that our unity and stand will become stronger if all the organisations here with us will unite as one and all our actions will be as one.
>
> Therefore we, coming from the representatives of the associations, non-government organisations, and individuals here in Calaca, call on all to be more active and strengthen the unity and struggle that we have already started. Let us form a broad citizens' movement against the setting up of NPC Phase II.[76]

Despite community opposition, however, government, through DENR, issued on April 24, 1992, the Environmental Compliance Certificate (ECC) for the Calaca II coal-fired thermal power plant.[77] The ECC is a prerequisite for the start of the construction of the power plant and indicates that government is satisfied that the project proponent, the NPC, has complied with EIA requirements under Presidential Decree nos. 1121 and 1586.

The construction and operation of the Calaca I and II power plants, despite the opposition from the local communities and the grave environmental damages that the emissions and waste products of these plants cause, provides a showcase example of how government prioritises socially and ecologically destructive development projects over ones that would serve to empower the local communities.

Mt Apo Power Project

Mount Apo National Park, covering a total of 72,936ha of mostly sloping to steep land in southcentral Mindanao, was constituted by virtue of Proclamation no. 59 (1936). In 1982, the park was included in the United Nations List of National Parks and Equivalent Reserves and in 1984, was declared as an ASEAN Heritage Site.[78] No one could have known then that within the year this consevation area would be overrun by the bulldozers of the Mt Apo Geothermal Power Project.

Arrival of the Strangers

In 1985, residents of Kidapawan, North Cotabato, a town lying on the southwestern slopes of Mt Apo, noticed the arrival of construction equipment in the area.[79] The Philippine National Oil Company (PNOC), a government-owned and controlled corporation, had identified a tract of 450ha within the park as the site for a 120-MW geothermal power plant[80] after having obtained an exploration permit in February 1985 from the Bureau of Energy Development.[81] In December 1986, PNOC requested clearance from DENR to undertake exploratory geothermal drilling and testing of three wells.[82] The Parks and Wildlife Bureau (PAWB) of DENR opposed the application of PNOC but another agency under DENR, the National Environmental Protection Council (now the Environmental Management Bureau) issued in 1987 in favour of PNOC an ECC but only for exploration, not for drilling.

Armed with the ECC, PNOC started conducting drilling operations within the Mt Apo National Park, despite requests from DENR to halt such activities.[83] PNOC also started the construction of an 8.5km pioneering road up the slopes of Mt Apo to a point near Lake Agko. The lake is one of the unique features of the mountain and is a sacred prayer site to the *lumad* (tribal) peoples of Mindanao.[84] There are approximately 480,000 *lumad* inhabitants in the area surrounding Mt Apo, from the Tagabanwa Bagobo, Ata, Manobo, Ubo, K'lagan, and Kaulo tribes.

Resistance on the Mount

By late 1988, community and *lumad* opposition to the power project had become organised. On October 27, 1988, they sent a petition to then-President Corazon C Aquino praying for the immediate stoppage and removal of the PNOC geothermal project in the vicinity of Mt Apo because it is a threat to the lives of the people living in the area; it caused economic instability and ecological imbalance ...[85]

The petition went on:

> VI
>
> That the indigenous people are further aggravated, alarmed and molested by the entry of the Philippine National Oil Company in the vicinity of Mt Apo in July 1987 for the construction of the geothermal project. That the PNOC entered in the ancestral domain of the Tribal People without prior and proper consultation with the indigenous inhabitants of the area. That a consultation/ dialogue has been made only with the barangay officials, most of whom are non-tribals, some influencial individuals and municipal officials.
>
> VII
>
> That the entrance of PNOC caused destruction to the ancestral lands, the desecration of their cultural heritage and sacred places of worship, the dislocation of several residents and destruction of wildlife, forest, rivers since the PNOC did not take any precautionary measures to protect the environment and natural resources from pollution. That the smoke from the geothermal wells had caused respiratory diseases to the people living near the project area most of them are children.

VIII

That the numerous cutting of trees and digging of deep wells in the mountain ranges is a threat to the flora and fauna of the mountain and to the ecological balance in the provinces of Cotabato, Davao del Sur and Davao District and probably to the whole Mindanao Island.[86]

In 1989, 21 *datus* or tribal chieftains representing the nine southern Mindanao *lumad* peoples that consider Mt Apo as their ancestral domain and hence sacred forged a *d'yandi* (sacred blood pact) to defend Mt Apo 'to the last drop of our blood in the coming years and even until the next generations.'[87] To quote the *datus*:

> • For us, the Lumad of Southern Mindanao, the land is our life; a loving gift of Magbavaya (the Creator) to our race. We will die to defend it, even to the last drop of our blood.
>
> • We, Lumad, believe that land is the beginning and the end of our life and our race. Magbavaya created land for our race to live on. No one can accept it except D'wata who guards our land for us. Our race owns the land as proven by our ancestors who from birth till death cultivated it. They who are now buried in this land of their birth. To us, it is a concrete proof of our ownership of the land in much the same way as we are now nourishing and living on it.
>
> We have analysed and felt that our race is suffering because of poverty for a very long time. The Lumad tribes find no more reason for celebrations, to be happy....
>
> Our race was utilised like game cocks teased to fight each other for the amusement of the rich and for those enriching themselves. They have forcibly milked our ancestral lands resources using new methods like machineries and fertilisers. This they did by showing us papers we could not understand.
>
> • Therefore, we Datus ... of the different tribes of southern Mindanao, aware of the distorted system of laws, bind ourselves and declare our unity. Through this Dayandi, we swear to fight and die for our sacred ancestral lands and our life are gifts from Magbavaya; to defend it to the last drop of our blood in the coming years and even until the next generations.
>
> • This Dayandi strongly vows to oppose and fight against the entry of the Philippine National Oil Company geothermal plant in Mt Apo, ... Whoever wishes to grab our lands, which we have nourished and inherited from our ancestors and from Magbavaya ever since mankind was created and which our race owns, will be punished with death.[88]

People's Voice Ignored

Despite the *lumad* and local community opposition, DENR issued in January 1992 the ECC for the project,[89] in effect allowing the PNOC to go ahead with its drilling operations. The issuance of the ECC was based on the environmental impact statement (EIS) submitted by the PNOC and the subsequent review conducted by DENR.

The recommendation of the review committee 'not to grant an ECC unless a scheme to ensure the sharing of benefits with the affected communities, especially the *lumads* and the upland dwellers, is firmly in place'[90] clearly shows the framework under which the review was conducted — that the opposition of the *lumad* and the local communities was based solely on the 'dismal experience of unfulfilled promises of development,'[91] that monetary benefits, roads, electricity, by past government development projects and programmes have conditioned the local communities to view the PNOC's promises with suspicion. As the committee put it: 'it is the conclusion of the body (EIARC and EMB) that the three-pronged objective of fulfilling basic needs, economic development within the bounds of socio-cultural aspirations and resource management can be met by the operation of Mt Apo geothermal project only if part of the benefits to be generated will be channelled directly to the affected communities in the area.'[92]

DENR completely ignored the fact that the basis of the opposition to the project was that the *lumad* considered it to be an encroachment on their ancestral domains, and worse, tantamount to a sacrilegious act by outsiders against the sacred home of their pantheon of gods. The *lumad* oppose the project not because they will not derive

any benefit from it but because they realise that it is a violation of their right to self-determination as distinct peoples.

Disregarding Arsenic

Furthermore, allegations were raised that the PNOC drillings caused arsenic levels in the area to rise,[93] and a Department of Health (DOH) report confirmed that arsenic could be found in the urine and hair of *lumad* persons living around Mt Apo.[94] The DOH later stated that there was 'no evidence directly or indirectly linking the geothermal drilling operations of the Philippine National Oil Company in Mt Apo to the reported arsenic contamination in the area'[95] in effect clearing the PNOC from any culpability or liability for the toxic contamination of the *lumad*.

Military Onslaught

To ensure the uninterrupted implementation of the project, the Armed Forces of the Philippines (AFP) sent in four battalions of the Philippine Army and police to the project site. It also organised a 500-strong armed paramilitary group, recruited from among the local inhabitants, as part of the Civilian Armed Forces Geographical Units (CAFGU) attached to the Philippine Army. Ostensibly, the strengthened military, paramilitary and police presence was due to the rebel New People's Army (NPA) guerrillas who had vowed to protect the mountain.[96]

Landmines planted by the NPA near the project site killed an Army soldier and a CAFGU paramilitary man and wounded two Army officers and another CAFGU member.[97] In late 1992, the military campaign against the NPA in the Mt Apo area was going on full blast, with the AFP employing jetfighters, helicopter gunships and heavy artillery to bombard and attack the NPA camps and facilities.[98] What has been the effect of this heavy military presence in the area on the *lumad* communities? One *lumad datu* has this to say:

Before, our livelihood seemed much better because we were farming. We planted vegetables and our income was good. But we left our lands because of the entry of people from PNOC ... when the guards of PNOC or the soldiers arrive, we had difficulty with our livelihood because we are given only limited access to our crops ... Our people complains and asks how we can maintain our crops now?... Our bananas, for example, have died because we were not able to maintain them because of the time limitations imposed on us for our farming.[99]

Nailing the Coffin

To add a further veneer of legality to DENR's decision to grant the ECC, then-President Aquino specifically segregated and excluded from the coverage of Proclamation No. 59 (1936) creating the Mt Apo National Park, a 701-ha portion corresponding to the project site of the PNOC, and expressly reserving the same 'as a geothermal reservation under the administration of the Philippine National Oil Company for the purpose of developing, exploiting and utilising geothermal energy.'[100] This proclamation in effect put the last nail to the coffin of the people's protest against the Mt Apo geothermal power project by providing the legal basis for excluding the project site from the coverage of the national park system.

Death with Development

Government's actions with respect to the Mt Apo geothermal power project indeed betrays an obvious lack of appreciation of and respect for the rights of the indigenous peoples and local

communities in the area to determine their own path to development and to participate effectively and meaningfully in the development process. As so eloquently put by the *lumad* leaders:

> The issue of Philippine National Oil Company Geothermal Project at Apu Sandawa is a question of capability for the people in government to respect and recognise our inherent right to ancestral domain. It is an issue of respect and understanding of our priceless legacy as distinct and uncolonised people of the Mother Earth.
>
> The issue is not whether we want development or not. We are questioning the kind of development that is forced on our people and environment. A kind of development which will eventually deprive our people to live. Such deprivation is not only meant to kill us physically. It is a destruction of our people's identity and priceless heritage. We want the people in government to understand that the primary reason for continuous destruction of our people and environment are their failures to recognise our right to ancestral domain. We want them to feel the magnitude of destruction they are inflicting on our people.
>
> Again we are saying these things though we know that no amount of pleading could change the mind of those people who are determined to destroy Apu Sandawa. We are saying it again though we understood that we could not be heard. We understand that this statement is already useless for those people in government who always think they have the absolute rights to decide for the destruction of the sacred places of our ancestors. *We want to make it clear as everything is becoming clearer that this government does not belong to us.*[101]

Law Backs Power

The fact that legal action provides little relief for communities besieged by government-sponsored 'development' projects is clearly exemplified by current legal rules relating to property expropriation. Thus, the enforcement of laws implementing the state's power of eminent domain[102] and the delegation of their implementation to, among others, public utilities, was facilitated by Presidential Decree no. 42, authorising the plaintiff in eminent domain proceedings to take possession of the property involved upon depositing the assessed value thereof for purposes of taxation.

The effect of this law with respect to the implementation by government, through NPC, PNOC, and other public utilities, of energy and power development projects has been to enable government to enter into and displace private property owners or possessors from the privately-held real property to be expropriated, even if there is community opposition to the power project.

Presidential Decree no. 42 was later supplemented by Presidential Decree nos. 605 and 1818. Both these together effectively barred resort to the courts for temporary relief through provisional remedies provided for by the Rules of Court by persons adversely affected by infrastructure and natural resource development projects of government and public utilities.

Truly, the fact that the various specific legislations governing different energy resources and government entities tasked to develop such resources do not provide for mandatory consultations, coupled with the decrees, has meant that under the current state of energy legislation, persons adversely affected by state infrastructure and natural resource development activities relating to energy resource development have virtually no means to participate in the conceptualisation, planning or approval of such projects or to stop such projects once started. This state of affairs continue to apply at present. Calaca and Mount Apo are only two prime examples of this fact.

Paramount State

Hence where considerations of 'national development' in relation to energy resources collide with considerations for community participation in defining such 'development,' the Regalian doctrine has enabled the state to effectively curtail such community participation. This, notwithstanding the fact that the same Constitution which recognises the Regalian doctrine and its application to energy resources also

requires that communities, or the people, be fully integrated into all levels of economic, social and political decision-making of the state. This includes, to be sure, state decision-making, whether at the project, policy or programme levels, regarding the development and use of the nation's energy resources for 'national development.'

The consultations envisioned by the Constitution were not conducted or employed by the NPC with respect to the Calaca power plants nor by the PNOC with respect to the Mt Apo Geothermal Project. The community was not integrated into the planning process and neither was consent freely obtained nor given. The circumstances of the Calaca and Mt Apo power projects show clearly that state ownership of energy resources, unqualified and untrammelled, can wreak tremendous damage to the ability of communities to fully and effectively exercise their right to direct the path of development for their community and their individual lives. The resolution of the conflict between the Regalian Doctrine and community rights remain loaded in favour of the state rather than the community.

Indeed, this conclusion is supported by the insights gained from another case of community opposition versus a government-initiated power project, i.e. the Masinloc coal-fired thermal power project, as follows:

> • While there exists a constitutional policy on environmental protection and ample legislation on resource utilisation that may be invoked in this case, the dispute resolution process is largely influenced by the perspective of those who prevail in the current balance of power and authority.
>
> • Thus, it is difficult for a government, having a distinct perspective of 'development,' to prioritise simple community interests over the economic benefits promised by a huge generation project.
>
> • It may also be the reason why the courts are not yet prepared to integrate environmental and community standards into its decisions. By opting to rely on rigid and well-established rules, courts have remained elusive to specific concerns regarding the project and treated such issues as separate matters that should instead be addressed to administrative and local government bodies.
>
> • The value of prior informed consent and genuine public consultations with the affected communities has yet to become part of the practice and policy of government and funding institutions.[103]

Aping Development Paradigm[104]

We must note, however, that the ability of the state to fully exploit the Regalian doctrine in effectively halting community efforts to share in energy resource development decision-making rests in large part on the energy resource development paradigm which the state currently employs.

> Philippine government's energy development programme remains largely biased towards merely ensuring the timely availability of energy supplies to markets by generating power from the construction of new power plants. It has not seriously looked into investments in efficiency and demand-side management and focuses only on the supply side.
>
> In 1990 for instance, NAPOCOR's responses to meet power demands revolved around generation and transmission of power from gas turbine projects; systems upgrading and inviting private sector participation in the construction of bunker oil- and coal-fired plants. Its installed capacity of 6037 MW remain heavily dependent on imported oil (43%) ...
>
> The whole energy development programme mirrors the economic development programme being undertaken by the present government. The 1995-2005 Power Development Plan which is largely based on mega-sized fossil-fuel energy projects is to fuel the industrialisation targets of the country's economic planners. Everything is then embodied under the MTPDP, more popularly known as 'Philippines 2000' which seeks to make the country achieve global competitiveness in the next few years.[105]

Indeed a pro-commercial private-sector-led investment and development determines the power and energy sector paradigms in the Philippines.

Marbon, Marcopper and Colombio Experiences

Sacrificing Sovereignty for Profit

Philippine experience in the forestry and minerals sector has been the same as in other sectors of the economy. Forestry resources have been the subject of intensive commercial development and exploitation, from logging to industrial forest plantations.

Law of the Jungle

Philippine forests and forest products are legally deemed to be the property of the state under the Regalian Doctrine.[106] This is the premise behind the provision in Presidential Decree no. 705, otherwise known as the Revised Forestry Code of the Philippines, stating that:

> No person may utilise, exploit, occupy, possess or conduct any activity within any forest and grazing land, or establish, install, add and operate any wood or forest products processing plant, unless he has been authorised to do so under a license agreement, license, lease or permit.[107]

This legal fiction that forest resources belong to the state has, therefore, allowed government to control the exploitation thereof, with such exploitation being in line with the economic development framework being pursued. This is clearly exemplified by the fact that the DENR, for 1995-97, has as two of its four major priority programmes the Industrial Forest Management Programme and the Mining and Quarrying Support Programmes. According to the former head of DENR in 1995, '(t)hese programmes promote the rehabilitation of degraded areas and the conservation of remaining resources *at the same time creating a conducive atmosphere for private investment in mining and forestry necessary for the attainment of Philippines 2000.*' (emphasis ours)[108]

Plantations for Profit

The concept of industrial tree plantations as a component in the management of Philippine forest resources is not an old one in the country. The Revised Forestry Code itself allows any person to enter into a 50-year lease agreement with government (through the DENR) for the establishment of an industrial tree plantation, tree farm or agro-forestry farm.[109]

However, it was only with the impetus provided by foreign funding assistance that the industrial tree plantation programme of the DENR took off during the 90s.[110] After a series of grants to determine the feasibility of industrial tree plantations, the ADB extended a $25m loan[111] to Philippine government to be used to help private sector investors finance the establishment of such plantations under the ADB's Industrial Forest Plantations Project.

> The project aims to institute change in the policy environment in which economic and financial incentives reinforce rather than contradict one another in bringing about sustainable management of natural resources assets and to develop approximately 120,000ha of Industrial Forest Plantations (IFP) in environmentally degraded lands by the private sector either through Timber Licensing Agreement (TLA) holders and other IFP investors.[112]

> The IFP Sector loan of $25m will provide credit through the Land Bank of the Philippines for the private sector to establish tree plantations, including rubber and bamboo. Two related technical assistance grants totalling $1.22m were provided to strengthen the DENR's technical and administrative capacity for identifying and monitoring IFP projects and to formulate a programme for improving the quality of tree species.[113]

Along with this loan, as mentioned above, were two Technical Assistance (TA) grants[114] intended to help the DENR establish the necessary regulatory and administrative mechanisms for the support of industrial tree plantation investments.

The establishment of industrial tree plantations have been regulated through a series of executive department issuances such as Executive Orders no. 725 (1981) and no. 278 (1987); DENR Administrative Order (DAO) no. 1 (1989); and in the latest set of regulations, DAO no. 42 (1993), DAO no. 60 (1993), DAO no. 68 (1993), and DENR Memorandum Order no. 15 (1994). It should be noted, however, that there are current moves to again change these regulations.

The aggressive implementation by the DENR of its industrial tree plantation programme can be implied from the sudden spate of regulations relating to the programme that were issued since the approval of the ADB loan and technical assistance grants in 1991. In this sense, it can even be implied that the ADB's support was instrumental in making the DENR's plantation project a reality.[115]

In fact, between 1975, when the Revised Forestry Code was enacted, and 1991, when the ADB loan and technical assistance grants were provided, a total of 367,522.25ha of forest lands were leased out by the DENR for industrial tree plantations. But between 1992-96, 162,180.75 ha, or an average of 46,337.36ha per year, have already been subjected to the DENR's Industrial Forest Management Agreement (IFMA), as compared to an average of 33,411.11ha per year between 1975-91. This means that foreign funding assistance, as well as the streamlining of DENR procedures relating to industrial tree plantations, have had a positive impact on the economic attractiveness of industrial tree plantations for private sector investors.

That industrial tree plantations form an integral part of the Philippines' industrialisation programme with respect to natural resources is further seen in Philippine government's 1996 IPP.[116] This plan contains the 'list of specific economic activities wherein investments are to be encouraged' and 'reflects support to the MTPDP for 1993-98.'[117]

Thus, the 1996 IPP considers the 'commercial production of quality/certified seeds and/or seedlings (e.g. for reforestation and *forest plantation development* especially indigenous, dipterocarp and first class wood species) (*italics* ours)'[118] as one of the 'catalytic industries' in which domestic and foreign investments are to be encouraged because they 'show potentials of developing into export-oriented industries as they already indicate a comparative advantage.'[119] Furthermore, the establishment of 'forest tree plantations for commercial/industrial purposes utilising timber and/or non-timber forest species'[120] is considered a priority investment support activity as an 'environmental support facility' on the premise that 'the development of such activities will help push the growth of our industries to the levels of their counterparts in the international market.'[121] Therefore, investments in plantations, whether by Filipino or foreign investors, would result in the granting of a wide range of investments incentives and privileges such as tax and customs duty exemptions, income tax holidays, tax credits, additional deductions, and non-fiscal incentives.[122]

Wreaking Havoc on Nature

With respect to the forest environment, the use, for the most part, of non-endemic or endogenous tree species in industrial tree plantations on a monoculture basis have negative implications on the biological diversity of the area as well as on the cultural practices of indigenous peoples therein.

Tropical forests, like those in the Philippines, are among the most biologically-rich ecological habitats in the world — with flora and fauna species running up into the thousands for every hectare of land. However, the very richness of life in tropical forests depends on the continued existence of an interdependent web of competing and cooperating relationships between and among species. The disappearance of the trees, for example, spells death to the survival of the other species, animal and plant alike, that depend on the trees and their fruits, or seeds, for food, shelter, and security. The nutrient-richness of tropical forest soil depends on the continued decomposition of leaves, animal excreta and other dead matter that litter the forest grounds. Industrial tree plantations, by their very design, cannot even approximate, let alone replicate, the original biodiversity of the forests that they seek to replace.

Nature designed forests as an experiment in unpredictability, of long-term trends, full of biological diversity, whose denizens and processes are interdependent and interrelated, in which all the elements are value-neutral, that is a flexible and timeless continuum of successive species covering an undefined landscape, whose lifespan is counted in centuries or millennia, and which is self-sustaining and self-repairing. Industrial tree plantation, on the other hand, seeks to create a forest that is regulated, based on short-term absolutes, that is based on isolated products seen as commodities, devoid of biological diversity, in which some elements are good and some are bad (such as pests), rigid and time-constrained monoculture covering specific hectares, whose lifespan is measured in decades, and whose very survival depends on external factors such as human intervention through fertilisers, herbicides and pesticides.[123]

Furthermore, the introduction of non-endogenous species alone into an area where it has no natural enemies has been well-documented as giving rise to disastrous consequences. That the industrial tree plantation programme of the Philippines does not give any thought to the biological impact of the introduction of non-endogenous tree species into the country is clearly seen in the fact that of the 16 tree species identified as potential plantation species under the ADB's industrial tree plantation loan to Philippine government, 11 are not native to the Philippines.[124]

On the basis of the introduction of non-native tree species into a different ecological biome alone, which does not have any native defense against the imported species, and the fact that they do not foster any form of sustainable biological diversity on the scale of the original forest, industrial tree plantations can be termed as environmentally-destructive.

Destruction of Indigenous Cultures

Grassroots community experience with industrial tree plantations also give us great cause for alarm. As early as 1983, government's industrial tree plantation programme was already under fire from communities and support groups, thus:

> It was seen that lands targeted for development as ITPs are mostly heavily settled already, and that the implementation of the ITP programme has already and will continue to result in intense competition between settler-farmers and these corporations for access to and use of the land.... Because the implementation of the Industrial Tree Plantation programme can only be done at the high social cost of the displacement of thousands of rural families, and since the programme represents the continued corporate exploitation of Philippine forest resources geared to satisfying the needs of the world market, it was seen that the price of this export-oriented economic development strategy would be borne by the upland farmers who now occupy these lands to be taken over for ITPs.[125]

A more recent example of the impact of industrial tree plantations on indigenous peoples communities, such as the Manobos of northeastern Mindanao, is provided by the following excerpt:[126]

(T)o concretise the impact of plantation companies, a second indicative case study is offered. This time, the focus is on the Manobo community of brgy Marbon, Municipality of Talacogon, Agusan del Sur. Their ancestral domain or territory has mostly been covered by the Provident Tree Farms Inc. into a plantation area, leaving only small parcels of forest and farmland to the Manobos.

With most of the area converted to tree plantations, there is literally no room for traditional Manobo agriculture.

In the past, there were many instances of conflict resulting from the company's prohibition against any agricultural activity in the area. Generally, no clearings are allowed in plantation areas. Even if the company allowed the Manobos to plant in between the trees, this is bound to fail because the trees would overshadow the crops, denying the crops of necessary sunlight.

With such restrictions on landuse, the traditional *yubas* or fallow cycles could not be followed, with negative consequences upon soil fertility and crop production.

Moreover, the Manobos discovered that even if they cleared a plantation stand for *kaingin*, the soil was so depleted of nutrients that the resulting crop yield was poor.

Datu Macompas, the oldest datu in Marbon, said: 'At least with logging, the companies stole only our trees; with the tree plantations, they steal not only the trees, but the land as well. How are we to survive?'

The severe impact of plantations is highlighted when one discusses hunting in Marbon. There is none. The reason is that, with the loss of 'degraded residual forest', the wild pigs and monkeys no longer have a source of food, and have either died off or moved away. One datu asked, 'There are no more trees, where do you put the *apuyu* (small monkey)?' while the species planted by the company do bear fruit, these are non-edible, even for animals. The fruits of some of these plantation species, in fact, are outrightly poisonous. One elder commented: 'If the monkeys could only, they would have mounted a demonstration against the company.'

Not even rivers or creeks are spared. Already damaged by past logging operations, many of these have been further reduced by bulldozing to flatten the area and facilitate plantation operations. Fishing has become a memory.

In much the same way, many of the elders still recall the many herbal medicines they used to secure from the vanished forest. However, very few of these medicinal trees or plants have survived the process of conversion into plantations.

Beyond the impact on the livelihood and health of the community is that on the culture of the people. What reason is there to pray to *Tephag* and *Ibabasok* when there is no clearing to make, or crop to harvest? What reason is there to pray to the *Tagabalete* and the *Tebobong*, when there are no wild pigs to catch? One elder says, 'It is only now that we can hear a person say dog meat is good; in the past, if you even wound a dog, you could be killed by its owner.' Now, dogs have no more value, and if someone manages to catch one of the few remaining pigs, the pork goes straight to the market to be sold for cash; where once the meat would have been divided up among the community, a practice called *handog*.

The entire framework of traditional religious beliefs and social values have been undermined by the loss of the community's forest and river resources.

Today there are two or three generations of Manobos in Marbon who know how to set traps, but have nothing to trap; can name the names of plants and trees of medicinal value, which may just as well be mythical, for they no longer exist in the area; and who know the spirits of their land, but have no reason to commune with them. They are a forest people, a forest culture without a forest.

'*Wala na tanan*: says Datu Makahusay, 'Everything is gone.'

Camouflaging Commercial Forestry

This continuing support of Philippine government for industrial tree plantation investments is inconsistent with recent policy pronouncements from both DENR and the Office of the President, such as Executive Order no. 263 (1996) stating that community-based resource management (CBRM) will henceforth be the planning and implementation framework for natural resource

management in the country, that herald an ostensible shift in framework from one that is primarily commercial to one that prioritises communities.

In the DENR's Master Plan for Forestry Development (MPFD) formulated in 1990, it targeted the establishment of 315,000ha of industrial forest plantations by the year 2000 with the provision of the corresponding support operations by the DENR through its budget. As of January 24, 1996, 529,703ha of industrial forest plantations have already been established nationwide. This means that the DENR has already achieved and in fact so greatly surpassed its targets that it can now afford to rest on its laurels and scale down its support for the establishment of industrial tree plantations. Since commercial interests through the industrial forest plantations are now already well entrenched and self-perpetuating in the forestry sector, DENR no longer needs to provide the services that would encourage the private sector to invest in commercial forestry.

DENR's community-oriented programmes, such as the Community Forestry Programme (CFP), the Integrated Social Forestry Programme (ISFP) and the Ancestral Domain Delineation programme, present a far different story. While the MPFD targets to have a total of 1.5mha of residual/secondary forests to be subjected to community management by the year 2000, as of April 29, 1996 however, only 142,297.87ha have been covered by the CFP; 34,131.07ha for the DENR-implemented ISFP; and 796,379.07ha of ancestral lands and domains delineated.

Furthermore, commercial interests in the natural resources sector continue to hold sway as 1,442,178ha are still subject to logging concessions; and 200,000ha have been subjected to mining FTAAs (Financial Technical Assistance Agreement) under RA no. 7942 (another 5,615,654ha are currently being applied for FTAAs by foreign mining companies).

Bargaining Away the People's Resources

Like industrial tree plantations, mining and quarrying activities are also priority investment areas under the 1996 IPP as a mandatory inclusion therein by virtue of RA no. 7942, the Philippine Mining Act of 1995.[127] This means, therefore, that foreign as well as domestic mining companies wishing to obtain FTAAs and mining permits under RA 7942 will be provided with incentives similar to those accorded to investors in industrial tree plantations (except for income tax holidays). Although it can be contended that this law, insofar as it has the effect of giving virtual ownership rights to the holders of FTAAs, violates the 1987 Philippine Constitution and hence is invalid,[128] for as long as the Philippine Supreme Court has not categorically ruled that such law is invalid, it is binding.

Again like industrial tree plantations, encouragement of large-scale mining activities by Philippine government has long historical antecedents.[129] The current administration, as stated above, considers the mining sector to be a priority investments area in line with the MTPDP.[130]

Swallowing the Earth: Corporate Mining in the Cordilleras

Even before RA no. 7942, the ecological and social impact of large-scale mining operations have already been recognised.[131] Thus, for example, Benguet Corporation's open-pit mining operations in Ucab, Itogon, Benguet province in Northern Luzon have been documented to have caused massive ecological destruction as well as social disruption. To quote:

> Starting in 1983, BC (Benguet Corporation) began shifting from the usual large-scale tunnel operations to open-pit or strip mining. This mining technique literally entails the scraping or stripping away of the mountainsides, for processing for its gold content. In order to provide some idea of the vast scale of these works, it should be noted that, to

break even, 2g of gold — the equivalent of 4 medicinal tablets — per one tonne or 1016.05 kg of earth and rock must be extracted and processed.

This has directly resulted in massive changes in the topography, disturbance of the water regimes in the area, and the loss of valuable topsoil. This last is both alarming and illegal, as all mining operators are required to 'stockpile or strip aside and save surface soil to be used for resoiling...,' a measure which BC has consistently failed to do in any of its strip-mining operations.

Aside from the direct impact of these operations in such areas as barangays Loakan..., Ampukaw and Ucab, these large-scale operations have necessitated certain 'adjustments' of some features of the surrounding physical environment which were inconvenient for the corporation.

Thus, the Antamok river, such as it is after receiving the effluents or waste waters from BC's Balatok gold mill upstream, was diverted from its original bed and into a huge diversion tunnel running through a mountain. In the Dalicno area, the Ambalanga river was also diverted into 3 or 4 relatively smaller tunnels, only 1 of which is currently functional; a matter of serious concern for riverside settlements during heavy rains. Farm areas and at least one water source have either been literally eaten up by the mining operations, or have been converted into dump sites for mine tailings (i.e. sludge materials from which gold has been extracted through the use of cyanide) or rubble. According to local residents, water levels are pumped up above normal levels or released to flow downstream at the company's will.

It is thus not surprising that the BC's operations have resulted in critical adverse effects upon the local environment: soil loss and degradation; vegetation loss; erosion, siltation, and flooding; contamination from mine tailings; and disturbance of the natural water tables. Unfortunately, these adverse effects are not limited to the area but have, conceptually and literally, other downstream effects: sedimentation of downstream riverine areas, pollution and other adverse impacts on riverine and coastal fishery, agriculture and soil resources. (*Footnotes at source omitted*)[132]

Killing Us Softly: Marinduque and Marcopper

One of the greatest environmental tragedies to hit the Philippines in recent years is the death of the Boac river system in the island province of Marinduque in the central Philippines in March 1996. The death was caused by the massive outflow of mine tailings from the Marcopper Mining Corporation's open-pit copper mining operations. Marcopper is 40% owned by Placer Dome of Canada.

Marcopper started[133] its open-pit copper mining operations at the Mt. Tapian, Marinduque site in October 1969. The intertidal areas of the bay were still described in mid-75 as being 'quite typical' of such areas. In October 1975, the now-defunct National Pollution Control Commission (predecessor of the Environmental Management Bureau of DENR) allowed Marcopper to construct and operate a mine tailings disposal system to discharge such tailings by pipeline into a submarine valley 300 metre off-shore and 75 metre deep in Calancan Bay.

By 1978, there were reports that 'changes in the quality and quantity of the flora and fauna of the bay was already apparent' as a result of such discharge of tailings. In October 1981, the NPCC imposed conditions on the operations of Marcopper and limited the quantity that it could discharge into the bay. In January 1982, President Marcos, on the request of Marcopper president Garth Jones, lifted the limitations and conditions imposed by NPCC. It was only on September 1986 that NPCC ordered Marcopper to cease dumping its mine tailings into Calancan Bay.

In November 1986, NPCC lifted the order on condition that Marcopper would discharge its mine tailings into the San Antonio mine tailings pond. Marcopper continued discharging into Calancan Bay such that by April 1988, DENR (which had by then absorbed the functions of NPCC) ordered Marcopper to cease such discharges into the bay and denied the renewal of its Permit to Operate. In May 1988, President Aquino reversed the order of DENR and in effect allowed Marcopper to continue discharging mines tailings into the bay. In December 1988, the regional director of DENR recommended that Marcopper's San Antonio mill pond be dredged and

the dredged tailings to be discharged into Calancan Bay for Marcopper to be allowed to operate its closed Tapian open-pit mine and open the San Antonio ore body.

Marcopper accordingly undertook the conduct of an EIA and applied for an ECC in 1989. The ECC was duly issued on April 6, 1990 by the DENR.[134] Among the conditions of the ECC was that mine tailings were to be dumped solely into the Tapian pit until other methods of disposal were approved by DENR.[135]

On August 25, 1995, a monitoring team reported that seepage was occurring from a plugged drainage tunnel connecting the Tapian mine tailings pit with the Boac river. The Tapian pit is being used to contain all the mine tailings produced by Marcopper in its mining operations of the San Antonio ore body. The volume of mine tailings stored at the Tapian pit was estimated at 20m m^3, with total capacity for 69m m^3. Marcopper's technical consultants recommended the drilling of an intersecting tunnel that will allow the insertion of an additional concrete plug into the drainage tunnel. The drill hole and additional plugging operations were finished in early March 1996.[136]

At around noon of March 24, despite the additional plug, the drainage tunnel started leaking and mine tailings started flowing into the Makulapnit river (a major tributary of the Boac) at the rate of 5-10m^3/second. The incident was due to the failure of the concrete plugs placed in the drainage tunnel.[137]

Silt clogged up the river system and started discharging heavily into Calancan Bay. According to DENR, the mine tailings discharged into the river was 70% solid and 30% liquid, 'composed primarily of ground rock mixed with water.'[138] Three days after the start of the discharge, the upstream reaches of the Boac and Makulapnit rivers were clogged up with silt, as the 'thickness of the tailings deposited is about 2 to 3 metre over a stretch of approximately 3km.'[139] The discharge stopped, for reasons unknown, at around 3.20 pm on March 28.[140] Recurrences of the leakage occurred over the next two days at the rate of 2m^3/second.[141] As a result of the tunnel's failure, it was estimated that 2.4mt of mine tailings had leaked into the Makulapnit and Boac rivers by the time the leakage stopped.[142]

According to newspaper reports, more than 4400 people were trapped in the remote villages of Marinduque province as the leakage caused the Boac river 'to overflow and threaten to swamp 20 villages alongside the river or near it.'[143] Health authorities advised residents of the area not to bathe in, draw water from, or eat fish caught in the Boac river, warning that the river may have been contaminated with toxic materials from the mine tailings.[144] Fishery officials estimated that the contaminated floodwater coming from the Boac river

> could have destroyed P1.8m ($69,230) worth of mature freshwater and marine life and P5m ($192,310) of bangus fry, a major source of livelihood along Marinduque's coastline. Other marine life killed by the mine waste included sardines, scud, tuna-like fish, seashells and corals.[145]

DENR, on March 27, suspended Marcopper's permit to operate and imposed a fine of P5000 per day (approximately $192).[146] DENR also created on March 30 a Board of Inquiry to investigate the criminal and civil liability of Marcopper and other culpable persons as a result of the leakage.[147]

Meanwhile, a DENR-MGB investigating team concluded that the measures undertaken by Marcopper to seal off the drainage tunnel prior to the leakage incident were inadequate.[148] However, a DENR laboratory analysis of Boac river and Calancan Bay water samples as well as samples of the discharged mine tailings resulted in findings that, in effect, state that while the tailings discharge resulted in exceedances of the water quality criteria for the Boac river, there is no clear indication as to whether the materials discharged were *per se* toxic or hazardous to human life, though the large quantity of solid particulates in the waters of the Boac river could 'suffocate or bury aquatic species such as fish or prawn.'[149]

On the other hand, the Board of Inquiry found Marcopper directly liable for the following violations:

> • (t)here was no full information disclosure by the company in the EIS on the existence of the Tapian drainage tunnel and its potential environmental hazards....
>
> •... the engineering intervention to seal the drainage tunnel consisted of caving of the portal inlet and a 3-metre thick concrete plug located at approximately 92 metre from the portal outlet.... the Board finds these measures inadequate leading to the release of tailings into the Makulapnit and Boac rivers.
>
> •... the seepage in August 1995 should have alerted the company to take more exhaustive and stronger measures to ensure that there is no discharge of mine tailings into the Makulapnit and Boac rivers considering the risks involved.
>
> • ... condition no. 9 of the ECC has been violated by the company, ... (which) provides: 'That Marcopper Mining Corporation shall ensure the containment of run-off and silt materials from reaching the Mogpog and Boac rivers ...'[150]

As a result of its findings, the Board of Inquiry recommended the filing of criminal and civil charges against the officers of Marcopper for violations of the provisions of Presidential Decree no. 984 (Pollution Control Law), Presidential Decree no. 1067 (Water Code), RA no. 7942 (Mining Act of 1995), and the Revised Penal Code. Appropriate complaints were filed with Department of Justice against the Marcopper officers. If convicted, they face a total of 18 years imprisonment and multi-million peso fines. DENR officials were also charged by the Ombudsman for gross negligence in monitoring the operations of Marcopper and in responding to the leakage.

Because of the mine tailings leakage and the consequent heavy silting of the Boac river, the Boac river system has lost most of its fish. According to DENR Secretary Victor O Ramos, it could take more than 10 years to restore the Boac river to its pre-leakage natural stage, suitable for fishing and contact water sports, confirming that 'for now, the river is definitely dead.'[151] DENR Undersecretary Delfin Ganapin concurred, saying that the rivers of Boac and Makulapnit were now dead.[152] Furthermore, even without the leakage, the operations of Marcopper have already resulted in the death of Calancan Bay:

> According to estimates, some 145mt of mine tailings,... have been released into Calancan since 1975 and now cover almost 50 sq. km of the sea floor.
>
> What used to be rich fishing ground is now nearly barren of marine life. Corals and sea grasses, the homes and nesting places of fish, have been choked by sediment. Near the mine waste's discharge pipes, the once-clear waters has become murky and turbid.
>
> The bay itself has been divided into two by a 5-km-long causeway formed by the accumulated tailings. It is estimated that nearly a fourth of the bay area has been reclaimed (through the discharge of mine tailings).[153]

Marcopper is now being required by DENR to fast track its river and bay rehabilitation and dredging operations even as its mining operations are still closed.[154]

What the Marcopper incident shows is the fact that environmental disaster in the Philippine context is not solely the province of irresponsible or profit-hungry private sector capitalists and industrialists. Government is as much to blame for the Marcopper disaster as its corporate owners.

Lax monitoring on the part of DENR enabled Marcopper to get away with cutting corners in its environmental protection requirements under its ECC. Actuations of government officials from the President down to the regional and provincial officers since 1969 show a callous disregard for the impact of mine tailings discharges on the environment of the Boac river system and Calancan Bay.

The fact that government sees increased investments into the mining industry as being an integral part of its national economic development plan means that conditions for the entry and

operation of mining firms will be made easier. The passage of RA no. 7942 in 1995 is proof enough of this. In this light, it is logical to conclude that, statements of government to the contrary notwithstanding, the corporate interests of mining firms will continue to prevail over community rights and interests to a healthy and sustainable ecology and political and economic equity.

Destroying Communities: Colombio and Other Mines

Less than a year into the implementation of RA no. 7942, controversy has already erupted over the impact on communities of the activities of foreign mining companies who have been granted FTAAs under the said law.[155]

One of these companies is the Australian-registered Western Mining Corporation Holdings Ltd (WMC) and its Philippine subsidiary, Western Mining (Philippines), Inc. (WMI). The FTAA in favour of WMC was signed on March 22, 1995, thereby enabling the WMC to undertake the 'exploration, development and commercial exploitation of mineral deposits in South Cotabato, Sultan Kudarat, Davao del Sur, and North Cotabato involving an area of 99,387ha.'[156] Although the FTAA stipulates that WMC, by virtue of the FTAA alone, 'shall not acquire any title to lands encompassed within the Contract area,'[157] it should be noted that it is virtually impossible to conduct any mining activities without also having effective control over the land surface. This means, therefore, that communities living within the FTAA area will be either physically or economically disrupted from their normal patterns of living.

The FTAA happens to cover the ancestral domains of approximately 17,000 B'laans — an indigenous people native to southwestern Mindanao — from 14 barangays in the municipality of Colombio, Sultan Kudarat. These B'laans are scheduled to be displaced as WMC proceeds with its exploration and mining activities within their ancestral domains. What has been the effect of these activities on the B'laans? In only the latest of a long string of ugly incidents of collusion between WMC and government authorities — amidst intense opposition from the B'laans — designed to drive the B'laans out of their ancestral domains, military operations were conducted in the area in late July 1996.

The following excerpt from a media advisory distributed by the Legal Rights and Natural Resources Center (LRC-KSK) gives a graphic description of this event:

> • **July 29, 1996/Colombio, Sultan Kudarat**: 20 B'laan families are now crowding in a classroom at the Public Colombio High School in Sultan Kudarat, as they flee from the ongoing military operation in Sitio Tacol and Bukay Eli in brgy Sinapulan, Colombio. This came at the heels of the mass action in the area taken by some groups opposing the Western Mining Corporation (WMC) exploration operations in Colombio last July 24.
>
> The B'laan families fled their homes in fear as gunfiring started in the area. Elders of the communities, with children and even infants, were the first to have arrived in the school. The other men were left behind to facilitate the evacuation of other families, and to fight back when engaged. Meanwhile, the municipality of Colombio has expressed willingness to conduct a dialogue with the evacuees as one of its councillors was caught in a crossfire in the recent encounter.
>
> Jovita Inop, who evacuated with her husband and 7 children, narrated that during the mobilisation, statements were distributed and streamers were displayed, clearly expressing strong opposition against WMC. They also condemn Colombio Mayor Clemente Bermudez for conspiring with WMC in driving them away from their ancestral domain.
>
> • A group of men from the CAFGU was seen in the area two days after the mass action. Manang Jovita said that this caused tension among them and prompted them to pack their things in preparation for evacuation.... At 6 am, fight broke out between the CAFGU and the B'laans. At noon, two dumptrucks loaded with military men arrived in the area. Gunshots were then later heard.

> Manong Tomas Awing asks both with frustration as well as fear, 'We left our homes because the military came. Why is this their response to our problem, when all we want is for the landgrabbers to leave our land.'[158]

What the above incident drives home is the fact that large-scale mining operations, as abetted and encouraged by Philippine government pursuant to its laws and economic development plan, also have large-scale negative effects on not only the environment but also the human rights and cultural integrity of grassroots communities.

Selling Off Resource Rights

The very manner in which government is pursuing its economic development plan with respect to natural resources may well-nigh be deemed unconstitutional. On the one hand, the Constitution as interpreted by the Philippine Supreme Court clearly and expressly states that:

> *One of the fundamental principles underlying the provision of Article XIII of the Constitution* (now Article XII of the 1987 Philippine Constitution) *and which was embodied in the report of the Committee on Nationalisation and Preservation of Lands and other Natural Resources of the Constitutional Convention, is 'that lands, minerals, forests, and other natural resources constitute the exclusive heritage of the Filipino nation. They should, therefore, be preserved for those under the sovereign authority of that nation and for their posterity.'*... Delegate Ledesma, Chairman of the Committee on Agricultural Development of the Constitutional Convention,... said: *'The exclusion of aliens from the privilege of acquiring public agricultural lands and of owning real estate is a necessary part of the Public Land Laws of the Philippines for the Filipinos.'*... And, of the same tenor was the speech of Delegate Montilla who said: *'With the complete nationalisation of our lands and natural resources it is to be understood that our God-given birthright should be one hundred per cent in Filipino hands*... Lands and natural resources are immovables and as such can be compared to the vital organs of a person's body, the lack of possession of which may cause instant death or the shortening of life.... If we do not completely nationalise these two of our most important belongings, I am afraid that the time will come when we shall be sorry for the time we were born. Our independence will be just a mockery, for what kind of independence are we going to have if a part of our country is not in our hands but in those of foreigners?'... Professor Aruego says that since the opening days of the Constitutional Convention one of its fixed and dominating objectives was the conservation and nationalisation of the natural resources of the country. (italics ours)[159]

On the other hand, we have Philippine government, through legislation and executive action, bargaining away the Filipino people's national patrimony and their right to enjoy the natural resources of the country for their and their progenys' benefit, to foreigners and the domestic elite.

At present a total of 2,172,881ha of lands and natural resources of the public domain are directly being utilised for commercial, profit-oriented purposes while only 972,808.01ha have thus far been designated by DENR for community-oriented natural resource management programmes.

Thus, of the 30mha of land in the country, a total of 2,181,881ha of land and natural resources therein have been leased out by government to private sector investors for the latter to exploit and profit from. Another 5,615,654ha are the subject of FTAA application by mostly foreign mining companies (Australian-30; Canadian-22; US-10; Filipino or joint ventures-8) pursuant to the Mining Act of 1995. Contrast this with the less than 1mha that have been subjected to community-oriented programmes!

One stunning conclusion that can be gleaned from the figures is that — come the time when the pending FTAA applications will have been approved by DENR — 25.96% of the entire Philippine land area will be primarily devoted to commercial natural resource exploitation activities. Fully one-fourth of the land surface of the country will be in the control of commercial, profit-seeking corporations and entities which, under current laws, will be given virtual ownership rights over the land to which their natural resource extraction agreements with government pertains. On the other

hand, barely one-thirtieth of the country's land surface has been specifically designated for community-based resource management programmes.[160] This is a clear case of sacrificing the Filipino people's national patrimony to the altar of profits and commercialisation at the hands of aliens.

The Bolinao Experience: Industry Before Environment

The primary objective of the Philippines' 1993-98 MTPDP is to 'transform the country into a newly industrialising economy.'[161] One of the plan's major thrusts, therefore, is to ensure that industrial activity in the country increase as a share of GDP.[162] To do this, investments in industrial endeavours are strongly encouraged in the annual Investment Priorities Plans of government as well as through legislation.

Under the 1996 IPP, industries manufacturing jewellery, medicines, shipbuilding and repair, processed foods, and cement, among others, are identified as 'catalytic industries' or 'industries that show potentials for developing into export-oriented industries as they already indicate a comparative advantage.'[163] Furthermore, the 1996 IPP also prioritises industries under industrial adjustment as a result of tariff restructuring — in line with GATT 1994 commitments — such as textiles, organic chemicals, leather tanning and finishing, sugarcane plantations and refining, packaging products, machinery and equipment parts and components, and coconut plantations and refining.[164] Industrial support services are also priority investment areas under the 1996 IPP.[165]

Modern industrial processing techniques and technologies consume and process natural resources at a greater rate than at any other time in human history. In the process, greater environmental damage has occurred. As one study stresses:

> (A)s the amount of matter and gases redistributed by human activities grows, it could overpower the (Earth) system's ability to correct itself at least before devastating effects on ecosystems and human health occur.
>
> Two facts, underlie this growing concern about environmental toxification. First, as currently structured, the industrial system that supplies our energy and material needs is enormously productive. Second, it is also enormously wasteful. Much of the toxification affecting human and ecosystem health has been caused by the practices that allowed industrialised countries to raise their material standards of living. As the developing world follows suit, new technologies will come into play, but old technologies that release vast quantities of toxic materials into the environment will still figure in the picture.[166]

Environmental damage arising from modern industrial activity can be traced to the massive extraction of natural resources as raw materials and the massive amounts of wastes generated by the processing of such resources into finished products. These wastes, not to mention the toxins and hazardous substances incorporated into the finished products that end up in the environment once such products have been discarded, are more often than not air, water and soil pollutants that are toxic to both human and ecological health.

These industrial toxins are released into the environment at virtually all stages of the production and consumption cycle. From the production of the energy needed to power the machines in factories up to the moment of use and even after the discard of the product, a large number of modern finished products impose a heavy toll on environmental quality.[167] The deterioration of environmental quality in turn leads to an increased incidence of health risks to wildlife and humans.[168]

The Cement Industry

One of the more polluting industrial processes in existence today is the manufacture of cement. However, cement is considered a prime industrial commodity because of its extensive uses in industrial infrastructure such as roads, buildings and other containment structures, which is why its continued production is considered indispensable to a growing economy.

In the Philippines, the production of cement has been on an increasing trend over the past 10 years and is now a multi-billion peso industry. There are less than two dozen companies producing cement in the Philippines.[169] The pace of industrial economic activity in the country is reflected in the growth of cement production.

With the spurt of economic growth experienced by the Philippines from 1994 to the present, it can also be expected that the production of and demand for cement will also grow. In fact, the Philippines had to import cement from Indonesia in 1995 to fill in the shortfall in domestic production of cement.

The provision of incentives for the establishment of cement manufacturing plants in the country is part of government's strategy of ensuring that the infrastructural requirements for industrial expansion will be met. However, implicit in the fact of increasing cement production is the corollary of increasing extraction of cement raw materials[170] from the ground. This means of course the conduct of quarrying and mining operations, and the ecological damage that it implies.

Environment or Cement?

Located at the tip of Lingayen Peninsula, near the mouth of Lingayen Gulf at the northwestern coast of Luzon, and facing the South China Sea, the Municipality of Bolinao has not yet been touched by massive industrialisation.

Its coastal reefs play a vital role as the only remaining breeding ground for fish and other aquatic resources in the Lingayen Gulf area. According to the University of the Philippines Marine Science Institute, which maintains a research laboratory there, about 50-75% of the Bolinao coral reefs are in good condition. The Bolinao reefs have been declared as an 'environmentally critical habitat' and thus a protected area.[171]

Furthermore, the Bolinao area contains sites of geologic, historical and archaeological significance, such as caves, pre-Spanish trade artifacts, and remains of prehistoric humans. In fact, the entire area of the Lingayen Gulf, of which the Bolinao area is a part, has been identified as suitable for ecotourism development rather than for heavy industry.[172]

However, the Bolinao area has also been the site of conflict between the interests of private sector investors and government officials for profit and the interests of the Bolinao community to the maintenance of their environment. Although no actual construction nor operational activities have yet been done on the site, the Bolinao case presents a good example of how promotion of industrial activities and protection of the environment can come in conflict with each other.

In 1994, a partnership was formed between the AIC Corporation, a Filipino company, Tuntex Corporation of Taiwan, and Marubeni Corporation of Japan for the purpose of setting up and operating a cement plant in the Bolinao area. This partnership was named the Pangasinan Cement Corporation (PCC). According to PCC, the project consists of five main parts:

- a cement plant and its auxiliary structures with an annual production capacity of 3.2mt;
- a limestone and clay quarry estimated to contain mineable reserves to last for 130 years;

- a 60-MW coal-fired power plant to supply electricity to the entire project;
- a 10-km conveyor belt to transport clay and limestone from the quarry to the cement plant; and
- a 550-metre wharf where ships shall unload raw material and transport cement produced by the project both in bulk or by bag.

Half of the cement output is targeted for export, the rest will supply local needs.[173]

The estimated cost of the project is $450m (P11.25bn). Of this amount, about $320m (P8bn) will be used to purchase machinery and equipment.[174]

From the very inception of the project and even during the EIA process, there has already been strong opposition to it from the communities that will be adversely affected. Their opposition was based on:

- the environmental risks that the project, if pushed through, poses to the marine and terrestrial habitats on which Bolinao's population depends for a living;[175]
- the social and economic dislocations that the construction and operation of the plant will entail for the community;[176] and
- the conflicts in land use priorities shown by setting up the cement plant in an area already identified as reserved for ecotourism and small-scale fishing activities.

The PNC and its supporters among the private sector and government stress the economic benefits that the project will provide to the country, the province, and the municipality.[177]

While PNC stresses that it will utilise the most modern and environmentally-friendly processing technologies and modern pollution control equipment to mitigate the adverse impacts that the project will have on the environment, it should be noted that the technology that it intends to use will be sourced from and 'will be identical to modern existing cement plants in' Japan.[178] Such state-of-the-art industrial projects will necessarily require skilled labour and expertise to handle the technologies to be used therein. Considering that such skilled labour and expertise are not present among the Bolinao population, a primarily fishing and agricultural community, it is logical to conclude that the plant's employees and staff, other than those for positions involving menial or low-skill activities, will have to come from outside the community.

Furthermore, the vaunted 'environmental-friendliness' of such technologies is dependent on their ability to work under optimum conditions, with regular maintenance. In fact, from the environmental impact statement alone of the project proponent, the effectivity of its proposed mitigating measures are generally qualified by statements such as 'it must strictly observe its maintenance schedule' or 'the seriousness of impact depends on the wind conditions'.[179] Conditional commitments such as these provide the proponent with a ready escape hatch in case its Japan-developed pollution control measures do not live up to Philippine environmental conditions. Indeed, in this type of situation, the possibility that environmental damage will occur as a direct result of the plant's construction and operation is far greater than the possibility that environmental damage will not occur as a direct result of the operation of the plant's pollution control and environmental protection equipment.

What is interesting to note is that while the project created a schism among the community in Bolinao, the conflict was primarily between those who wanted to preserve the current environmental conditions in the Bolinao terrestrial and marine coastal area and those who wanted the project for the sake of 'industrialisation' and 'economic progress.' Thus, the opposition came from various sectors and organisations like the UP Marine Science Institute — which maintains an aquatic habitat research laboratory in Bolinao, Movement of Bolinao Concerned Citizens Inc., Lingayen Coastal Area Management

Commission, the Women in Development Foundation, Bolinao District Teacher's Association, Roman Catholic Diocese of Alaminos, Haribon Foundation, University of the Philippines System, United Methodist Church of the Philippines, and other concerned individuals. The supporters of the project on the other hand are mostly businesspersons such as the Metro Dagupan City Civilian Reconstruction Fund Foundation Inc. — a business group based in Dagupan City, about 80km from Bolinao, local government officials — the Municipal Council and Mayor of Bolinao, and the Provincial Board of Pangasinan, national government officials — such as House of Representatives Speaker Jose de Venecia and, of course, the project proponent.

The Bolinao controversy then is clearly an example of how the drive for industrialisation and economic growth under Philippine government's 1993-98 MTPDP, by the very nature of the projects that it prioritises, has the inherent potential of adversely affecting not only environmental quality but also community livelihood and social cohesiveness.

A Slave of Political Will

However, the controversy also demonstrates that the game of balancing environmental concerns with the need for economic development is more a matter of political will than technical argument.

To the credit of the Department of Environment and Natural Resources, it denied the issuance of an ECC to the project proponent on October 30, 1995 because of 'the yet serious and unmitigated problems related to' the project such as concerns on landuse, social acceptability and other technical issues relating to pollution.

The project proponent submitted additional 'new information' to DENR intended to answer the basis for the denial. As a result, DENR convened a committee to review the proponent's EIS. This review committee first met on May 29, 1996. After a series of meetings, field visits and consultations with the project proponents and the opposition, the committee 'unanimously recommended the denial of the issuance of the ECC for the proposed Pangasinan Cement Complex project.'[180] The review committee still found the project as posing 'adverse impacts to the environment which are considered irreversible and non-negotiable.'[181]

The findings of the committee were, to quote from an official DENR memorandum:

> • UNACCEPTABLE ENVIRONMENTAL RISKS: The activities that will be associated with the proposed cement plant pose serious risks to what the committee members deem as very valuable environmental assets. The Committee is unconvinced that the proponent's submitted measures to deal with the risks would be effective. The major environmental risks are: destruction of aquatic life and the coral reefs, from the port development and its operations, and potential negligence from the wastewater management of the cement and power plants; impairment to the health of Bolinao residents from air pollution; siltation of the river systems due to quarrying operations; and possible inability to deal with the geologic and landscape disturbances from quarrying.
>
> • SERIOUS LAND AND RESOURCE USE CONFLICT: The project will seriously compete with existing and articulated land, marine and water usage in the area. Preferred activities as comprehensively articulated in the Lingayen Gulf Coastal Area Management Plan are for fishing and eco-tourism activities. Fishing will compete for the use of the narrow water and landing where the wharf will be situated . Fishing will of course be negatively impacted by some of the environmental risks already mentioned . Eco-tourism will suffer from the landscape impact of cement plant and quarrying operation as well as from the environmental risks identified. There is also going to be a conflict in the use of non-saline water, which is limited availability in the area, with existing and preferred uses.
>
> In this regard, respect for the principle of integrated coastal management constrains the DENR from issuing an ECC to a project incompatible with the preferred land and resource use for the project site.

> • PROBLEMS OF SOCIAL ACCEPTABILITY: The project has deeply divided the Bolinao community and the larger society of stakeholders. These deep divisions are rooted in the fundamental conflicts of interests rather than from mere ignorance or lack of information on the project. The political support and/or endorsement of several local and national government officials for the project is recognised. The unwavering opposition of other major stakeholders within and outside the Bolinao community is likewise recognised. ... Apart from the number of supporters and oppositors, however, what is equally, if not more, important are the issues raised against the project that are found to have remained unresolved which make the project socially unacceptable.[182]

While the proponent had stressed that its technology will be sufficient to address environmental risks, this reliance on technology disregarded the fact that the project site is but a small part of an entire interdependent ecosystem, which has its own dynamics. Thus, in an area such as Bolinao characterised by a fragile, coral-reef dependent coast and low-lying terrestrial ecosystems and its concomitant human fishing- and farming-based economic activity, the impact of a heavy industry such as a cement plant would be devastating to the community and the environment — in terms of the air, water, soil, and noise pollution that will be caused and the economic and social dislocations that will of necessity occur among the community. It was, therefore, a laudable move on the part of DENR to deny the issuance of the ECC of the proposed Bolinao cement plant project.

This exercise of the political will on the part of DENR to prioritise social acceptability and environmental concerns over investor interests highlights the point that technological fixes must always be contextualised within the framework of community consent and ecological protection and sustainability. Of course, the credit for the decision is not for DENR alone, but also for the Bolinao community and the other stakeholders who have been consistent in their opposition to the project.

However, this instance of political firmness on the part of DENR cannot be taken as a precedent for future firmness in conflicts between environmental and social acceptability concerns and private sector or government-initiated development projects. In the overall scheme of things of government's Philippines 2000 development plan, this rejection of the ECC for the Bolinao cement project does not mean much. It is a triumph for the people of Bolinao, of course, but it ends there.

The decision does not signal a sea-change in government's priorities and its orientation regarding conflicts between environment and development. Neither does it signal that as a matter of effective government policy henceforth, the social and environmental acceptability of a given development project will become the prime determinants in the decision on whether such project will be given an ECC or not. It is, in fact, solely an isolated case whose benefits may or may not eventually rebound in favour of other communities threatened by other development projects.

What the Bolinao experience does showcase, on the other hand, is the way that consistent and united community action against development projects that threaten the community's environment and livelihood can become an effective barrier against such projects. Of course, it should be noted that such local community action must, to be most effective, be linked up with national and international support groups in order to maximise all avenues of protest and opposition — whether legal or metalegal.

Banana and Pineapple Plantations: Death Blows of Cash Crops

The Philippines 1993-98 MTPDP emphasises that 'agriculture and industry, ... must be subsumed under a common framework to emphasise the link between them.'[183] Thus, it is explicitly stated that:

The agriculture and industrial sectors shall be geared towards the attainment of the following major goals: industrial restructuring for worldwide competitiveness and expanded production of goods and services for the domestic and export markets; stronger productive and ecologically sound links between agriculture and industry; and increasing incomes, productivity and access to resources among small entrepreneurs, farmers, fisherfolks and workers.[184]

However, these positively glowing policy statements of government in the MTPDP does not seem to be reflected in reality.

Promoting Exports and Cash Crops

With respect to agriculture in particular, government's stated policy is to 'promote the production of high-valued commodities for the domestic and export markets.'[185] What this simply means is that government intends to pursue, as a primary agricultural development policy, an export-oriented, cash crop-based agricultural production strategy rather than concentrate on increasing the production of basic food crops.

As a writer has pointed out,

> The agricultural component of the MTPDP likewise supports the export drive. Dubbed as the Medium-Term Agricultural Development Plan (MTADP), its sub-programmes essentially extend the promotion of commercial crops for export. For instance, alongside the Key Commercial Crop Development Programme is the Grains Production Enhancement Programme (GPEP) which seeks to allocate 60% of the land currently planted to rice and corn for commercial crops and livestock production.[186]

According to an agricultural research and policy advocacy institution, the Philippine Peasant Institute (PPI),

> the MTADP will ... limit lands devoted to the country's staples to some 1.9mha. Under the GPEP, rice production will be focused on 1.2mha, while corn production will be limited to 0.7mha. Currently, roughly 2.5mha are devoted to rice and another 2.5mha are planted to corn. The 3.1mha that will be freed from grains production will be used for livestock raising, specifically pasture development —1.8mha, and the production of cash and commercial crops —1.3mha.[187]

Adverse Effect on Ecology and People

Concern has been raised regarding the negative impact risks of the MTADP on the country's food security; the depletion of biological diversity; peasant displacement due to the land needs for large-scale commercial cash cropping; overdependence on the global market; the institutionalisation of agricultural land conversion to non-agricultural uses — such as industrial estates and residential subdivisions; and reduction of direct agricultural subsidies for small farmers.[188] This does not mention the negative health impact on the people and the environment from the use of pesticides required in the large-scale commercial production of cash crops.

Indeed, the ecological impact of the export-oriented, cash crop-based thrust of government's agriculture development programme is expected to be high. Again, to quote:

> The high growth scenario ... envisioned in the MTPDP is expected to translate into severe costs for the environment.... the MTPDP's call for rapid industrialisation and the promotion of cash crops has already led to massive land and crop conversions, both of which impact gravely on the country's ecological integrity.
>
> Experience has shown that land conversions are particularly common in areas near the centre of economic activities. Almost always, (agriculturally) productive areas devoted to rice and other food crops are affected. A study done by the Bureau of Soils and Water Management

showed that from 1987 to 1991, 68% of irrigated ricelands lost to non-agricultural uses were concentrated in the Calabarzon region. With the MTPDP's predisposition for industrialisation, the spate of conversions are expected to continue.[189]

Indeed, since the basic premise of export-orientation and cash cropping is increased production leading towards increased competitiveness and thence increased income, it comes as no surprise that there will be a large degree of reliance on petrochemical or artificial fertilisers and pesticides. Thus,

> (t)heir supposed function — which is to increase agricultural productivity, particularly for major crops like rice and sugar, including cash crops such as banana, pineapple, cotton, etc. — is said to be the main reason why the Marcos government had encouraged farmers to use these inputs in its Green Revolution. At present, the Aquino government is using the same reason to encourage the massive use of petrochemical fertilisers and pesticides.
>
> The result of this has been the dependence of farmers and the addiction of land to the use of chemical inputs....
>
> Sad to note though, more than 20 years since chemical inputs have been massively used in the country ... the promised increase in yield and income continues to elude most farmers. Despite the increase in the use of chemical inputs which means bigger production cost, production yields follow a decreasing trend, which means lesser production income.[190]

Furthermore, the social impact of the MTADP is expected to be worse, in view of the dire economic straits of the large majority of the Philippine agricultural rural sector, which comprises roughly 45% of the total Philippine population.[191]

According to another PPI study, the major causes of rural poverty in the Philippines are:

- worsening landlessness in the countryside and the continuing failure in effecting a redistributive land reform programme;
- burgeoning unemployment and underemployment problems in the countryside which has constantly depressed rural real wages;
- declining productivity of major agricultural crops of the country;
- an overwhelming prevalence of inefficiencies in marketing systems and structures;
- basic trade and foreign exchange policies which have prejudiced the growth and development of the agricultural sector;
- a flawed industrialisation programme which only generates minimal labour employment;
- a gross lack of adequate infrastructure, social services and credit support; and
- the exhaustion of the land frontier, combined with the disasters and degeneration of the country's environmental situation.[192]

An indicator of the worsening negative impact of the agricultural development programme being observed by government pursuant to the 1993-98 MTPDP and MTADP was the occurrence of an agricultural crisis in 1995.

The agricultural sector grew by only 1.96% in 1995, with the food crops sector registering only a mere 0.42% increase in production. In fact, during the first three quarters of 1995, rice, corn and sugar production declined by 2.5%, 0.20% and 27.1% respectively. In August 1995, a rice crisis hit the country, with retail prices of the food staple going up by at least 45-125% from their previous price of approximately P14 per kg ($0.54).[193]

> The crisis in agriculture is basically rooted in the bias for industry over agriculture and the bias for production for export over production for domestic needs in the administration's development plan. The increasing rate of crop and land conversions has endangered food security, one key element of which is the country's self-sufficiency in staple grains and other major crops. One indicator of the worsening situation in food security — and

the depletion of the country's means of subsistence — is the increase in the country's agricultural imports by 43.4% in 1995. Agricultural imports amounted to $273.9m, outstripping earnings from agricultural exports, valued at $188.74m.[194]

Rise of Agroindustry

The thrust towards exports and cash cropping under government's agricultural development programme reveals itself, among others, in the rise in the number of hectarage covered by large-scale agricultural enterprises in the country, such as large-scale banana and pineapple plantations, mainly in the Southern Philippines.

The total hectarage devoted to commercial banana production increased from 289,800ha in 1985 to 330,000 in 1994, while that devoted to large-scale pineapple production rose from 58,000ha to 68,900ha for the same period. This indicates that the established banana and pineapple producers continue to find exporting banana and pineapple products, both fresh and processed, to be profitable in terms of net gain.

Of no small consequence in the continued profitability of large-scale banana and pineapple production in the country, despite the relatively weak markets abroad for these products, is the fact that Philippine government has embarked on a policy strategy of promoting these kinds of crops for export in line with its overall national economic development plan.

The Philippine banana plantation industry[195] supports approximately 400,000 workers in Mindanao in the Southern Philippines. The produce of these plantations are intended for export, mostly to Japan, the United States, and Europe. Because of the fact that large-scale commercial banana cultivation involves large tracts of land and intensive application of chemical fertilisers and pesticides, the development of such plantations have caused massive land conversions and soil fertility exhaustion. On top of that, the pesticides used by the banana companies have had adverse physiological effects on the banana plantation workers.

Killing Fields of Banana

One of the most hazardous to human health among the banana pesticides used is dibromochloropropane (DBCP). This pesticide kills the 'microscopic nematode worms that attack the roots of bananas and other fruit trees.'[196]

In the Philippines, DBCP name brands, such as Nemazon and Fumazone, were widely used in Mindanao banana plantations from the mid-60s to the late 70s.[197] DBCP was banned by the Philippine Fertiliser and Pesticide Authority in 1980 after it was banned in the United States in 1977. However, there are reports that some plantations in Mindanao have continued to use Nemazon and Fumazone even up to the early 90s.

Among the companies that utilised DBCP were Davao Fruits Corporation, Hijo Plantation Inc., Twin Rivers, Standard Fruits, Marsman Estate Plantation,Inc., Tagum Agricultural Development Corp., Checkered Farms, Nestfarms, Farmingtown, Diamond Farms, Golden Farms Inc., Soriano Fruits, Dizon Farms, Delta Farms and Desidal Farms.[198] DBCP name brands are manufactured by United States corporations such as Shell Oil Co., Dow Chemical Co., Standard Fruit and Steamship Co., Dole Food Co. Inc., Dole Fresh Fruit Co., Chiquita Brands Inc., and Chiquita Brands International Inc. These US-based companies are the respondents in a civil lawsuit filed for damages in Texas by 12,630 banana plantations workers who are DBCP victims from all over the world, including 7691 Filipino banana plantation workers.[199]

The effects of DBCP on those workers that have been exposed to it for long periods of time has been grave. As one of the Filipino banana workers' lawyers put it: 'Most of them suffer from a type of sterility known as germinal cell aplasia. Simply put, their bodies did not produce sperm. The rest produce fewer sperm than normal.'[200] In other words, these workers became sterile, with their reproductive capacity curtailed.

Furthermore, pre-natal DBCP exposure by women workers also resulted in physical and mental defects for their children. To quote:

> One of them is Jojit Cabanban, 15, who was born with irreversible brain damage. His mother, Consolacion, used to work at the banana packing house of Davao Fruit Corp.
>
> 'We all felt very sorry for Jojit when he was born,' Consolacion confided during our visit to their Lanzona subdivision home. 'Some of his body parts — his ears, penis and legs — were deformed. Shortly after birth, he was operated on for hernia, leaving him with only one testicle. He also turned out to be a deaf-mute and an epileptic. He still has difficulty walking and keeping his balance.'
>
> Jojit's father, Efren, is one of the 7691 Filipino claimants in a class action lawsuit filed with a Texas court against nine US firms which sold DBCP in Third World countries in the mid-60s to the late 70s.[201]

DBCP is listed by the US Environmental Protection Agency as 'probably causing cancer in humans' while the US National Cancer Institute confirms that the nematicide is 'one of the most potent known carcinogens.'[202]

In the Philippines, the Fertiliser and Pesticide Authority estimates that approximately 400,000 litre of banned pesticides, including DBCP, 'are still in the hands of 2000 dealers all over the country.'[203]

Dole Pineapples Poison Soil

Pineapples and pineapple products, like bananas, are major mainstays of Philippine agricultural exports. During 1985-94, the value of pineapple production in the Philippines has zoomed more than three-fold, from P1.792bn ($68.93m) in 1985 to P5.934bn ($228.25m) in 1994.[204]

One of the biggest pineapple plantation owners in the Philippines is Dole Philippines Inc., 99% of whose outstanding voting stock is owned by Dole Food Company, Inc. based the US.[205] Through Dole Philippines, Dole 'operates a plantation of (approximately 13,500ha) in the Philippines ... A cannery, chillroom, juice concentrate plant, corrugated box plant and can manufacturing plant, each owned by Dole, are adjacent to the plantation.'[206] It is currently one of the largest companies in the country, employing approximately 5700 workers. The Philippine subsidiary started its operations in the country in 1963 by leasing 8000ha of public agricultural land from the government-owned National Development Company (NDC).[207] The pineapple plantation is located in the municipalities of Tampakan, Tupi and Polomolok, in the province of South Cotabato, island of Mindanao and its products are exported to West Asia and Japan.

The vast hectarage covered by the plantation has had adverse effects on the ability of small farmers in the area to plant and maintain agricultural crops, primarily because of the soil erosion and denudation that has occurred as a result of the planting practices of Dole. This has meant severe dislocations in terms of agricultural output from small farmers and the consequent loss of economic livelihood among the surrounding communities, not to mention the negative impact of environmental degradation on their ability to cope with such loss. To quote:

> From the data available, the problem of land denudation in the municipalities of Tupi and Polomolok, is directly affecting 236 families. The data also revealed that 113ha of private lands are rendered unproductive and useless. The specific areas surveyed are barangays

Linan, Acmonan, Kablon, Potok Hill, Upper Tupi and Polonoling, all of Tupi municipality, and barangays Maligo, Polo, Lamcaliaf, Silway 8, and Pagalungan of Polomolok municipality. Before, these plains or gently rolling lands were productive of rice, corn, coffee, banana, coconut and fruits of various kinds. No big creeks or waterways traversed the lands then because the natural flow of water was not disturbed by human intervention.

Currently, these sizeable hectarage are covered by boulders and sprawling silt. They appear like a dried river or desert from a distance. However, even a small amount of rainfall can transform these waterways into a river of turbulent and swirling rainwater. Whenever it rains, the waterways crisscrossing the different barangays of Tupi and Polomolok become wider and deeper as a result of scouring by the massive flow of rainwater coming from the contoured pineapple plantation of Dolefil. Some of these denuded portions are now 10 metre deep and 20 metre wide. These areas are now unproductive and, therefore, unfit and useless for farming.

Aside from land denudation and crop destruction, the farmers are also complaining about the destruction of their fishponds, houses, and loss of working animals due to flash floods. The neighbouring farmers of the municipality of Koronadal are also complaining about the heavy siltation of Marbel 8 irrigation dam which cost them a 50% productivity loss.[208]

In a dialogue conducted between the farmers and the company in March 1994, a farmwife graphically narrated that:

... before Dolephil came, there were no floods. There was plenty of clean water supply which came from Maliang river that flowed freely at the back of their house. There were a lot of natural creeks then. And the water can be guided even during heavy rains. When Dole entered the area, flood started to be experienced by the people. The height of the flood increased as the years go by. It was in 1969 that their house and all other belongings (food, farm animals, plants, etc.) were carried away, when the height of the flood almost equalled the length of their house. You could even see the angry waters carrying away coconut, bamboo and banana trees while standing. It would be better to become a fire victim than a flood victim because in the former, you can still rescue some belongings but in the latter you could not salvage anything except your life. The flood did not only destroy their properties, it above all separated them from their families and relatives.[209]

In response to the farmers' allegations that it was Dole's farming practices that directly led to the occurrence of floods of such destruction, Dole officials stressed that the increasing frequency of devastating floods was due not to Dole plantation activities but rather to the increasing denudation of the Mt Matutum watershed and the atmospheric and climatic profile of the area, and thus Dole could not in any way be held liable for the floods.[210] However, an environmental investigating mission conducted by 32 NGOs has tagged Dole to be the culprit behind the destruction of the Mt Matutum watershed and the loss of properties and poor health of residents of Polomolok, Tupi and Koronadal.

The mission reported that pineapple monocropping over the vast hectarage of the Dole plantation has:

- changed the hydrology of the area and altered natural drainage;
- the scouring and gully formation done by Dole caused the transportation of large volumes of sediments away from headwater areas and agricultural lands into adjoining rivers and creeks;
- soil and rock materials transported by Dole in its operations are deposited in lowlying and downstream areas, causing lowland infertility;
- as a consequence of pineapple monocropping, runoff water during the rainy season caused flashfloods;
- water quality in the affected areas have deteriorated due to sedimentation and contamination from chemical residues carried by the runoff water; and
- health problems in the area were traced by the mission to the chemicals used by Dole in its operations.[211]

The land contour requirements of pineapple cultivation has meant that farmers who had leased their lands to Dole for inclusion in the plantation can no longer use the land productively after the expiry of the lease. In 1992, Dole started to expand its operations by expanding the hectarage under pineapple cultivation. To do so, it entered into 'farm management contracts' with surrounding small farmers, offering to rent the farmers' lands for 12 years with rentals amounting to thousands of pesos per hectare per year. For such small farmers, receiving amounts ranging from P50,000 ($1923) up in cold cash at one time was too great an incentive to turn down. An added factor to the decision to lease their lands to Dole was the fact that in 1992, the area was experiencing a drought and the instant cash offered by Dole afforded the farmers immediate relief. However, the long-term effects of such leasing of private farmlands to Dole is clearly indicated by the following environmental appraisal report:

> At this moment, it is doubtful if the farmers lured by Dole would still have some money left out of their advances ... Those who wanted to raise their fixed incomes looked for spaces in gullies to plant, but these were subject to flooding. The desperate ones opened up patches of land in the remaining forest in Mt Matutum.
>
> Under the contract, Dole has an absolute right to land exploitation.... the farms were bulldozed to fit the topographical needs of pineapple plantation . With topsoil gone and heavily treated with fertilisers, pesticides and herbicides, the farmers are helpless once their contract is terminated by Dole. There is a stipulation in the contract that when Dole will abandon the land, they will restore it to its original condition. It is unimaginable how they are going to do it topographically and in terms of biodiversity as well as in bringing back the topsoil that was drained down the gullies.
>
> Immediately after Dole ceases operations, the soil has to be rehabilitated a lot to restore its productivity. Small farmers with little resources can do this with much difficulty and, sooner or later, will lose their land. Gone is their subsistence economy, gone is Dole's rent, then they will have to look up to the forest for new hope, or migrate to congested slum areas.[212]

Legal Resistance

The affected small farmers have filed petitions with various government officials such as the peasant sector representative to the House of Representatives, Leonardo Montemayor, their respective local government officials, and have even engaged Dole and its officials in a dialogue, all, however, to no avail.

In the case of Representative Montemayor, his actions effectively ended with a referral to the head of the small farmers' group of a copy of a letter from a vice-president of Dole Philippines commenting on the allegations raised in the farmers' petition paper.[213] Dole officials insisted that they had no fault in the floods, pointing to 'nature' as the culprit and saying that as the floods were fortuitous events, they, therefore, cannot be held legally responsible for damages arising therefrom.[214] This consistent refusal by Dole to accept responsibility for the floods had earlier led the farmers to file a civil suit for damages against the company. The court, however, ruled in favour of Dole, and furthermore ordered the farmers to pay to Dole the amount of P70,000 ($2692) as moral damages.[215] The farmers, however, despite these setbacks, continue to struggle on, emboldened by international support and action for their cause.[216]

Conclusion

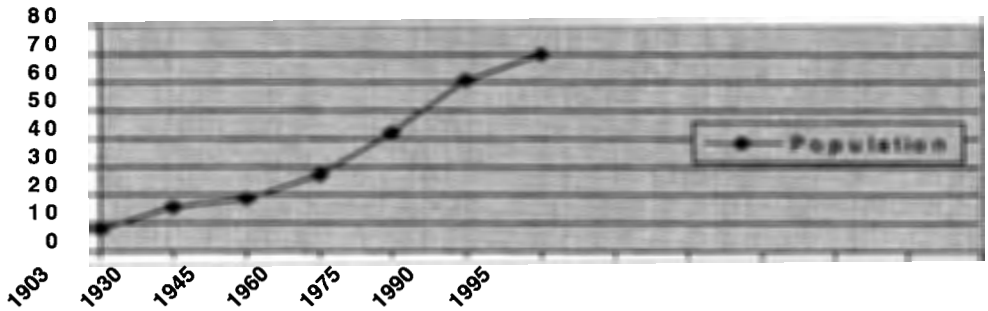
Export cropping as the primary thrust for agricultural development in the Philippines under government's economic development will clearly entail great environmental, economic and social costs, as has been borne out by the two case studies above. Despite these costs, government continues to pursue, without substantial change, the 1993-98 MTADP, and even seeks to accelerate its implementation in tandem with the liberalisation and the opening up of the Philippine agricultural sector to foreign trade pressures under the GATT-WTO global trade regime. It seems clear, therefore, that small Filipino farmers and rural producers, not to mention the rural environment, face increased threats to their livelihood and existence, under such an export-oriented, cash crop focused agricultural development policy environment.

A worker uses a pail to transfer oil to a waiting boat after a spill on Laguna De Bay South of Manila. At least 7000 barrels of oil leaked from tanks at a state-owned NAPOCOR thrmal power plant, killing thousands of fish in the lake. Romeo Ranoco, Reuter.

STATISTICS

Demography

Population Growth
(in millions)



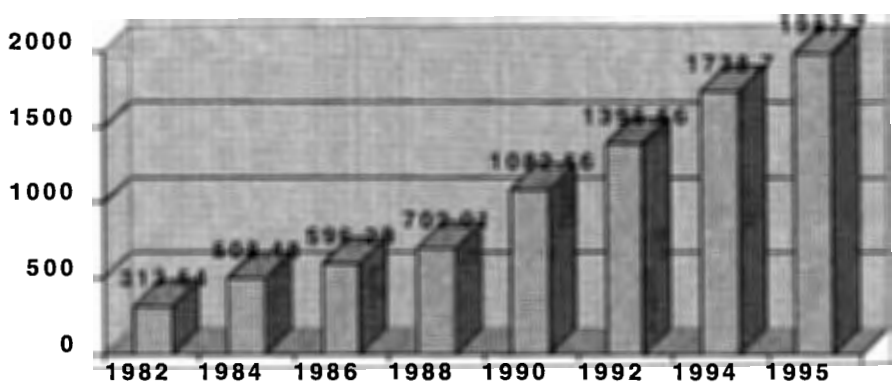
Population Trends

	1970-75	1990-95
Crude birth rate (per 1000 population)	38.4	30.3
Life expectancy at birth (years)	57.8	65
Crude death rate (per 1000 population)	10	7

Source: Philippine Statistical Yearbook, *NSCB, 1995*

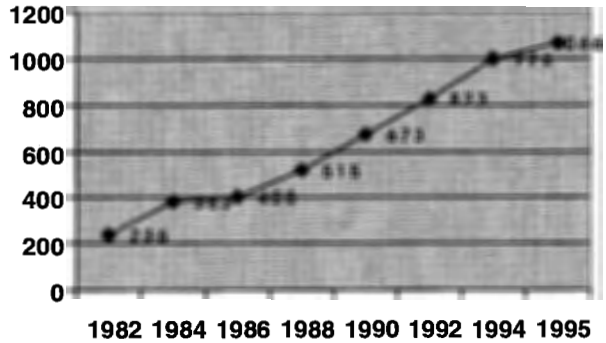
Economy

GNP Growth
(bn pesos at current prices)



Source: Philippine Statistical Yearbook, *NSCB, 1995*

Per Capita GNP Growth
($ at current prices)



Defence Share in Economy

Defence expenditure	
1985	$474m
1991	$843m
Number in Armed Forces	
1985	114,800
1991	106,500
Arms imports (value 1988) $60m	

Source: World Resources 1994-1995, *World Resources Institute*

Biodiversity

Number of Species
(per 10,000 sq. km)

Mammals	54
Birds	129
Reptiles	63
Amphibians	21
Higher Plants	2907

Source: World Resources 1994-1995, *World Resources Institute*

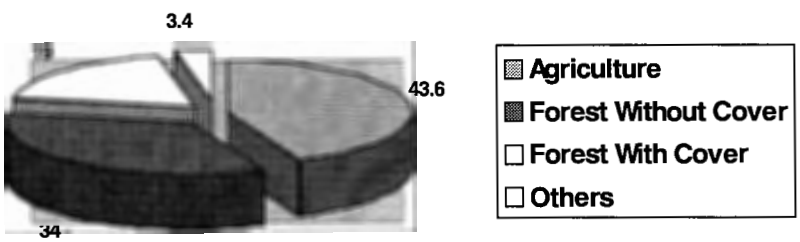
Species Count, 1990s

Total number of known species	Mammal	Bird	Reptile	Amphibians	Fish	Higher plant
All species found in country	166	395	193	63	NA	8931
Endemic species	91	172	158	44	NA	3500
Threatened species	12	39	6	0	21	198

Source: World Resources 1994-1995, *World Resources Institute*

Landuse

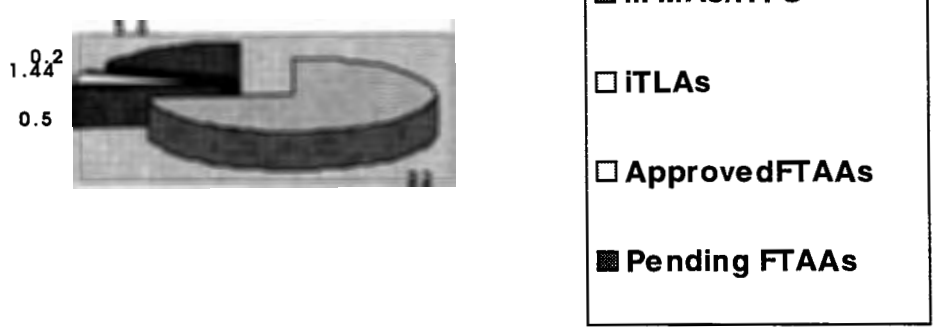
Forest and Agriculture



Source: Philippine Statistical Yearbook, *NSCB, 1995*

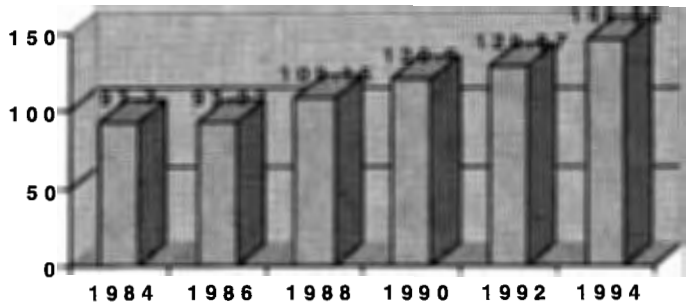
Land Identified for Commercial Interests

Total land area 30mha

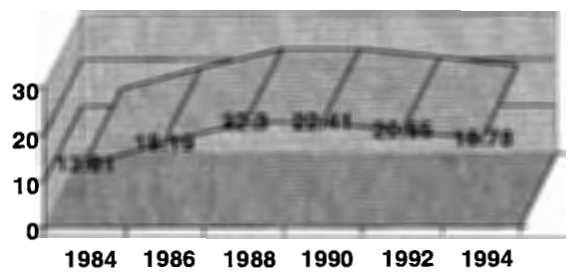


Resource Use

Energy Consumption



Mine Production
(in bn pesos)



Source: Philippine Statistical Yearbook, *NSCB, 1995*

Pollution

Metro Manila Emission Sources, 1990
(tons per year)

Pollutants	Mobile Source	Stationary Source	Area Source	Total Emissions
TOG	100954	1816	5162	107932
%	93.5	1.7	4.8	100.00
CO	572626	4046	525	577197
%	99.21	0.7	0.09	100.00
NO_x	66216	13418	276	79910
%	82.86	16.79	0.35	100.00
SO_x	10350	78094	12	88456
%	11.75	88.28	0.02	100.00
PM	13220	9323	102286	124829
%	10.59	7.47	81.94	100.00
PM_{10}	11450	7494	51042	69986
%	16.36	10.71	72.93	100.00

Source: State of the Philippine Environment for the 1990s *DENR*

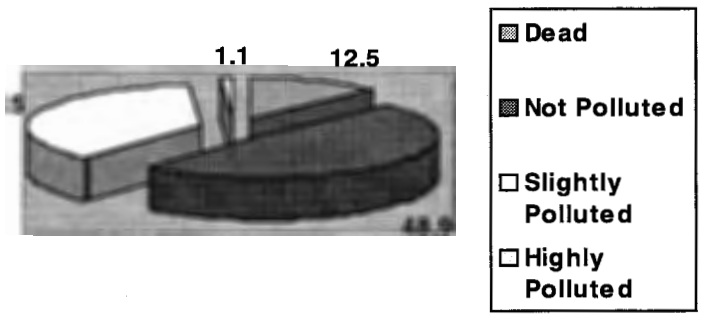
Greenhouse Gas Emissions, 1990

(in gigagram)

Categories	CO_2 emission	CO_2 removal	CH_4	N_2O	NO_x	CO
1 All energy	38638					
A Fuel Combustion						
Energy & transformation	12133		NE	NE	NE	NE
Industry	8474		NE	NE	NE	NE
Transport	10634		NE	NE	NE	NE
Small combustion	4194		NE	NE	NE	NE
Others[a]	3203		NE	NE	NE	NE
Traditional biomass burned for energy	48121[b]		221	0.9	32.5	1837
B Fugitive emissions			8.8			
Coal mining			7.8			
Oil			1.0			
Industrial processes	3286					
Cement	3272					
Paper and pulp	14					
Solvent and other product use[c]						
Agriculture			680.5			
Enteric fermentation			243.7			
Manure management			70.1			
Rice cultivation			366.7[d]			
Agricultural soils	NE		NE	NE	NE	NE
Prescribed burning of Savannahs	NE		NE	NE	NE	NE
Field burning of farm residues	NE		NE	NE	NE	NE
Others	NE		NE	NE	NE	NE
Landuse change and forestry	87924	3162				
Changes in forest and other woody biomass stocks	4069	3162				
Forest and grassland conversion	83855		97.9	0.7	24.3	857
Abandonment of managed lands	NE					
Others	NE					
Waste	NE		NE			
TOTAL	129848	3162	1008.2			
International bunkers	1280[b]					

[a] *includes non-energy used and unaccounted sources*
[b] *not included in the total*
c source of NMVOC which is not estimated
[d] *if IPCC default emissions are used, the value is 1468 Gg*
NE means "not estimated"
Source: State of the Philippine Environment for the 1990s *DENR*

River Pollution, 1992



Source: State of the Philippine Environment for the 1990s *DENR*

ENDNOTES

[1] *Under this doctrine, all land and natural resources belong to the sovereign (King or Queen as the case may be), and ownership and exploitation of such land and natural resources by private individuals are to be decided only through consent of the sovereign. This doctrine was adopted by the United States when it acquired sovereignty over the Philippines and was passed on to the Philippine Republic. For varied discussions concerning the application of the Regalian Doctrine in the Philippines, see* inter alia, *Ma Lourdes Aranal-Sereno and Roan Libarios,* The Interface Between National Land Law and Kalinga Land Law, *58 Phil. L J 420 1983; Antoinette G Royo,* The Regalian Doctrine: Whither the Vested Rights, *1 Phil. Nat. Res. L J 1 1989; Antonio GM La Viña,* Democratising Access to Forest Resources: A Legal Critique of National Forest Policy, *3 Phil. Nat. Res. L J 2, 1990; Augusto B Gatmaytan,* Land Rights and Land Tenure Situation of Indigenous Peoples in the Philippines, *5 Phil. Nat. Res. L J 5, 1992; Dante B Gatmaytan,* Ancestral Domain Recognition in the Philippines: Trends in Jurisprudence and Legislation, *5 Phil. Nat. Res. L J 43, 1992; Owen J Lynch, Jr.,* Invisible Peoples and A Hidden Agenda: The Origin of Contemporary Philippine Land Laws, *63 Phil. L J 249 1988; and Owen J Lynch, Jr.,* Land Rights, Land Laws and Land Usurpation: The Spanish Era (1565-1898), *63 Phil. L J 82 1988.*

[2] *The bulk of this section is obtained from Alejandro A Lichauco, 'The International Economic Order and the Philippine Experience,'* Mortgaging the Future: The World Bank and the IMF in the Philippines, *12, 26-47, 1982.*

[3] *The MTPDP states that: '(I)t is necessary to discard traditional trade and industrial policies that dispense protection to domestic industries so excessively that inefficiencies are encouraged. This means opening the economy purposefully to international trade and the discipline it imposes. A more open economy prods entrepreneurs to improve productivity, use least-cost components, newer technologies, and advanced managerial know-how if they are to compete with imports. Competing with foreigners domestically, they are also encouraged to compete abroad.'* 1993-1998 Medium Term Philippine Development Plan *4-5, 1992 (hereafter* MTPDP*).*

[4] Department of Budget and Management, Budget of Expenditures and Sources of Financing: Fiscal Year 1995 *9-10, 1994. Also, in connection with this foreign-investment friendly, export-led development strategy, the Philippine government has among other measures, made the entry of foreign investments into the domestic economy virtually unlimited under the* Foreign Investments Act of 1991 *(RA 7042); extended the maximum allowable period of the lease of private lands by foreign investors from 25 years to 75 years under the* Investors' Lease Act of 1993 *(RA 7652); allowed the entry of foreign banks into the country under* Foreign Banking Act of 1994 *(RA 7721); and aggressively pushed for the ratification by the Philippine Senate of the* Uruguay Round Final Act of the General Agreement on Tariffs and Trade *(GATT).*

[5] *As recently as 1988, protectionist measures in the form of export restraint arrangements were enacted by the United States and in the European Community, such as the Omnibus Trade and Competitiveness Act of 1988 of the US and tighter anti-dumping laws in the EC.* Asian Development Bank, Annual Report 1988 *12, 1989 (hereafter referred to as ADB 1988).*

[6] See e.g. *Lichauco,* supra. *note 2, at 21.*

[7] *See* Ibid, *at 17.*

[8] *The dominant Philippine exports, such as garments and electronic components, are characterised by high levels of imported inputs and correspondingly low levels of value added. Secretariat of the General Agreement on Tariffs and Trade, Trade Policy Review Mechanism: The Philippines: Report by the Secretariat viii, 11 January 1993, GATT Doc. No. C/RM/S/33 (hereafter TPRM).*

[9] Ibid.

[10] *See* Asian Development Bank, Annual Report 1993 *35-36, 1994 (hereafter ADB, 1993). It is interesting to note that while the Philippines seeks the internationalisation of its domestic economy by opening it up to foreign capital and making easier capital outflows, Indonesia, Malaysia, and Thailand on the other hand pursued policies designed to strengthen domestic control over the economy. The result of trading on the basis of strong domestic markets is reflected in the 1993 GDP growth rates of the above countries: Indonesia — 6.5%, Malaysia — 8%, Thailand — 8%, and the Philippines — 1.7%.*

[11] *See e.g.* ADB 1988, supra. *note 5, at 16.* See also *Lichauco,* supra. *note 2, at 18.*

[12] *Under Sec. 3(c) of RA 7042, 1991,'foreign investment' is defined as follows: the term 'foreign investment' shall mean as equity investment made by a non-Philippine national in the form of foreign exchange and/or other assets actually transferred to the Philippines and duly registered with the Central Bank which shall assess and appraise the value of such assets other than foreign exchange; ...*

[13] *See Lichauco,* supra. *note 2, at 20-23. See also Herman E. Daly, 'The Perils of Free Trade,'* Scientific American *50, 1993.*

[14] *The Philippine economy was further opened up to foreign investments with the issuance of Executive Order (EO) No. 182, which took effect on 24 October 1994, allowing* '100% foreign ownership in practically all manufacturing operations including service businesses such as trading, travel and insurance.' *See Lee C Chipongian, 'Opposition to Negative List C's removal eases,'* The Manila Chronicle *10, 18 October 1994.*

[15] See e.g. *Daly,* supra. *note 13 at 52.*

[16] *See* 1993-98 MTPDP supra. *note 3, at 3-14.*

[17] *See Art. I, Sec. 3.1(9), DENR Administrative Order (DAO) No. 11, series of 1994.*

[18] *See Memorandum from Cielito F. Habito, Director General, National Economic and Development Authority, to Teofisto T. Guingona, Jr., Executive Secretary, Office of the President of the Republic of the Philippines 1 (12 May 1994) (hereafter Habito Memorandum).. (On file with the Research and Policy Development Division, LRC-KsK).*

[19] *Art. I, Sec. 2.2, 2.3, and 2.7, DAO 11 s. 1994, explicitly puts forth the investment-attraction thrust of the programmatic compliance approach.*

[20] *Habito Memorandum* supra., *note 18.*

[21] *See LRC-KsK/FoE-Phils., Position Paper in Response to NEDA Director General Cielito Habito's Memorandum on Environmental Compliance Certificates 3 (June 1994) (On file with the Research and Policy Development Division, LRC-KsK).(hereafter LRC Position).*

[22] *The 'World Bank' as used herein refers to the International Bank for Reconstruction and Development (IBRD) and its affiliate, the International Development Association (IDA). The IBRD has two other affiliates, the International Finance Corporation (IFC) and the Multilateral Investment Guarantee Agency (MIGA). The IBRD, the IFC, and the MIGA are sometimes referred to as the 'World Bank Group.'*

[23] *IMF Managing Director Michel Camdessus stated before the UNCED in Rio De Janeiro, Brazil on 8 June 1992, that 'The IMF's main responsibility is to safeguard the stability of the international financial system and to support the worldwide application of sound macroeconomic policies.. In addressing the specific issues of the environment, we (the IMF) rely basically on the expertise of our sister institution the World Bank.' Quoted in Dominic Hogg,* The SAP in the Forest: the Environmental and Social Impacts of Structural Adjustment Programmes in the Philippines, Ghana and Guyana *34, 1993 (Hereafter Hogg); The point about real effects on real people has been recognised by Camdessus, who said that 'Everyone knows that sound economic policies will not produce lasting effects — indeed, they are doomed to failure — if their effect on the environment is destructive.'*

[24] Ibid, *at 17.*

[25] *See* ibid, *at 55-100, and Walden Bello, David Kinley and Elaine Elinson,* Development Debacle: The World Bank in the Philippines, *1982, for the historical background of Philippine access to IMF stabilisation programmes and WB loan conditionalities.*

[26] *These SALs are loans by the WB provided to borrower countries to which policy conditionalities are attached and agreed to by the borrower. Through the SALs, programmed aid has been linked to medium- and long-term policy changes by the borrower government aimed at enabling them to promote production for export in accordance with their comparative advantage. See Bello,* supra. *note 26, at 167; See Hogg,* supra. *note 23, at 24.*

[27] Ibid, *at 26, citing Mosley, P. and J. Toye,* The Design of Structural Adjustment Programmes, *6 Development Policy Review, 1988.*

[28] Ibid, *at 28, citing Yagci, F, S Kamin and V Rosenbaum,* Structural adjustment lending: an evaluation of programme design, *No. 735 World Bank Staff Working Papers, 1985.*

[29] *See* ibid, *at 29.*

[30] *See ADB, 1993* supra. *note 10, at 19-27.*

[31] Ibid, *at 33. They suggest that poverty increases the propensity of individuals to consume resources now rather than use such resources in a manner that might ensure a continuing flow of environmental benefits in the future; See World Bank,* World Bank and the Environment *2, 1993.*

[32] *'Bank lending specifically targeted to the environment can be subdivided into three categories: urban and industrial pollution control, natural resource management, and environmental institution building. Financing in all three of these areas increased markedly.., providing a record $2 billion for twenty-three projects devoted primarily to environmental concerns.'* Ibid, *at 26-27; The bias is implicitly recognised in the fact that 'The World Bank is striving to incorporate environmental concerns not only into those projects.. which are specifically environmental in focus, but into all Bank lending activities. Thus, all investment projects are now screened for their possible environmental results, and their design and implementation are adjusted accordingly.'* Ibid, *at 57-58.*

[33] Ibid, *at 18-19, 27.*

[34] *For example, according to the Department of Agriculture, Philippine export products facing good prospects in a GATT-regulated trade regime are agribusiness products like cutflowers, fruits, coconut oil, prawns, and fibre. This means that the Philippines has comparative advantage in this products vis-a-vis its competitors. Manufactured*

Philippine export products stand to lose in the world market due to their inability to compete qualitatively and quantitatively with manufactures from the industrialised North.

[35] *See Hogg,* supra. *note 23, at 33, citing ADB,* Economic Policies for Sustainable Development October, *1990.*

[36] See *Marvic F Leonen, 'Mt Apo Power Plant Project: The Philippine Case,' in Jorge A Emmanuel* et al., Papers and Proceedings: Lecture Series on the Philippine Environment in the 21st Century: Issues and Concerns *201, 202, 1993.*

[37] See *Department of Environment and Natural Resources,* A Report on Philippine Environment and Development: Issues and Strategies, *vi,1991 (hereafter DENR). Annually, one billion cubic metres of topsoil (or 100,000 ha) wash down to the sea.* See *Maximo T Kalaw, Jr., 'A General Situationer on the State of the Philippine Environment,' in Jorge A Emmanuel* et al., Papers and Proceedings: Lecture Series on the Philippine Environment in the 21st Century: Issues and Concerns, *1,2,1993.*

[38] *Marvic Leonen and Antonio GM La Viña,* Obstacles to Harnessing Creativity: Philippine Efforts to Conserve and Sustainably Use Biological Diversity, *5 Phil. Nat. Res. L J 119, 120 (1992) stated that: 'The clearest indication, however, of the grave threat to biodiversity is indicated by the less than one million hectares of primary forests remaining. While it cannot be established at present the exact number of species that can be found in Philippine forests, one survey of just over a hectare of forest reserve has uncovered more than one hundred species of trees. A basic rule in the extinction of species is that if a habitat is reduced by 10 percent in area, approximately one half of the species will be lost. At these terms, the Philippines may have lost more than 50 percent of its biological species.'* See *Augusto Gatmaytan,* Forest and Forest Peoples in Crisis: An Overview *1 (October 1992) stating that: 'The rate of deforestation in the Philippines over the past 60 years has been among the highest in the world. In 1934, more than 17 million hectares or 57 percent of the country's land area was forested. Today, only about 6.5 million hectares still retain forest cover (Phil Forestry Statistics, 1990), and this is decreasing at the rate of about 100,000 hectares per year. In layman's terms this is equivalent to losing an area of forest the size of five to six basketball courts per hour. Of this steadily decreasing forested area, only about 800,000 hectares are virgin or old growth forests. Fifty to sixty percent of these (old growth) forests are located inside timber concession areas. The Philippine forests abound with rich biodiversity. Unfortunately, about 50 percent of the country's forest flora are extinct, 18 forest species are endangered, and 25 more are candidates for the endangered species list. These forests maintain 57 major watersheds, half of which are critically denuded. Of the 59 national parks, only seven meet international environmental standards. At present, the forests support and sustain 12-15 million upland people, eight to nine million of which are indigenous peoples, whose lives and ways of life depend on the survival of the forests.'*

[39] *Of the 19 major Philippine freshwater rivers, nine are biologically dead, especially those around the National Capital Region. Freshwater aquifers or groundwater sources in and surrounding urban areas like the NCR are fast drying up and turning brackish and unpotable because of excessive drawing up of freshwater for consumption. DENR* supra. *note 1.*

[40] *In 1918, the country's mangrove forests were estimated to be 500,000 hectares. By 1970, this had gone down to 288,000 hectares and to only 242,000 hectares a decade later. Recent estimates placed the Philippine mangrove forest area at 139,725 hectares. Between 1978 and 1988, nearly 107,000 hectares of mangroves were lost. DENR,* ibid *at vii. By 1994, only 120,500 hectares of mangrove forests were existing*

[41] *Only 6 percent of Philippine coral reefs are left in good condition, 15 to 20 percent are in fair condition while 70 percent have already been destroyed.* Ibid.

[42] *Robin Broad & John Cavanagh,* Plundering Paradise: The Struggle for the Environment in the Philippines, *1993; Environment News Networks, 'Metro air pollution worse,'* Philippine Daily Inquirer *4, 3 August 1996; DENR, Environmental Management Bureau,* State of the Philippine Environment in the 1990s, *1996; Raul Segovia,* A Dictionary of the Crisis in the Philippine Ecosystems, *1995.*

[43] *Robin Broad & John Cavanagh,* ibid*; Augusto Gatmaytan,* Forest and Forest Peoples in Crisis: An Overview, *October 1992; Marvic Leonen & Antonio Gm La Viña,* Obstacles to Harnessing Creativity: Philippine Efforts to Conserve and Sustainably Use Biological Diversity, *5 Phil. Nat. Res. L.J. 119, 1992.*

[44] *Armand Nocum, 'Underpaid, Overworked: Child labourers number almost 3m,'* Philippine Daily Inquirer 2, *18 October 1996; Agence France Press, '2.2 m kids work under hazardous conditions,'* Philippine Daily Inquirer 1, *19 October 1996.*

[45] *Robin Broad & John Cavanagh,* op cit*; Raul Segovia,* op cit.

[46] *Raul Segovia,* ibid.

[47] *Robin Broad & John Cavanagh,* op cit*; Tunay Na Alyansa Ng Bayan Alay Sa Katutubo (TABAK),* Tribal Filipinos and Ancestral Domain: Struggle Against Development Aggression, *1990.*

[48] *Augusto Gatmaytan,* ibid*; Raul Segovia,* op cit.

[49] *DENR, Forest Management Bureau, 1995 Philippine Forestry Statistics, 1996.*

[50] Ibid*; Asian Development Bank,* Mangrove Forests: A Valuable But Threatened Indo-Pacific Resource, *Agriculture Department Staff Paper no. 5, October 1992; Robin Broad & John Cavanagh,* op cit*; Raul Segovia,* op cit.

[51] *Raul Segovia,* ibid.

[52] Ibid.

[53] Ibid*; Robin Broad & John Cavanagh,* op cit.

[54] *Frank Cimatu, 'Mine waste killing 4 Cordillera rivers,'* Philippine Daily Inquirer *17, 13 April 1996; Pigeon Lobien, 'Now it's Lepanto's turn to contaminate Cordillera rivers,'* Philippine Daily Inquirer 3, *12 June 1996.*

[55] *Dennis Gorecho, 'Mangyans decry floods, erosion due to quarrying,'* Philippine Daily Inquirer 4, *7 April 1996.*

[56] *Carla Gomez, 'Mining firm told: Explain oil spill,'* Philippine Daily Inquirer, *13 April 1996; Dolly Sabitsana, 'Quit dumping waste, mine firm told,'* Manila Times 1, *22 April 1996; Richel Langit, 'DENR orders closure of Negros mine firm,'* Manila Times 1, *25 April 1996; Maricris Carlos, 'Negros mining firm gets closure order from DENR,'* Business World 16, *25 April 1996.*

[57] *Carolyn O. Arguillas, '12 students found positive for mercury poisoning,'* Philippine Daily Inquirer 6, *6 October 1996.*

[58] *Danny Calleja, 'Mining destroys farms,'* Philippine Daily Inquirer *18, 15 July 1996; Danny Calleja, 'Compensation sought for farms destroyed by mining,'* Philippine Daily Inquirer *20, 19 July 1996.*

[59] *Jaime Espina, 'Mine spill in Negros: A silent death,'* Today 3, *21 June 1996.*

[60] *Maricris C. Carlos, 'Marcopper's tailings flow into river,'* Business World *22, 28 March 1996; DENR, Mines and Geosciences Bureau,* Update on the Marcopper Massive River Siltation Incident *by the DENR in Coordination with the NDCC 1, 28 March 1996; Juliet M. Labog, 'Marinduque town swept by toxic flood,'* Philippine Daily Inquirer 1, *28 March 1996; Elvis Z. Sadia & Rene Alviar, 'Mine firm continues to spill toxic waste,'* Philippine Daily Inquirer 1, *29 March 1996.*

[61] *Lina Sagaral Reyes, 'Toxic mine waste choking Zamboanga del Norte rivers,'* Philippine Daily Inquirer 20, *17 April 1996.*

[62] *Industrial Environmental Management Project,* Analysis of Current Regulatory Programmes for Pollution Management: Analysis of Fines and Penalties *(Final Report), Policy Study no. 2/10, 27 March 1995; Antonio Gm La Viña (ed.),* Law and Ecology: A Compilation of Philippine Laws and International Documents Pertaining to Ecology, *1991.*

[63] *Christine Herrera, 'Cyanide caused bay poisoning, probe reveals,'* Philippine Daily Inquirer 24, *22, 18 October 1996.*

[64] *Yolanda Fuertes, 'Fish kill blamed on toxic wastes,'* Philippine Daily Inquirer 19, *17 October 1996.*

[65] *Carolyn O. Arguillas,* op cit.

[66] *DENR, Environmental Management Bureau,* op cit; *Raul Segovia,* op cit.

[67] Ibid.

[68] Ibid.

[69] *Medium-Term Philippine Development Plan 4-1 to 4-27 (1993). (Hereafter MTPDP).*

[70] *Memorandum Order No. 353 (1996), 92:20 OFF. GAZ. 3081 (1996), 3088-3089.*

[71] *Francelyn G. Begonia,* The Social and Environmental Impacts of Coal Power Development in the Philippines: The Calaca Experience 5, *LRC-KSK Issue Paper No. 93-07,1993.*

[72] Calaca Environmental Investigating Mission Report, *16-17 June 1990, Appendices 17 (Hereafter* Calaca EIM*).*

[73] *Center for Environmental Concerns, 'Government Coal-Fired Power Plant Endangers Communities,' 1:3* Environmental Action Alert 1, *1990.*

[74] Calaca EIM, supra. *note 5,* passim. *This mission was spearheaded by the Center for Environmental Concerns, the Philippine Environmental Action Network and Batangas-based organisations*

[75] *Leti Boniol, 'Chemists raise new warnings vs. Calaca,'* Philippine News and Features, *1 April 1993.* See also *Leti Boniol, 'Scientists confirm Calaca pollution,'* We Forum, *4-10 October 1991.*

[76] *Panawagan sa mga Mamamayan ng Calaca laban sa NPC Phase II (1990). The statement was signed by representatives from the following Calaca-based NGOs and people's organisations: SAPIDA, ANIDA, CCW, FIST, CDCI, CERD, and SAMACOLO.*

[77] *DENR, 'Environmental Compliance Certificate for the Proposed Batangas Coal-Fired Thermal Power Plant II of the National Power Corporation,' 24 April 1992.*

[78] *Kinaiyahan Foundation, 'Back to the Future: Overview of Events (1936-1990),'* The Assault on Apo Sandawa Primer 4, *1990 (Hereafter Kinaiyahan).*

[79] *Task Force Sandawa,* The Mt Apo Geothermal Plant Issue: A Chronology of Events 1, *1991, manuscript on file with the author (Hereafter TFS).*

[80] *Augusto B Gatmaytan,* On PNOC's Illegal Tenure on *Mt* Apo National Park: A Comprehensive Memorandum, *2 Phil. Nat. Res. L J 1, 1990 (Hereafter* Gatmaytan Memorandum*).*

[81] *Kinaiyahan,* supra. *note 11, at 4. The area was later on expanded to 701ha.*

[82] *TFS,* supra. *note 12, at 1.*

[83] *Gatmaytan Memorandum,* supra. *note 13, at 2.*

[84] *TFS,* supra. *note 12, at 1.*

[85] *Petition to the Office of the President in the Matter of the Declaration of the Mt Apo National Park Reservation as Bagobo, Ubo, Manobo, Ata, K'lagan and Kaulo Ancestral Domain and the Immediate Stoppage and Removal of the PNOC Geothermal Project 4, 27 October 1988. There were 423* lumad *and 372 non-*lumad *signatories to the petition.*

[86] Ibid, *2-3.*

[87] *D'yandi Declaration of Principles, 13 April 1989 (on file with the author).*

[88] Ibid.

[89] *Jose A Magpantay, The Mount Apo Geothermal Project: An Evaluation 13, 1993.*

[90] *Environmental Management Bureau,* Final Report on the Review of the Environmental Impact Statement of the Mt Apo Geothermal Project 2, *14 May 1991.*

[91] Ibid.

[92] Ibid.

[93] *Jaime S Ortiz, 'PNOC drilling yields arsenic,'* The Manila Times *A4, 9 June 1994.*

[94] *Diana Mendoza, 'Mt Apo tribal folk have arsenic in hair,'* Today 4, *4 April 1994.*

[95] *'PNOC cleared of raising arsenic level in Mt Apo,'* The Sunday Chronicle 12, *8 May 1994.*

[96] *Jimmy K. Laking, 'Mt Apo Project: Generating insurgency rather than energy?,'* Philippine Daily Inquirer *20, 16 June 1992.*

[97] *'Landmine blast kills 2 at Apo geothermal site,'* Mindanao Daily Mirror *1, 7 June 1992 .*

[98] *'By providing ground support, PNP joins Army in Mt Apo battle vs. NPAs,'* People's Daily Forum *1, 15 September 1992.*

[99] *Kristina Gaerlan,* A Question of Development: Mt Apo Geothermal Project *10-11, 5 November 1992.*

[100] *Proclamation No. 853 (1992).*

[101] *Council of Leaders, Statement of the Council of Leaders of the Alyansa sa mga Lumad sa Habagatang Mindanao alang sa Demokrasya (ALUHAMAD) on the Costly and Sacrilegious PNOC Geothermal Project at Mt Apo, 19 May 1991.*

[102] *Constitution, art. III, sec. 9, and art. XII, sec. 18.*

[103] *Brenda Jay C Angeles,* The Masinloc Coal-Fired Thermal Power Project: Triggering the Conflict of Rights over a Quiet Earth *2 (1995), a case study prepared for the USIA Environmental Conflict Resolution Programme for 1995. For a detailed discussion of the events leading to the breaking down of community resistance to the Masinloc Coal-Fired Thermal Power Project,* see *Vicente Paolo B. Yu III,* People Empowerment and Energy Resource Development: Possibilities for Participatory Energy Resource Development in the Philippines, *7 Phil. Nat. Res. L J 35, 1996.*

[104] *This section of this chapter is based on this writer's article,* ibid, supra. *note 36.*

[105] *Ma. Athena D. Ronquillo,* Issues of Participation in the Leyte Geothermal Power Project in the Philippines *22, LRC-KSK Issue Paper No. 95-01,* supra. *note 37, 6-7, 1995.*

[106] *Const., art. XII, sec. 2.*

[107] *Presidential Decree no. 705, 1975, sec. 20.*

[108] *DENR Secretary Angel C. Alcala, Talking Piece of Secretary Angel C. Alcala on FY 1996 Budget Proposal of the Department of Environment and Natural Resources, presented to the Panel for the DENR Technical Budget Hearing, 17 April 1995, held at the National Electrification Administration (hereafter Alcala)*

[109] *Presidential Decree no. 705, 1975, sec. 34*

[110] *The initial impetus was provided by Asian Development Bank (ADB) Technical Assistance (TA) no. 995-PHI, approved on 28 June 1988, for conducting feasibility studies on the promotion of commercial and industrial tree plantations*

[111] *ADB Loan no. 1106, approved 17 October 1991*

[112] *Republic of the Philippines, Office of the President-Coordinating Council of the Philippine Assistance Programme, 3 Partnership for the Future 18 (1994). (hereafter Partnership)*

[113] *Asian Development Bank (ADB), 1991 Annual Report 96 (1992).*

[114] *These are TA no. 1577 for the Management, Supervision and Institutional Support to the Industrial Forest Plantations Project (Amount: $683,500.00); and TA no. 1578 for Tree Improvement in Industrial Forest Plantations (Amount: $535,000).* See *ADB, Loans, Technical Assistance and Private Sector Operations Approvals 49, Doc. no. 93/09 (September 1993).*

[115] *It would not be amiss to note here that even the ADB recognised that it was the lack of suitable financing for private sector investments in industrial tree plantations that was the main reason for the slow development of industrial tree plantations in the Philippines, together with the speculative nature of the early leases and administrative delays.* See *ADB, Appraisal of the Industrial Forest Plantations (Sector) Project in the Philippines 5, ADB Doc. no. LAP: PHI 16023 (September 1991).*

[116] *Memorandum Order (MO) no. 353 (1996),*1996 Investment Priorities Plan, *92:20 OFF. GAZ. 3081 (1996).*

[117] *Foreword to the IPP,* ibid *at 3081. The 1993-1998 MTPDP itself explicitly states that as one of the priority activities in the Environment and Natural Resources Subsector, government will '(e)stablish forest plantations and tree farms through industrial forest plantations (IFPs), mandatory TLA/TPSA plantations...'*

[118] *Part I: Priority Investment Areas (Countrywide), Section II:B,* ibid, *at 3086.*

[119] Ibid, *at 3085.*

[120] See *Part I: Priority Investment Areas (Countrywide), Section III:B,* ibid *at 3090.*

[121] Ibid, *at 3088.*

[122] See *Part III: Major Policies on Registration and Administration of Incentives Under EO no. 226; Section IV. Incentives to Registered Firms,* ibid, *at 3098-3101.*

[123] See *Chris Maser,* The Redesigned Forest *(1988).*

[124] See *ADB,* Appraisal of the Industrial Forest Plantations (Sector) Project in the Philippines, *Appendix 12.* See *T E Hensleigh and B K Holaway (eds.),* AgroForestry Species for the Philippines, *1988, for descriptions of the tree species.*

[125] *Paul Freese and Thomas J O'Brien,* Forests, Trees and People: A Preliminary Report on the Impact of Industrial Tree Plantations and Tree-Farming Projects on Small Filipino Farmers *89 (1983).*

[126] See *Augusto Gatmaytan,* Uprooted by Trees: Indigenous Peoples and Tree Plantations in Agusan del Sur *8-9, 1995) The author of the paper notes that 'the data presented... is drawn from research, extensive area visits throughout the province (of Agusan del Sur), several community discussions and interviews with key informants in communities affected or threatened by tree plantation activities of corporations.'* Ibid *at 1.* See also *Ma. Isabel G. dela Torre,* Tales from the Darker Side of IFPs: A Briefing Paper on the Integrated Forestry Management Agreement, *Legal Rights and Natural Resources Center-Kasama sa Kalikasan (LRC-KSK) Issue Paper no. 93-10, 1993.*

[127] *Part I: Priority Investment Areas (Countrywide), Section IV:B, MO no. 353 (1996),* supra. *note 11, at 3092.*

[128] See e.g. *LRC-KSK,* Selling Out to Foreigners for Thirty Pieces of Gold?, *A Statement on the Approval of DENR Administrative Order no. 23 s. 1995 (Implementing Rules and Regulations of the Mining Act of 1995).*

[129] See e.g. *Antoinette G. Royo and Dante B. Gatmaytan,* The Philippine Mining Policy: A Case of Obscured Environmental and Social Impacts, *4 PHIL. NAT. RES. L.J. 24-34 (1991), for a discussion of the history of Philippine mining policy.*

[130] *Marvic MVF Leonen and Francelyn G Begonia (eds.),* Mining: Legal Notes and Materials *7, 1996.*

[131] See ibid, *at 5-6.*

[132] *Augusto B. Gatmaytan,* The Perils of Playing God: The Open Pit Operations of Benguet Corporation *4-5, LRC-KSK Issue Paper no. 93-01, 1993.* See also *Royo and Gatmaytan,* supra. *note 25, at 31-32.*

[133] See *DENR, Regional Office IV,* A Chronology of Events Relative to the Marcopper Mining Corporation Operations, *1996.*

[134] See *DENR,* Environmental Compliance Certificate for the San Antonio Mine Project of Marcopper Mining Corporation, *6 April 1990.*

[135] Ibid, *condition no. 3.*

[136] See *DENR,* Update on the Marcopper Tapian Pit Tailings Flow *1, 1996 (hereafter Update).*

[137] *DENR, Mines and Geosciences Bureau,* Update on the Marcopper Massive river Siltation Incident *by the DENR in Coordination with the NDCC 1, 28 March 1996. (hereafter MGB)* See also *Memorandum of Renato S de Villa, Chairman, National Disaster Coordinating Council*

and Secretary, Department of National Defense, to President Fidel V Ramos, relating to the Marcopper mine tailings leak incident, dated 29 March 1996. Marcopper officials claimed that the failure of the plug was due to an earthquake that hit the area, but DENR officials discounted this claim. See *Maricris C Carlos, 'Marcopper's tailings flow into river,'* Business World *22, 28 March 1996.*

[138] *MGB,* supra. *note 33, at 2.* See also *Update,* supra. *note 32, at 1.*

[139] *MGB,* supra. *note 33, at 2. Newspaper reports however state that the mine tailings could be seen contaminating the river for about 10km.*

[140] Ibid.

[141] *Memorandum of the MGB Investigating Team to the MGB Director,* Report on the Preliminary Investigation on the Tailings Leakage at Marcopper's Tapian Pit Drainage Tunnel 1, *1 April 1996.*

[142] Ibid.

[143] *Juliet M. Labog, 'Marinduque town swept by toxic flood,'* Philippine Daily Inquirer *1, 28 March 1996.*

[144] *Elvis Z. Sadia and Rene Alviar, 'Mine firm continues to spill toxic waste,'* Philippine Daily Inquirer 1, *29 March 1996. Official DENR reports state that the mine tailings contain no traces of cyanide or mercury but with traces of dithiophosphate, xanthate, glycolether, and lime.* See *MGB,* supra. *note 33, at 2.*

[145] Ibid.

[146] *It must be noted that this is the maximum penalty that can be imposed under existing laws such as Presidential Decree no. 1152 and Presidential Decree no. 984.*

[147] *DENR, Special Order no. 96-329, 1996.*

[148] *MGB Investigating Team,* supra. *note 37, at 3; Environmental Management Bureau,* Quality of the Waterbodies Affected by the Marcopper (Marinduque) Mine Tailings *2-3, 3 April 1996. (hereafter EMB). Note however that drinking water with higher than normal levels of copper may cause vomiting, diarrhoea, stomach cramps, and nausea. Very high levels of copper can cause liver and kidney damage and even death. Exposure to high levels of metallic, inorganic, or organic mercury can permanently damage the brain, kidneys, and developing fetus. Eating food or drinking water with very high levels of cadmium severely irritates the stomach, leading to vomiting and diarrhoea. Intake of large amounts of zinc, even for a short time, can cause stomach cramps, nausea, and vomiting. Taken longer, zinc intake can cause anaemia, pancreas damage, and lower levels of high density lipoprotein cholesterol. Lead can affect almost every organ and system in the human body. The most sensitive is the central nervous system, particularly in children. Lead also damages kidneys and the immune system.* See United States Agency for Toxic Substances and Disease Registry.

[149] *Richel Langit, 'Phivolcs warns of floods; Firm ignored ECC terms?,'* Manila Times *1, 30 March 1996.*

[150] *DENR,* Preliminary Report of the Board of Inquiry on the Seepage of Mine Waste of Marcopper Corporation in Marinduque *2-3, 3 April 1996.*

[151] *Natasha Vizcarra and Rita Villadiego, 'Boac River dead; Marcopper banned,'* Philippine Daily Inquirer *9, 3 April 1996. Boac river's depth was reduced as a result of the siltation from 1.2 metre to only 20cm*

[152] *Richel Langit and Perfecto Caparas II, 'Marcopper banned; execs on hold order,'* Manila Times *5, 3 April 1996.*

[153] *J R Alibutud, 'Rough winds blow over Calancan Bay,'* Manila Times *1-4, 8 April 1996.*

[154] *Dana Batnag, 'Clean up Boac River or else, Marcopper told,'* Manila Times *3, 22 May 1996.*

[155] *As of April 23, 1996, DENR data indicates that of 13 companies or conglomerates with pending FTAA applications, only two are Filipino companies, Benguet Mining Company and Tapian Mining Corporation — the latter however is 40% owned by Placer Dome Inc. of Canada.*

[156] *Cover letter of Dr Patricia L Lontoc, Presidential Assistant I, Office of the President of the Philippines, to Mr Andrew Cullum, WMC (Philippines) Inc., transmitting to the latter two (2) original signed copies of the FTAA with Optional Mineral Production Sharing Agreement (MPSA) entered into on 22 March 1995.* See also *Section IV, Clause 4.1 of the FTAA. This FTAA was, incidentally, the first FTAA granted under RA no. 7942.*

[157] *Section I, Clause 1.3 of the FTAA.*

[158] *LRC-KSK, Media Advisory, 29 July 1996.*

[159] Krivenko vs. Register of Deeds and City of Manila, *79 PHIL. 461 (1947) .*

[160] *In fact, 'when it is considered that the 59 (FTAA) applications are merely the result of the opening salvo of the government's aggressive campaign to attract foreign investors into the mining industry, the statistics may even triple or quadruple, leaving less and less land for agrarian reform, community based forestry, ancestral domain delineation, and other initiatives to empower local communities.'* See *LRC-KSK,* Selling Out to Foreigners for Thirty Pieces of Gold?, supra. *note 24.*

[161] *MTPDP 1, 1993.*

[162] See ibid, *at 3-5.*

[163] *Memorandum Order (MO) no. 353, 1996,* 1996 Investment Priorities Plan, *92:20 OFF. GAZ. 3081, 3085-86, 1996.*

[164] Ibid, *at 3086-87.*

[165] Ibid, *at 3088-92.*

[166] *Cheryl Simon Silver and Dale S Rothman, Toxics and Health: The Potential Long-term Effects of Industrial Activity 11, 1995 (Hereafter Silver and Rothman).*

[167] See e.g. ibid, *at 5-9.*

[168] See e.g. ibid, *at 17-28.*

[169] See *National Statistical Coordination Board,* 1995 Philippine Statistical Yearbook *6-6 (1995).*

[170] *These cement raw materials are: limestone, shale clay, silica sand, and gypsum.*

[171] *Proclamation no. 156 (1993).*

[172] See e.g. *Regional Development Council I Development Plan, and Lingayen Coastal Area Management Plan.*

[173] *The plant is expected to produce approximately 3.2mt of cement per year once it commences operations.*

[174] See Executive Summary, Environmental Impact Statement for the 3.2 Million Metric Ton Pangasinan Cement (Corp.) Plant Complex *1 (1994). (Hereafter Executive Summary).*

[175] See e.g. Position Papers of the UP Marine Science Institute and the Movement of Bolinao Concerned Citizens, Inc., expressing opposition to the project.

See also *DENR*, Matrix of Technical Issues Raised by the EIARC on the Proposed Pangasinan Cement Complex.

[176] *According to the Lingayen Gulf Coastal Area Management Commission, 22 of the Bolinao municipality's 30 barangays are located in coastal area. And out of almost 10,000 households in the municipality, 22% are entirely dependent on fishing while 39% are dependent on farming. Thus the number of those who will be potentially dislocated economically is far greater than the number of workers that may be potentially employed in the plant. Furthermore, Bolinao's fishery-based revenue of P 36m ($1.385m) per year is more sustainable and directly benefits more people than the estimated P 25m ($961,538) annual revenues that will go to the municipal treasury as tax payments from the cement plant after the five-year tax holiday period.* See also *DENR*, Matrix of Social Acceptability Issues Raised by the Opposition to the Proposed Pangasinan Cement Complex.

[177] See e.g. *DENR*, Summary Matrix of Social Acceptability Issues on the Proposed Bolinao Cement Plant Complex *(Basis for Supporting the Project).*

[178] *Executive Summary*, supra. *note 14, at 1.*

[179] Ibid, *at 5.*

[180] See *Memorandum of Undersecretary Antonio GM La Viña, DENR, for Secretary Victor O. Ramos, DENR, dated 5 August 1996, regarding the ECC application of Pangasinan Cement Corporation for its proposed cement complex in Bolinao, Pangasinan.*

[181] Ibid.

[182] Ibid.

[183] *Medium-Term Agricultural Development Plan 3-2, 1992.*

[184] Ibid, *at 3-4.*

[185] Ibid, *at 3-8.*

[186] *Allen D Mariano, 'Stifling Agriculture's Progress,'* 7:45 Farm News and Views *2, 1994.*

[187] *Philippine Peasant Institute*, Philippine NIChood: Stunting Agriculture for Fast-Track Growth , *PPI Briefing Paper no. 93-03,1993, at 6.*

[188] See ibid, *at 6-9.*

[189] Ibid, *at 5.*

[190] *Philippine Peasant Institute*, The Use of Chemical Inputs: An Instituted Fallacy, *3:3* Farm News and Views *1,1990.*

[191] See *National Statistical Coordination Board*, 1995 Philippine Statistical Yearbook *11-6, 1995.*

[192] See *Corinne Canlas, Edsel Sayir and Catherine Venzuela*, Dynamics of the Philippine Rural Economy, *PPI Briefing Paper no. 92-02, 1992, at 2-7.*

[193] See *Cecilia Ochoa and Allen Mariano, 'Assessing the Damage,' 8:6* Farm News and Views *2-8, 1995 .*

[194] *Philippine Alliance of Human Rights Advocates*, Dark Stains Spreading on the Canvas: A Human Rights Report on the Third Year of the Ramos Government *49, 1996.*

[195] *The bulk of the following section is based on the three-part series of articles on banana plantation workers written by Jerry Esplanada for the* Philippine Daily Inquirer *25-27 September 1995.*

[196] Ibid, *'Pesticide causes mass sterility,'* Philippine Daily Inquirer *1, 25 September 1995.*

[197] Ibid.

[198] Ibid, *at 4.*

[199] Ibid.

[200] Ibid, *at 1, quoting Atty. Renato Ma. Callanta.*

[201] Ibid, *'Birth defects, childless couples, shattered dreams,'* Philippine Daily Inquirer *1, 11, 26 September 1995.*

[202] Ibid, *at 11.*

[203] Ibid, *'Pesticides dumped in 3rd World,'* Philippine Daily Inquirer *6, 27 September 1995.*

[204] See 1995 Phil. Stat. Yrbk, supra. *note 9, at 5-4, 5-7.*

[205] See *Dole Food Inc.*, 1993 Annual Report to the United States Securities and Exchange Commission *(Form 10-K), SEC File no. 1-4455, Exhibit 22, at 3.*

[206] Ibid, *Main Report, at 15. Aside from its pineapple plantations, Dole also operates a fully integrated shrimp processing facility, and also produces asparagus and leather-leaf ferns, anthuriums and other tropical flowers in the Philippines for export to Japan.* Ibid, *at 6.*

[207] See After '30 Quality Years' of Dolefil Presence: Small Farmers Cry for Help *(n.d.), (manuscript, on file with the author).*

[208] Ibid, *at 2.* See also *Petition Paper of the 275 Small Farmers of Tupi and Polomolok, South Cotabatio, Regarding the Denudation of Our Estimated 253 Hectares of Land and Crop Destruction due to Flash Floods from the Contoured Pineapple Plantation of DOLE Philippines in Polomolok, South Cotabato, 29 November 1994.*

[209] *Proceedings of the Dialogue with Dole Officers and Farmers on the Problem of Soil Erosion/Flash Flood Allegedly Caused by Dole Plantation Operations, held at Sta. Teresita Multi-Purpose Center, Tupi, South Cotabato, 3 March 1994, at 2.*

[210] Ibid, *at 6.*

[211] See *Noreen Manatad, 'Mission team finds Dolefil guilty of envt'l damage,'* Mindanao Daily Mirror *4 and 13, 1 May 1994.*

[212] *Nimfa Andrade* et al., An Environmental Appraisal of Dole Philippines, Inc. Pineapple Plantation in Barangay Kinilis, Polomolok, South Cotabato *32, 1993.*

[213] See *Letter of Leonardo Q. Montemayor, Representative (Peasant Sector), House of Representatives, to Ernesto B. Pantua Jr., President, Tupi Farmers Against Soil Erosion, 15 February 1995.*

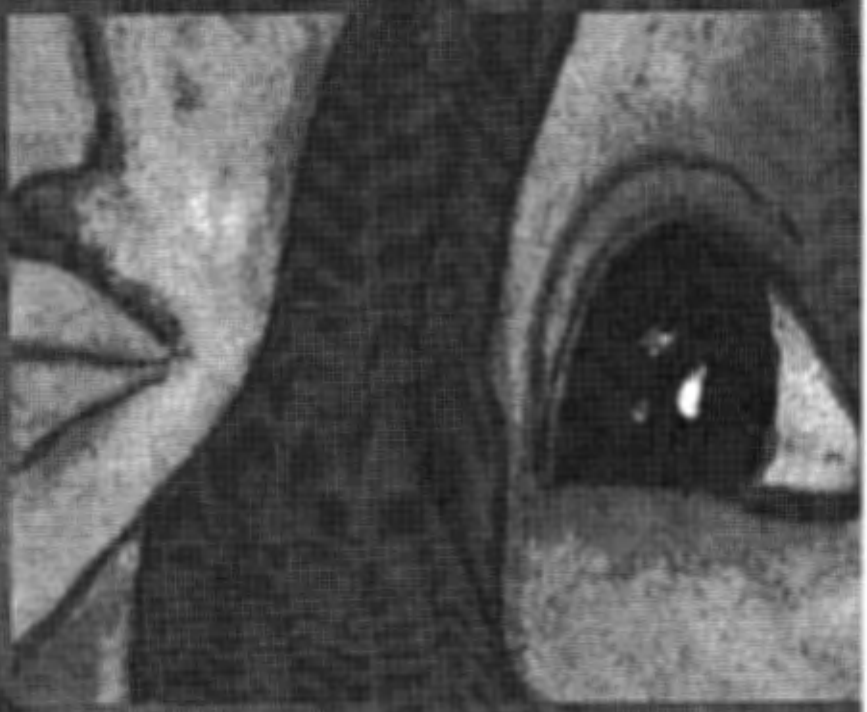
[214] See *LRC-KSK*, Small Farmers Struggle for Land: A David and Goliath Story, *Mail Alert! no. MA-03-94, 4 October 1994.*

[215] See *Consolidated Decision*, Sotero Pampolina and Esperanza Pampolina vs. Dole Philippines Inc. *(Civil Case no. 3 (378)) and* Jose Zabala and Angelita Zabala vs. Dole Philippines Inc. *(Civil Case no. 4 (416)), Regional Trial Court, Branch XXV, 11th Judicial Region, Koronadal, South Cotabato, 19 June 1986.*

[216] See e.g. *Friends of the Earth International (FoEI) Resolution Expressing Support to the Small Farmers of the Municipality of Tupi and Polomolok, Province of South Cotabato, Republic of the Philippines and Demanding that Dole Philippines, Inc., Rehabilitate Lands Damaged by Soil Erosion, Provide a Comprehensive Compensation Package to Affected Families and Develop and Implement a Comprehensive Mechanism to Address the Problem of Soil Erosion, adopted on 15 October 1994 during the FoEI 1994 Annual General Meeting at Jäneda, Estonia.*

SOUTH KOREA

"Industries preferred paying up fines to pollution treatment as that was much cheaper. In fact, the corporate sector tended to regard public environmental assets as free"



SOUTH KOREA

Sanghoon Lee

Compressed Growth in South Korea: Remarkable Progress, Colossal Price

South Korea is noted for being a third world country which has achieved dramatic development on the basis of urbanisation and industrial growth. In just three decades, the country has reached a level of industrialisation that took the advanced nations three or four centuries to arrive at. Through its policy of accelerated development, the country has experienced an unprecedented rise in its GNP in the past three decades and achieved a prominent place in the world in many fields of industry. Today, South Korea is sixth in steel production and among the top automobile manufacturing countries in the world. It is the world leader in shipbuilding in terms of the number of orders for ships.

However, despite such fantastic performance, South Korea is reeling under severe environment degradation, acute pollution, unbridgable economic inequities and ever-rising industrial accidents. Environmental problems have become so pervasive that they are threatening people's health and have now turned into social issues, impeding the growth process. The people are seeking clean air, pure water, fertile soil, an amenable environment and an aesthetic landscape. According to a recent survey, 35.1% of respondents favoured a halt to economic growth, if that was the only way to resolve the fundamental problems of pollution and environmental degradation.

Galloping Towards Prosperity

South Korean government, often described as a military or development-dictatorial regime, initiated the process of economic development for its own legitimisation. Launching national development plans for industrialisation and urbanisation, it concentrated investments in the expansion of physical infrastructure in specific urban and industrial areas. It is due to such assiduous policies that the Korean economy has grown at an annual average rate of over 8% since the 60s, and per capita income and volume of exports increased swiftly. During 1970-93, GNP per capita went up 30 times, and the volume of international trade about 60-fold. Today, income per capita is $10,000, 85% of the population living in urban areas enjoying modern amenities.

South Korea overcame absolute poverty to achieve a high level of economic development, under strict government control through Five-Year Economic Development Plans. In the early years of its development drive, the country was saddled with paucity of funds for investment, lack of effective demand and scarce natural resources. To overcome

this situation, it adopted an export-driven, unbalanced strategy, which focused on giving a boost to those strategic industries that would contribute to quantitative growth.

Since 1961 South Korea consistently maximised 'compressed growth' in the implementation of its five-year plans, swiftly moving from light to heavy and then to high-tech industries in a short span of time. Industrialisation was launched on the southeastern coast which already had ports that facilitated exports and industrial complexes sprouted in cities along the shoreline. Other industrial complexes were built around the capital, Seoul, and Inchon and the inland areas of Taegu and Kumi.

The pursuit of this intensive and extensive development was facilitated by a drive towards strategic enterprises such as heavy chemicals, which were capital-intensive, resource-wasting and environment-degrading. This encouraged the establishment of an industrial structure oriented towards pollution. Thus, the southeastern seashore, the major location of heavy chemical industrial complexes, has been seriously polluted.

The unbalanced growth strategies that marked the economic development plans were also adopted in the national land development plan with the intention of gains from agglomeration. Such a strategy led to a breakneck pace of urbanisation in concentrated areas, and consequent destruction and pollution of the environment. Realising the adverse impacts of its policies, government did change its strategy towards a more balanced use of land, but by then it was too late. Besides, strong centralism prevented the plan from being effectively implemented.

State-dictated Corporate Growth

South Korea's unprecedented economic progress had several outstanding characteristics. First, it was initiated by central government which planned economic policy in detail, established national industrial complexes, invested in specific industries, and often created artificial market demand to give a fillip to industrialisation. Thus most public utilities and services such as power, land development, water resource management, housing, information and media were government monopolies.

Second, it consistently decided and implemented labour policies in favour of the corporate sector. Its export-driven economic policy was carried out by importing large amounts of capital equipment, technology and raw materials or components for assembly using cheap domestic labour in factories in vast industrial areas, and then exporting the finished products. Naturally, South Korea's accumulation of considerable wealth was based on plentiful and cheap labour.

Plethora of Ills

The process of industrialisation in Korea, where natural resources are scant and the population large, brought with it severe and irreversible destruction of the environment and largescale pollution.[1] The first widespread impact of this was felt as early as the 60s when a large number of farmers in the city of Ulsan reported the loss of their pear crop, and severe soil pollution to the extent that no paddy could be planted. The people of the area were thus forced to move out.

But their relief was temporary as industrial complexes were coming up fast in the near-shore areas. When a new complex was built in the area where the people of Ulsan had been relocated, they were compelled to move out. Government, however, carried on with its relentless policy of industrialisation, regardless of the problems it was creating for the people and prevented their complaints from being voiced. In the absence of a democratic and responsible press, few such complaints were publicised.

Meanwhile, government went on with its infrastructure development, constructing roads, port facilities and seashore industrial sites. It also built numerous dams and filled up shallow areas of the seacoast to secure enough land for massive industrial complexes. The Korean Water Resources Corporation, Land Development Corporation and central government chugged along in unison, developing all available land for industrialisation, leaving no room for conservation or rehabilitation considerations.

It is these giant infrastructure projects that became one of the major factors which tipped the delicate balance of the ecological system. The land reclamation projects, carried out along the western shoreline are a revealing example. Here public corporations and major conglomerates, called 'Chaebol,' joined hands to fill up vast areas, prompting undesirable changes in the marine environment and destroying the settled areas along the shores.

All the major rivers in the South, including the Han, Nakdong, Keum, and Yongsan, were contaminated. The phenol spill in 1991 in Nakdong river and the toxic release into the water reservoir serving Taegu, Pusan, and Masan are among the many such examples of development's adverse fallout in South Korea.

A vital input for the industrialisation was power and energy. South Korea, which ranks eighth in the world in energy consumption, formulated a new policy in the mid-60s, which replaced coal and wood with gasoline as an energy source. Today, the country has a large energy-consuming segment which is expected to increase faster than the growth of the economy in the foreseeable future. Needless to say, the power plants that were set up to meet the rising demand caused substantial amounts of air pollution, made worse by the sharp increase in the number of automobiles since the 80s.

As of today South Korea has 11 nuclear power plants in operation, six more under construction, and, according to government reports, the country will have 50 nuclear plants to meet half the power needs. Anti-nuclear campaigns against additional power plants, suppressed during the cold war, are now in full swing with the active participation of local residents.

Two decades into rapid industrial strides and South Korea saw the destruction of greenery as a growing number of golf courses and resort towns were built. In Kyonggi province not far from Seoul, a large number of trees were felled and mountains bulldozed to build a golf course and the access road. In the course of the construction, a different type of pollution originating from the blasting — explosions, tremors, dust and noise — added to the suffering of the local people, mostly farmers. In addition, toxic insecticides and herbicides sprayed in large quantities over the grass led to ground water contamination and destruction of aquatic ecosystems. In Mooju, expected to hold a winter Universiad Games in 1997, forests are being cut down to build ski slopes.

By the 90s, South Korea had lost its attraction as an ideal place to set up industries. Lack of labour, higher wages and growing anti-pollution protests prompted Korean companies to turn their eyes abroad in search of inexpensive labour and low environmental standards. In this move, they followed in the footsteps of Japan, which had furthered the process of South Korean industrialisation in the early years by exporting polluting industries into South Korea, and importing their finished products. Most of the Korean companies operating in China and southeast Asia are low-productivity, labour-intensive industries such as leather, textiles and electronics. While there is no way to conclusively prove the adverse effects of these industries, the possibility that South Korea is exporting pollution is too great to be ignored. The case of the Wonjin rayon factory that caused large-scale contamination and was marked by frequent accidents is quite revealing and symbolic. A strong campaign by workers and residents forced its closure but the entire plant has now been exported to China, causing severe pollution on the way. Pollution export is now spreading further into East Asia.

A Society Gone Astray

Over the years, the onus for environmental pollution in Korea has shifted — from government to the corporate sector to households. During the 60s and 70s, it was government that was mainly responsible for ecological degradation through the establishment of industrial complexes, construction of dams, land reclamation and so on. In those days, lax laws were the reason why factories could discharge massive amounts of pollutants into the air and water.

In its zeal for unbridled growth, government imported polluting industries from advanced countries believing it to be the only way to progress. Late President Park, who ruled over South Korea during two crucial decades, 1961-79, had called a smokestack at an industrial complex, 'a symbol of prosperity.' In fact, during those days, government consistently concealed and denied the existence of environmental problems. When a marine scholar declared that the South Sea was polluted, he was fired from the university and arrested by the Korean Central Intelligence Agency, apparently because his research had adversely affected the export of raw fish to Japan. Government also denied and ignored reliable international reports on the rising pollution and suppressed all kinds of environment movements until the early 90s, labelling them as 'enemy of the regime' and branding their initiators as public enemies.

In the 80s, however, the corporate sector took over from government as the chief agent of pollution through discharge of untreated effluents, excessive emission of toxic gases into the air and illegal landfill disposal of hazardous waste. Though most factories did not meet even the lowest permissible emission standards, government did nothing for it would negatively impact economic growth. Industries preferred paying up fines to pollution treatment as that was much cheaper. In fact, the corporate sector tended to regard public environmental assets as free goods.

Since the mid-80s, Korea has become a society of mass consumption. Its citizens have become voracious consumers of water and energy and the biggest contributors to waste generation and air pollution. This is the inevitable outcome of the 'compressed growth' strategy that South Korea adopted on the road to prosperity.

Oil leaks from the crippled tanker the Sea Prince.

GLOSSARY

Ecosystem Destruction

Even with its fast pace of development, South Korea retained 65% forest cover till the 80s. But since then forests are being regularly cleared for the construction of golf courses, ski slopes, resorts and roads. As a result, several bio-diverse and sustainable ecosystems have been seriously endangered.

***Golf courses*:** The number of golf courses in South Korea have increased rapidly since 1990 though their construction is not appropriate to the country's topography. The courses have been systematically decimating forests, polluting soil and water with chemicals, and triggering erosion of mountain slopes. At least 50 people were buried alive in 1991, when the construction of a golf course on a hill led to a massive landslide. The total area covered by golf courses is 109.9km^2, one-sixth the area of the capital, Seoul, and the number of applications for new construction is 203. People and environmental NGOs have been opposing golf courses, but their construction goes on and even the Gaya and Chiak national parks have not been spared.

***Land reclamation*:** Government and major corporations in South Korea are reclaiming tidal lands to create new space for agriculture, industry and housing needs. The intertidal zone — a kind of natural wastewater treatment system and ecosystem of the highest productivity — is completely ruined. Coastal reclamation projects are not only harming the marine ecosystem but also taking away the livelihoods of fishing communities. Since 1970 about 800km^2 has already been reclaimed and another 1200 km^2 of new land is expected to be created by AD 2001.

***National parks*:** South Korea's national parks, deemed national property, are being taken over by local and central authorities as well as the corporate sector for the development of tourism, entertainment, sports and industrial infrastructure. Five golf courses, two ski slopes, amusement parks and many roads and dams have already been constructed or are under construction in national parks while mammoth tourism complexes are being planned around them.

Housing Problems

The concentration of population in metropolitan areas and the consequent growing demand for housing, that has been a boon to property developers with the spurt in real estate prices, has become a curse for people in search of housing. Many poor tenants were forced to commit suicide while tens of thousands were evicted from their houses. Figures for 1990 show that a high 30% of total households inhabited a single room. The situation has somewhat eased with the construction in 1992 of 2m housing units. The Habitat International Coalition meeting in 1987 named South Korea as one of the two countries in the world with the most cruel forced evictions.

Industrial Pollution

Since the modernisation drive was initiated in South Korea, 759.7km^2 national industrial complexes have been constructed. The soil and sea surrounding these complexes are severely polluted in the absence of any consideration for the environment and efforts to maximise profits. There has been a move since the mid-80s towards environmental conservation but it is too late.

***Onsan disease*:** The Onsan industrial complex for heavy chemicals lies on the middle-southern tip of the Korean peninsula adjacent to Ulsan, South Korea's largest industrial city. The complex was built around a small, peaceful town which became a ghost city after an unidentified disease, caused by heavy metal pollution, afflicted 1500-2000 inhabitants living in the neighbourhood. Pollution in Onsan became so severe that its 37,000 residents, including the ailing, had to move out. While government helped resettle some of the victims it has not yet officially acknowledged Onsan disease. (*See case study*)

***Yochon*:** Yochon, a newly developing industrial city, lies on the middle-southern tip of the Korean peninsula, on the Yosu coast southeast of southern Cholla province. The complex offers employment to 12,000 workers in its 73 units, at least 34 among them dealing with petrochemicals. Yochon and its surrounding areas have been even more seriously polluted than Onsan, necessitating the relocation of 15,000 people.

Industrial Wastes

More than 96,000t industrial waste is generated in South Korea every day. But there are just two well-equipped industrial waste treatment plants in the country and the private waste treatment plants are neither efficient nor are they managed properly.

***Hwasong*:** Air pollution and toxic wastewater from Hwasong industrial waste treatment plant under the Ministry of Environment (MoE) and Songrim company located in Hwasong county caused skin disease and deformed animals in 1992. The irony was that the Hwasong industrial waste treatment system is one of the two best equipped plants.

Marine Pollution

The seas around South Korea is getting increasingly contaminated by frequent oil spills and effluent discharge. Government has neither paid attention to pollution treatment, nor has it bothered to prevent oil spills. In the past 10 years, there have been at least 10 major oil spill incidents. Reclamation projects have also destroyed the marine ecosystem.

***Oil spill*:** In July 1995, Hoyu Tanker Company's ship, *SeaPrince*, sunk off the coast of Sori island, Yosu in southern Korea, spilling 1500t Bunker-C oil which devastated the marine ecosystem and seriously harmed the livelihood of fishermen. Losses were estimated at 200bn won (US$ 235,294000). The local people had to mop up the spill as Hoyu, an affiliate of LG Group, showed little concern for the disaster affected area. (*See case study*)

***Red tide*:** In the hot months, ocean plankton multiplies abnormally when it comes in contact with effluents discharged into the sea. Every summer the contaminated plankton break on the shores in huge waves known as red tides, devastating the coast. It gradually dies out only when the temperature begins to fall.

***Shihwa Lake*:** When the Korean Water Resource Corporation (KWRC) and Agriculture and Fishery Promotional Corporation (AFPC) reclaimed tidal land on Shihwa bay in the West Sea, they spent 500bn (US$ 588,235,000) won in creating the 60km^2 Shihwa freshwater lake. It became so polluted that it has to be purified at a price much higher than its cost of construction. There are several such freshwater lakes whose fate is similar. (*See case study*)

Occupational Hazards

Industrial accidents are a frequent occurrence in South Korea — the rate being 1.67% in 1991 as compared to Japan's 0.57% and Thailand's 0.7% in 1988. The total number of workers involved in industrial accidents was over 1.4 million during 1984-94, while 2700 workers died in 1994. The number of workers suffering from occupational diseases goes up by 5000 every year.

***Accidents*:** In South Korea, 120,000 workers are injured at their work places every year. Though the frequency of industrial accidents is decreasing gradually, the number of the serious mishaps is increasing, and more than 2000 workers die each year. The high casualty figures are the outcome of government policies and corporate philosophy which put high productivity and profit maximisation before workers' safety.

***Mercury poisoning*:** On July 2, 1988, an adolescent worker of Hyupsung Keigong company died of mercury poisoning. After graduating from a middle school in his hometown, he came to Seoul to work at the thermometer factory and within two months he fell ill. Contracting such lethal diseases have become commonplace in many factories in South Korea, taking a heavy toll, even on children.

***Wonjin Rayon*:** During 1966-93 when the Wonjin Rayon factory was in operation, more than 500 workers suffered from carbon disulphide poisoning[2] and at least 20 died. The factory was a dangerous workplace handling hazardous chemicals and it violated all labour safety laws with impunity and government connivance. Wonjin's equipment was imported from Japan and after playing havoc with workers' health in South Korea, has been transferred to China. (*See case study*)

Power Projects

The fast pace of industrial growth and urbanisation has created a spiralling demand for energy in South Korea. To cope with the extraordinary need for electricity, government has given a thrust to setting up power-generating complexes with sophisticated technology specially nuclear power plants, thereby increasing the possibility of radiation-induced health hazards.

***Water-pumped plants*:** The Korea Electric Power Co. (KEPCO), the electric power industry monopoly, is clearing forests to construct water pumped-storage power plants in the Dokyu, Chombong and Chiri mountains where forests had hitherto been perfectly conserved. Water pumped-storage power plants have the lowest energy efficiency because they are related to nuclear power plants. They utilise night-time surplus power produced by nuclear plants to pump water into reservoirs which is released later to meet peak time demand.

***Nuclear plants*:** South Korea has 11 nuclear power plants and plans to build several more to meet 40% of the country's energy demands by 2010. The nuclear power plants are a menace because of radiation-induced diseases and foetus deformities, frequent radioactive leaks, destruction of ecosystems through hot water discharge into the sea, and dumping of nuclear wastes. Fishing grounds around the Yongkwang nuclear plant in South Cholla province were ruined because of hot water discharge. The anti-nuclear power movement is gaining ground all over South Korea. (*See case study*)

Safety Lapses

The break-neck speed of South Korea's economic development has been marked by several safety lapses leading to major accidents, often with fatal consequences. In the last

three years alone there have been eight such major mishaps, among them the collapse of the Grand bridge and a luxury department store, explosion in a city gas pipeline and sinking of a ferry, all taking a toll of 1100 lives. Minor mishaps have become so regular that South Korea has been dubbed 'the republic of accidents.' The annual traffic accidents toll alone is 1200.

***Grand bridge*:** On October 21, 1994, the Songsu Grand bridge over the Han river In Seoul collapsed during the morning rush hour, killing 32 people including several high school students. The collapse occurred when the upper board of the middle section of the bridge gave way. Investigations identified fraudulent construction and negligent management as the causes for the mishap. The contractor of Songsu bridge was the multinational DongAh Construction Co., which is also constructing the Libyan Great Waterway.

***Pipegas explosion*:** At least 102 people died and over 200 were injured when a city gas pipeline exploded on April 28, 1995, in Taegu, South Korea's third-largest city with a population of 2.3 million. The toll was high as the area was teeming with people going to work and children on way to school in the morning. The pipeline explosion occurred at the construction site of a subway in Dahlseo district because careless construction workers of a nearby department store had damaged the pipe through which gas leaked. Safety lapses were responsible for this accident.

***Sampoong department store*:** On June 29, 1995, the Sampoong luxury department store in a posh area of south Seoul collapsed, leaving 502 people dead and more than 900 injured. Though there were several early warning signs before the five-storied building crumbled, the management ignored them for the sake of business and profit and, in fact, ordered the employees to keep working while they fled to safety. This accident symbolised the tragedy of a money-oriented society. (*See case study*)

Seoul Smog

Seoul, the capital of South Korea, is a city of 11 million people and three million vehicles. The city has been experiencing the 'Seoul smog' with increasing frequency, a phenomenon caused by a mixture of fog, and vehicle pollutants. When Seoul smog descends, visibility decreases and the ozone concentration in the air becomes very high. Ozone alerts in Seoul were announced ten times in 1996. (*See case study*)

Water Pollution

Of South Korea's four major rivers[3] that provide water to 30 million people, the second-longest, Nakdong, and the Youngsan are so polluted by industrial and municipal wastewaters, that their water quality has become third or fourth grade, not fit for drinking any more. In cities, there are few people who drink tapwater directly; most people drink mineral water or water purified at home. The mineral water market was over 100bn won (US$ 117,647,000) in 1995.

***Ammonia*:** When a large amount of ammonia flowed into the Chilseo and Doksan water purification plants along the Nakdong river in January 1994, 1.5 million residents of Pusan, the second-largest city in the country with a population of four million, and 700,000 people in Changwon, Masan and Haman suffered from acute water shortage. Government could not clearly explain the cause of the ammonia inflow, stating that it was the shortage of water in the dry season that had caused water pollution.

***Heavy metal*:** In 1989 Ministry of Construction, in the first-ever public admission of contaminated waters, declared that most water purification plants in South Korea had been

so polluted by heavy metals and detergent that tapwater was not fit to drink. Soon after publication of this government statement, people stopped using tapwater and invested in water purifiers or started drinking mineral water, enlarging their market even more.

Phenol: When 30t liquid phenol discharged by Doosan Electronic Co. flowed into the Nakdong river on March 14, 1991, civic officials increased the amount of chlorine in the water treatment plants to get rid of the foul smell. This trigged a chemical reaction and led to the formation of chlorophenol, a chemical more lethal than phenol. The chlorophenol contaminated water reached 420,000 households and 1.62 million people suffered from headache and nausea besides being deprived of drinking water. (*See case study*)

CASE STUDIES

Onsan Disease

Korean Version of Itai-itai

Onsan on the East Sea was a peaceful and well-off town. When in 1977 a giant industrial complex comprising petroleum and nonferrous metal factories was constructed here, the entire area began to be ruined by heavy metal contaminants and air pollutants.

Within five years, the fish catch fell to one-eighth of what it had been before the industrial complex was built, and the crop yield was halved. In addition more and residents began to fall prey to various kinds of ailments and since 1983 people suffering from symptoms of neuralgia rapidly increased.

In 1985, 1500-2000 residents of Onsan were afflicted by an unidentified disease. Apparently they were poisoned by seafood infected with heavy metals. The first to be affected were people living around Daechung creek, the main outlet for heavy metal wastewater from the industrial complex. Onsan's toxic effluents were clearly leaving their deadly marks on the life around the once-tranquil town.

Research by the Graduate School of Environmental Studies, Seoul National University, had found concentrations of mercury, cadmium, arsenic, lead and chromium in Onsan's water samples to be several times higher than the country's average. The presence of copper at 11.5ppb and zinc at 23.1ppb was more than 2.5 and 23.5 times respectively above acceptable limits. Copper concentrations were, in fact, the highest recorded along the country's seashore. The Disaster Study Committee of Nagoya, Japan, too, had detected arsenic, manganese and chromium in the Onsan area. Contamination in fish and shellfish in Onsan were also worse than in other places in South Korea. However, it was a time when surveys could not be conducted freely or pollution data be publicised.

Kill if You May, Profit You Must

The dangerous pollutants were discharged by factories which, to reduce costs, did not operate effluent treatment plants regularly. In fact, it was cheaper to pay compensation to residents than to operate pollution prevention systems. Over 1978-83 factories in Onsan paid out 1.5bn won (US$ 1,765,000) in damages from air and water pollution, whereas it

would have cost them about around 45bn won (US$ 52,941,000) to install wastewater treatment systems, and 1.25bn won (US$ 1,471,000) per year just to run them.

In fact, the Onsan tragedy is a typical example of the inevitable outcome of South Korea's industrial policy of high growth at any cost. When it set out on its path of dictatorial development, the highly-polluting heavy-chemical industries of developed countries were losing out in competition due to stringent environmental regulations. At that time, South Korea needed both capital and technology from these countries and so welcomed the polluting industries with open arms. Thus several industrial estates were established to facilitate the setting up of these industries, and Onsan was one such complex.

The foreign companies which rushed to South Korea tended to concentrate in one place for it was convenient to buy raw materials and labour skills. Ten of the 13 companies operating in Onsan were multinationals and the rate of overseas funding was about 36%. The term 'pollution' was not a familiar word in those days and the few people who talked about it were regarded as public enemies. It did not matter if the activities of the polluting units at Onsan — Korea Zinc, Korea Mining Refinery, Donghae Pulp, Cheil Product Company, Lucky Onsan Factory and so on — had a terrible impact on people's lives as long as they contributed to industrial growth. Therefore, as products and sales of the Onsan industries multiplied, so did misery and pain for people living around the complex.[4]

Uncared-for Sufferers

When it was windy or rained, white dust in smoke emitted from Donghae Pulp Co. surrounded the whole village and if the white dust touched a vegetable, it made holes in leaves like the biting of insects and that killed vegetables in the greenhouse. The residents are suffering from vomiting and itching and have experienced that kind of troubles for three days of every 10 days.

Kim Kyounguk in Ubongri

It is rare that hot and stinking gases don't come out from stacks. (One) afternoon, I stopped to take care of seaweed to keep it from a strange gas which spread suddenly. But it wasn't a special thing. So I went back to my work. In the daytime some stacks emit smoke only, but they only start to discharge stink gas at night.

Resident in Daejungri

The flowers did not grow in school. A spindle tree which is usually strong died too.

Onsan *elementary school teacher*

Nowadays there is no way to live. We, fisherwomen, make money in the ocean. If the ocean dies, that means we lose our job. We easily caught earshell and topshells, as we dived two, three fathoms deep. But nowadays even though we dived 12 fathoms, we cannot find earshell. If we open oyster, it is full of heavy metal powder.

Lee Bongsun in Leejinri

When the Minamata and Itai-itai diseases struck in Japan, polluting factories responsible for mercury contamination of its waters had been in operation for at least 20-30 years. The Onsan disease hit South Korea within barely five years of the polluting factories being set up.

First it was crops and marine life that exhibited the adverse effects of wastewater and air emissions from the Onsan factories. Then it was the turn of children, women and the aged to fall

prey to pollution, displaying increasing symptoms of neuralgia as early as 1983. From then on till January 1985, 70-80% of all local residents suffered from skin problems, eye infections, respiratory diseases and neuralgia.

Government, however, refused to admit the disease was pollution-related. Its callous attitude was vindicated by the report of a team researching the Minamata outbreak, stating — on the basis of examination of just 20 patients and survey of the area in 1986 — that the Onsan disease could not be classified as pollution related. People were, therefore, compelled to leave their hometown and jobs without proper medical treatment or any means of livelihood.

As the evil effects of the pollution got worse, residents of Onsan started to claim damages. Government responded in a high-handed manner, resettling the victims in other areas. About 7000 households or 37,000 people have left Onsan and moved to other town or cities, unwelcome and uncared-for, the cost of such uprooting being about 370bn won (US$ 435,294,000). After they moved out, the Onsan industrial area went into oblivion.

More Onsans?

The repressive political regime and lack of awareness about environmental issues prevented a precise survey of the number of people who died or fell ill from Onsan pollution. A study planned by environmentalists has not been allowed for the last 10 years.

Meanwhile, the 'second Onsan' is on the horizon at the Yochon Industrial Complex which is more dangerously polluted and will uproot over 15,000 people in the near future. With government remaining bent on a faster rate of economic growth without any concern for the environment and with environmental activism not gaining much ground, who knows a 'third Onsan' may soon rear its ugly head.

Nakdong Phenol Leaks

A River of Sorrow

On March 14, 1991, people living along the Nakdong river reported a strange smell in their piped water supply. Not knowing what had caused it, the water purification treatment plant added more chlorine to the river waters being supplied to households. The action merely intensified the strong smell and it was only late that evening that officials discovered the cause was phenol that had leaked from a broken pipe and flowed into the river. The addition of chlorine made matters worse for it reacted with the leaked substance to form chlorophenol, a far more potent and dangerous chemical, several hundred times stronger in smell. By then the contaminated water had already been supplied to 420,000 households.

The incident affected 1.6m people living in Pusan, Masan, Changwon and other places of Kyongnam. They had no water to drink, wash or for household needs and suffered from headaches and nausea.

Inspections carried out by MoE and the prosecutors revealed that one of the two incinerators at Doosan Electronic Company's Kumi factory had broken down some time between Nov. 1, 1990 and March 14, 1991, discharging 1.7t wastewater containing phenol each day into the Nakdong. The nearby Sinsung Co.'s unit also discharged the chemical in its 833t wastewater into the river. A total of 30t phenol was, thus, released into the Nakdong. The amount of the dangerous chemical in tap water supplied to Taegu residents was more than 22 times the international drinking water standard of 0.005 ppm.

On April 22, a connecting part of a phenol tank pipe started to leak and 1.3t of pure phenol liquid again flowed into the Nakdong. Doosan had been ordered closed after the first leak, but reopened on April 18 after its associates prevailed upon the authorities concerned. With the fresh leak, tap water supply to Taegu had to be discontinued again.

Some 11,958 cases of compensation were filed after the leaks including those of several hundred pregnant women claimed damages for both spontaneous and forced abortions. According to a Ministry of Health and Social Affairs survey, 75% of the local inhabitants were of the opinion that the water supplied to them was not clean, 82% used water purifiers or boiled tap water.

Nationwide Protests

The phenol leaks sparked spontaneous protests. Environmental groups and NGOs in Taegu initiated a boycott of Doosan's products and a campaign under the slogan: 'Don't pay the charges of tap water.' In no time the protests spread nationwide.

On April 28, 30 main citizen groups under the banner of 'Citizens' Coalition for Countermeasure of tap water polluted by Phenol' filed a suit in Seoul against the MoE and president of the Doosan Group. In a symbolic protest, they poured OB beer, the country's most popular brand manufactured by Doosan, in front of the company's headquarters while the Supermarket Coalition decided not to market its goods. The protesters also demanded the imprisonment of Doosan Electronics' president and dismissals of the minister of MoE and head of the Taegu Environment Office.

To pacify angry citizens, Doosan decided to donate 20bn won (US$ 23,529,000) to Taegu. The group's president retired after the second phenol accident and government replaced its minister of MOE. Government also announced a 'comprehensive plan for improvement of water quality' and followed it up with a Midterm Comprehensive Plan for Environmental Improvement.

Ambiguous Judgment

Just after the phenol accidents, 800 affected pregnant women claimed damages from Taegu Environmental Disputes Coordination Commission (EDCC), which was ignored. So, 60 women went to the Central EDCC but the result was same. In end-1992, 16 women brought an action in the Taegu local court. This suit, 'pregnant women's compensation for mental and physical damages by phenol' continued from March 1993 to Feb. 22, 1995. At last, the judge decided, 'Doosan Electronics has to pay 120m won (US$ 141,000) to the group of pregnant women through Taegu city..., for Doosan Electronics neglected its responsibility of social role. Taegu city has to pay 20m won (US$ 23,500) to that group to console them.' However, the court exempted Doosan from legal responsibility ruling that it was difficult to know what the concentration of phenol in the water was and what impact it had on people.

Polluter Goes Scot Free

The phenol incident underlines the absence of a clearcut environment policy and bureaucratic apathy in checking industrial pollution. Government's justification is that it does not 'have enough men and money to regulate illegal discharges,' and polluters are usually let off with a fine. The actual reason, however, is that companies must not stop production as it would harm the economy. This was evident from the fact that Doosan Electronic was allowed to resume operations soon after the first leak.

Even though the budget for water treatment has been hiked water pollution by industries goes on unchecked and the quality the Nakdong water is getting worse, being third or fourth degree today. The water quality of the Han, Gum and Youngsan rivers is the same and requires high technical purification before use.

There has been no move to implement the 'polluter pays principle' in South Korea and companies find it pays to pollute, for fines are invariably cheaper than installation of treatment plants. Doosan Electronics. which is worth 50 bn won (US$ 58, 824,000), discharged untreated wastewater to reduce costs by 5m won (US$ 5,875) a month.

With growing environmental awareness, companies are finding that an interest in environmental protection is good for their public image. So the Doosan group has incorporated environment management in its activities fetching the reward from MoE as the most environmental-friendly group in the country. Ironically, Doosan still has to pay up fully the 20bn won (US$ 23,529,000) it pledged to Taegu city.

Seoul Smog

A City Under a Cloud

For 20 days in June 1996, Seoul was enveloped in a bell-like dust cloud. Dense fog, fumes emitted from vehicles, fine dust particles and secondary pollutants all combined to fill the atmosphere with deadly air.

This was the 'Seoul smog', a phenomenon that occurs when the atmosphere is stable, but the temperature on a foggy day changes because of pollutants in the air. It differs from London smog — where fog mixes with sulphur dioxide, and LA smog — which is caused by secondary pollutants like ozone in vehicular emissions — and perhaps more dangerous than both of these.

It is not clearly known how Seoul smog damages people and property as there have been no studies due to lack of experts and technology to measure and analyse the damage from environmental pollution, though South Korean GNP per capita is over $10,000. All that is known is that it is extremely harmful and vehicles contribute up to 80% of the air pollution.

Though authorities concerned keep trying to reduce their estimates of the extent of damage caused by smog, there has been, according to newspapers, a 50% rise in respiratory diseases. Again, there is no clear indication of the impact on death rates, particularly among the aged, but it is likely to have risen considerably, considering that the disease rate was higher among normal people affected with air pollution.

Deteriorating Air

On July 22, 1995, an ozone alarm was sounded twice for the first time in Seoul. On that day the concentration of ozone was 0.126ppm per hour. Alarms were next given during the 20-day Seoul smog in June 1996, when ozone levels touched a high of 0.137ppm. The ozone alarm system was introduced in 1995 and is sounded several times each summer.

In 1990, with 1.1m vehicles on the road, Seoul had an average ozone concentration of 0.009ppm. The 1994 average was 0.014ppm and August 23 recorded the highest-ever ozone concentration of 0.322ppm. At the rate that pollution keeps going up every year, Seoul is likely to see many days with record ozone concentrations. Seoul city government has no means to control the volume of traffic.

MoE and Seoul city government claim that Seoul's air quality is getting better, but citizens feel otherwise. In a recent survey, 95% of respondents stated that air pollution in the city was very serious; 70.6% experienced discomfort caused by air pollution; and over 50% said they were not satisfied with air protection measures taken by Seoul city government. Another survey revealed that 56.7% respondents experienced eye and throat aches while more than 90% were distressed by noise whenever they stayed downtown for long periods.

Factories having been moved outside Seoul and the quality of fuel improved, pollutants in the air have decreased from 0.05ppm in 1990 to 0.03ppm in 1993. The continued air pollution, with higher concentrations of oxides of nitrogen and ozone is, therefore, mainly due to sharp increase in the number of vehicles. With the high degree of pollution, visibility has been diminishing rapidly — the number of days with visibility beyond 15km decreasing from more than 300 in 1969, to 110 in 1981 to less than 60 days in the 90s.

Cost of Pollution

Despite government claims to the contrary, air pollution has been the direct cause of several kinds of ailments. According to the National Institute of Environmental Research (NIER), the number of patients affected by air pollution in Seoul's Gooro district is 3.6 times more than in Chongjoo, a city in the heart of South Korea with a population of 500,000. At least 450 children under 10 years suffering from chronic respiratory disease have been treated in hospitals in Gooro, 5.8 times more than that in Chongjoo. The number of adult patients, too, has gone up from 108 to 143 per 10,000.

According to a 1995 report of the Korea Environmental Technology Research Institute (KETRI), deaths caused by fine particles from diesel would be 25,000 per 10m, a number twice as large as that in California in 1994. Besides, 6300 persons died from diseases induced by carcinogenic materials such as benzopyrene, arsenic and nickel. A KETRI calculation, using UN parameters, suggest that direct social cost of air pollution by vehicles in 1994 was $3.3bn and indirect cost, $5.1bn.

Serving the Car Lobby

The MoE has announced that Seoul's air quality would improve by 2005 through a strategic plan, though its estimates show that pollution would increase up to 11% in 2000. It is predicted that by then the number of vehicles will be 3.2m, 1.5 times more than at present, while green areas will shrink due to construction of housing and roads. According to KFEM, the biggest environmental NGO in South Korea, vehicular emissions will increase up to 1.9 times and suspended particles to 24%. Thus, without a concrete plan to solve the air pollution problem or fund it, MoE's prediction is just a 'pinky dream.'

MOE has no plan to control the rising traffic volume which is being given an impetus by government's policies on oil prices and enlarged budgets for the extension and construction of roads. The average price of gasoline and light oil in South Korea is the cheapest in the world, promoting greater use of private cars and higher oil consumption. The traffic policy focuses on only solving traffic jams and not reducing air pollution. No doubt the interests of the automobile lobby led by three major conglomerates decide government policy in South Korea.

Shihwa Reclamation Project

A Lake Turns Into a Cesspool

In 1987, Korean Water Resource Corporation (KWRC) and the Agriculture and Fishery Promotion Corporation (AFPC) reclaimed 170km^2 tideland by building a 12.7km embankment blocking Shihwa bay on the West Sea. An 60km^2 artificial freshwater pool, the Shihwa lake, was built here at an investment of 500bn won to supply water to industry, agriculture and households that were to be set up in the reclaimed areas. Today the magnificent lake has turned into a cesspool.

Contamination Inevitable

The site for the Shihwa lake was not appropriate for an artificial lake. With a few small creeks flowing through the area, water was not plentiful and there was no clean water to fill up the lake. Therefore, after the development project was launched, only raw municipal and industrial wastewater flowed into it, at the rate of 314,000t a day. The total quantity of wastewater generated around the area is 490,000t per day but only 36% or 176,000t is discharged from a sewage treatment plant into the sea, the remaining flowing into Shihwa. Its condition grew even worse during January 1995- March 1996, when the raw wastewater flowing into the lake stayed for a long time as inflow of backwater from the sea was cut off to protect work on the embankments.

The Shihwa reclamation project lowered harvests in nearby farms through the use of the lake's contaminated waters and also because of salt and dust from the dried tideland, leading the farmers to seek compensation from KWRC for damages. KWRC then made plans to discharge the polluted lake waters into the sea, but fisherfolk of the area resisted the move, insisting that the contaminated water would damage the marine ecosystem.

However, KWRC secretly discharged about 220mt of contaminated water into the sea. The amount of pollution contained in this water was as great as the total pollution in the wastewater that is emitted in the whole of South Korea over 10-20 days. Even the Shihwa wastewater treatment complex, which has been treating part of the inflow into the lake, has discharged raw wastewater into the sea.

Who Pays the Price?

The pollution of Shihwa Lake stands for a failed development policy that acted like a bulldozer. When South Korean construction companies withdrew from West Asia in 1985, government planned the Shihwa project to protect them from bankruptcy as well as utilise their equipment and workers through the creation of new construction endeavours. From the very beginning there was neither careful planning nor a clear goal and as everyone wanted a piece of the cake government responded by allocating different responsibilities to different bidders, with the result that no one felt the project was its own.

Initially no EIA was carried out and when it was done 17 months later, three conditions were stipulated: that water purified at the sewage treatment plant had to be discharged into the sea until construction was finished; that wastewater from the farming area could not be discharged directly; and that water in the freshwater lake had to be changed regularly. However, those conditions were not met.

Now that Shihwa lake is severely polluted, there are plans to purify it at a greater cost than that of construction, so as not to contaminate the ocean. But there are serious doubts

whether the 450bn won(US$ 529,411,000) earmarked for purification will ever be raised or whether it will guarantee a clean Shihwa lake.

Burden of Failure

The experience of the Shihwa reclamation project, a model of unsustainable development, is being repeated at other reclamation sites. All of these reclamation projects are today invariably facing the same fate as their forerunner. The artificial lakes of Ahsan, Shapkyo and Seamankeum are choked with effluents, defeating the very purpose for which they had been created.

South Korea, a small country with a large population, constantly needed more land for its growth needs and reclamation of the intertidal zone of West Sea, from Inchon to Youngsan lake, has been going on for 20 years. Government and development companies have together reclaimed 800km^2, 1.3 times the area of Seoul till now. When the scheduled projects are completed, new land twice the size of Seoul would have been reclaimed.

The intertidal zones are the most productive ecosystems and the land creation process has severely hurt the fishing community which sustained itself on their bounty. Once the coastal lands were commons, but the reclaimed lands belong to a few companies or individuals. For example, Hyundai Group, the second largest conglomerate in Korea, owns the huge Seosan A,B zone, while the DongAh Group has an enormous reclaimed area in Inchon. As their grand scheme to encroach on nature's territory for more profits leads to one failed project after another, the misery of the people knows no bounds.

Oil Spills from Tankers

Sea Under Siege

On July 23, 1995, a Hoyu Tanker Company ship, *SeaPrince*, sunk in the South Sea, off the coast of Sori island, Yosu, spilling 1500t Bunker-C oil. The ship had crashed against rocks while trying to escape from a typhoon. The spill caused an estimated 200bn won (US$ 235,294,000) damage to marine life and the ecosystem.

South Korea did not have sophisticated equipment to handle marine pollution accidents and, therefore, its only recourse was to put up an oil fence and use absorbents and oil treatment powder. The height of the fence was so low that when waves came, the oil flowed over the fence into the sea. Oil treatment material also could not be used as it was banned for causing more extensive damage to marine life. Absorbent cloth was the only way to control the spreading spill.

Initially, Hoyu refused to provide ships for the clean-up, and when it finally did, the oil had already spread widely. Local inhabitants, whose livelihood had been affected by the spill, did their best to clean the shore and waters. In the process, hundreds of fishermen suffered from headaches and skin infections.

Problems arose when the fishermen claimed compensation for the loss of their livelihood. Those without licences were worst-hit as there was no way to calculate the volume of their trade. Even licensed fisherfolk received merely a fifth or a tenth of the actual loss suffered.

Environmental NGOs, especially KFEM, insisted that the LG group, owners of Hoyu Tanker Co., be held responsible for the accident and condemned government's inaction over the issue. On July 26, KFEM and 'Citizens' Coalition for Yosu Regional Environment (CCYE)' jointly set up a team of experts to conduct an investigation which led to the formation of the 'Headquarters for

countermeasures for the LG's *SeaPrince* accident.' It demanded that government declare the accident site a 'critical disaster area' and force the LG group to take positive actions to control marine pollution.

On November 17, while cleaning-up activities were still going on, another Hoyu ship *HonamSapphire*, spilt over 1000t oil. The incident further enraged the people and the demand to punish Hoyu Tanker Co. and the LG group reached its crescendo. The Headquarters began a boycott of LG goods and Hoyu oil, calling for prompt compensation and accurate assessment of damages.

On February 22, 1996, it became clear that some local public officials, the police chief and a National Assembly member had taken bribes from Hoyu. The anger of the people now knew no bounds and thousands gathered in protest meetings to condemn the culprits. At last, on June 25, the NGOs and LG group reached a basic agreement on initiating a research project on marine environment in accident sites. Meanwhile, the local inhabitants were joined by KFEM in clearing the spills. The citizens' spirit was clearly in complete contrast to LG's callous attitude.

South Korean shipping companies like Hoyu were not really bothered about accidents and the consequent loss or destruction of marine and human lives because they themselves were covered by insurance. And whenever accidents happened they were sure of government and media support. The aftermath of the *SeaPrince* and *HonamSapphire* spills proved this tellingly. As did the recommendation for the 21 affiliates of the LG group as environmental-friendly companies.

The oil spills in the South Sea were not mere accidents but an indirect offshoot of South Korea's energy policy. The country's dependence ratio on energy imports was around 96.4% in 1994, petroleum, being fairly cheap, accounting for about 62.9% of total consumption, much higher than even that of most petroleum-producing countries. The ever-rising demand for petroleum is increasing the probability of tanker accidents and, therefore, of oil spills and marine pollution.

Wonjin Poisoning

A Killing Factory

In 1961, as part of the First Economic Development Five-Year Plan, President Park's military government decided to construct two manufacturing plants for rayon products as a step towards import substitution for raw cotton. A year later, about 486,000m^2 land was acquired in Migum city, Kyongi province where the Wonjin Rayon Company's factory was set up. Secondhand machinery imported from the Dorei rayon company in Japan was installed and rayon production began in 1966.

The factory was besieged by many problems since inception. Consequently, its management changed hands several times and its labour force dwindled steadily, from 3000 workers in the 60s and 70s to barely 1500 in the 80s. The factory was finally shut down in 1993 and driven away to China, where it is thriving.

The Wonjin factory was a dangerous place to work in as hazardous chemicals were handled in violation of safety and health norms. In the 26 years that it was in operation, more than 500 people suffered from carbon disulphide poisoning and 20 are known to have died.

Hong, one of the first Wonjin Rayon victims, sued the company for compensation but suddenly withdrew his lawsuit under pressure. Though Hong had been diagnosed as suffering from an occupational disease by the National Medical Centre, he was said to be a victim of sulphur dioxide poisoning and not the more lethal carbon disulphide.

Later when Jung, Seo, Kim and Kang, who had retired from Wonjin Rayon after working for over 14-16 years, developed certain poisoning symptoms, they appealed to Ministry of Labour to identify their disease. The Environment Medical Research Centre of Korea University took on the cases and concluded that all four were victims of carbon disulphide poisoning.

On January 8, 1988, members of 25 medical, labour and environmental groups formed the 'Committee for Wonjin occupational disease victims' to conduct research and arrange aid. On August 18 that year, retired workers of the company formed the first victims' group under the banner of 'Council of Wonjin Rayon occupational disease victims and families' to fight for compensation. When its negotiations with the company failed, it tried to barricade the street that was to carry the 1988 Olympic torch, forcing Ministry of Labour to join the negotiations. A 'committee for occupational disease patient compensation judgment' was set up comprising six doctors recommended by each side. This was followed by the formation of 'Wonjin occupational disease victim labour council (WOVC)' in December 1989 which comprised workers rejected for medical treatment by the company. While WOVC was carrying out negotiations with the company, the factory's labour union, joined the struggle.

Meanwhile, Kim, who had worked for six years in the nontoxic section, died while awaiting the ruling on his occupational disease. When Kim was diagnosed to be suffering from carbon disulphide poisoning, he submitted the reports to the company and applied for medical treatment. But the company refused to issue the treatment order because he had worked in the nontoxic section. In fact, the company said that his death was not caused by any occupational disease, but hypertension. For five long months workers and social movement groups fought over this issue, establishing that occupational disease had caused Kim's death and also making the company agree to medical examination of all employees, retired and present. In August 1991, about 1300 Wonjin's workers were examined by a medical board.

When Wonjin Rayon was finally shut down in July 1993, workers protested, demanding that the factory remain open with new equipment, improved pollution prevention systems and better work conditions. An agreement was worked out with government and the company covering medical examination, consolation pay for shutdown, reemployment security, the establishment of the Wonjin occupational disease foundation and so on. Though the foundation was set up and some compensation paid out, those promised reemployment are still waiting for jobs and no one knows for sure the actual number of victims.

According to Ministry of Labour's own special inspection paper, Wonjin infringed every labour law in the books, from industrial security to health and did not pay overtime allowance during 1985-87. When carbon disulphide poisoning was first exposed, the company tried to cover up by claiming that the disease was the outcome of alcoholism and intemperate sex. What is worse, it initially tried to appease the victims with just 15.6 bn won (US$8000). For all its labour victimisation, Wonjin was awarded the 'non-industrial accident record' and 'gratitude prize' by government. Today, the Wonjin tragedy is set to be reenacted in China where the factory, with all its hazards, has been transferred.

The Wonjin incident showed clearly that South Korea's economic miracle was made possible with the blood and sweat of workers. Every year 130,000 workers in South Korea die or are injured at their workplace and about 2000 workers die in industrial accidents, the figure being 2700 in 1994. In pursuit of profits, the companies, in collusion with government, play with the lives of workers and are unwilling to bear the consequences, blaming, instead, the workers themselves for the ills that befall them.

Sampoong Collapse

Luxury Store on Crumbling Pillars

Around six in the evening on June 29, 1995, the Sampoong department store selling luxury goods in a posh locality of south Seoul, collapsed, bringing down five floors above ground and razing a four-storied building underground. The toll was 502 dead and more than 900 people injured.

There had been several indications before of the building's imminent collapse but business was carried on as usual. On the day of the accident, cracks were first noticed in the 5th floor restaurant and the store's board members accordingly informed. However, shop assistants were told to wait for the 'specialists,' who did not arrive. At noon the 5th floor was closed and a couple of hours later the board decided to shut down the 4th floor. When it became apparent the building was collapsing, the board members fled but ordered the clerks to remove the goods to safety. Within minutes, many innocent customers and clerks lay buried under cold concrete rubble.

A 119-man rescue team arrived almost instantly but their operation was seriously hampered because of confusion in the command system. Without a centralised command, the rescuers acted independently, not cooperating with each other. Curious crowds were not kept at bay and their presence added to the confusion. Had there been a systematic rescue, at least 50 lives could have been saved.

While the official machinery failed to effectively handle the emergency, ordinary people rose to the occasion, displaying rare courage and thoughtfulness. Volunteers trained in various rescue skills offered their services, companies supplied trucks, cranes, and other necessities, citizens provided lanterns, food, blankets and money, and housewives prepared food for the rescuers night and day. Many of the volunteers collapsed from overwork and had to be hospitalised.

The Sampoong collapse laid bare the corrupt nexus among the builders, owner of the department store and public officials. The accident happened because of unsuitable plans, fraudulent construction, indiscriminate alterations in approved design, negligent inspection and callous management, causes common to all building collapses in South Korea.

A leading building firm of South Korea, Woosung Construction Co., began work on the five-storied Sampoong departmental store in September 1987. At that time, construction materials were in short supply as 2m housing units and facilities were coming up for the 1988 Olympic Games. So it is possible that inferior materials were used to cut costs, a few steel rods and a lot of seasand going into the walls which were then dressed in cement. Nothing else can explain the improbably low estimate of 10bn won (US$ 11,765,000) for such a complicated building process.

The construction company obviously denied the fact and shifted the blame to the owner of the store who had overextended the building and frequently ordered changes in design to make more space. When half the construction was over, the owner sacked Woosung, handing the building contract to Sampoong Construction Co. and added five stories more to the original plan to accommodate more restaurants, gymnasium, playground and so on. The new firm was not bothered about illegal construction as long as it made money.

As he was not issued a completion certificate because of design alterations, the owner registered with the Seocho District office seeking permission for temporary use of the premises. But even before formal permission was granted, business had begun at Sampoong with the connivance of government officials. Within three days, the Seocho office issued the temporary approval, right after the department store had been inaugurated.

The collapse of Sampoong department store symbolises the collapse of rapid economic growth in South Korea, which has been running only forward for 30 years. Generally speaking, it was a tragedy of mammonism that had championed the faster and bigger march to prosperity even at the expense of safety and the value of life. Today in South Korea, money is everything and the priority is not public interest but self-interest. The Sampoong collapse is a manifestation of this moral degeneration.

Nuclear Power Projects

Energy to Destroy

In the late 60s, South Korean government launched a nuclear energy programme, and set up agencies to promote its policies. Construction of the first of the four planned units in Kori began in 1971 and when Kori unit 1 went on stream, South Korea became the 22nd country with an atomic power plant. Since then nuclear construction has been continuously and enthusiastically promoted. There are now 11 nuclear power plants operating in the country and two more are under construction. According to its long-term electricity supply and demand plan, government will build at least 18 new reactors by 2010 which will satisfy 40% of South Korea's national power needs.

The military regime that ruled South Korea during 1961-93 had been pro-nuclear. Some political analysts maintain that nuclear power was promoted as a strategic industry for military purposes. Others say that the western nuclear industry's lobbying was responsible for the government decision to go nuclear. Rejected in their own countries after the Three Mile Island disaster in 1979, the western nuclear industry came in droves to the new markets in Asia and persuaded the South Korean military government to take up a nuclear programme. Westinghouse and General Electric of the US and France's Framatome became major suppliers of reactors and other equipment.

The Korean Electric Power Corporation (KEPCO) monopolised power production and played a major role in nuclear policy. In 1994, the then head of KEPCO was arrested for taking large bribes from South Korean companies involved in nuclear construction. It is widely believed that such bribes were usually passed on to government officials.

South Korea was a haven for nuclear power till 1987, when residents of Youngkwang demonstrated, demanding compensation from KEPCO for damage to their fishing industry. The fishermen were unable to cope with the spreading thermal pollution from the two plants in their area. Seaweed and shellfish harvests were cut in half, while the beach near the power plants could no longer be used for swimming and was closed.

At the end of 1988, a nuclear plant worker died of stomach and liver cancer. He had worked for four years as a repairman and had sometimes received radiation doses as much as 1200 mrem, the permissible quantity for three months, in a week. The death brought to light the dangers of worker exposure to radiation but medical experts could not prove the direct relationship between the death and the worker's job at the plant. However, growing instances of deformed births — babies without brains or with heads that were too large and soft — near nuclear power plants made women aware of the health hazards associated with radioactivity. No wonder, they became the core of active people's opposition at plant sites.

In 1988 a revelation that KEPCO had illegally buried low-level radioactive waste in a mountain near Kori, sparked spontaneous demonstrations by local inhabitants. The protesters recovered an actual nuclear waste drum from the burial site and displayed it in front of the Kori nuclear plant. The people's protests intensified when 2t heavywater was released in the sea at Wolseong. People of Kori, Youngkwang and Wolseong formed a solidarity committee which led demonstrations at

the Seoul headquarters of KEPCO, demanding compensation and relocation far away from the plants. The Korean Anti-Pollution Movement Association (KAPMA), also held its first 'anti-nuclear citizen's assembly' in the capital around the same time.

In 1986, the Youngkwang nuclear power plant went on stream. Since then, the ocean environment is being slowly destroyed and radioactive contamination is taking its toll on human and marine lives. The daily discharge of 130bn t hot water into the sea by Youngkwang's four reactors has raised the temperature by several degrees, many nurseries along the coast have been devastated and marine life in the tidal zone has decreased by 10%. In 1989, a nuclear plant worker's wife gave birth to a baby girl with no brain and the following year a worker, Kim Choel, died of cancer. Deformities have been observed in the local fish and cattle, too. In addition, small and big accidents have been frequent at Youngkwang unit 4.

In 1989 the opposition against Youngkwang units 3 and 4 grew when South Korean government contracted Combustion Engineering to supply the reactors for these plants. CE's model, considered dangerous, had failed to get a safety guarantee from the US Nuclear Regulatory Commission while Egypt and Taiwan had rejected it. KAPMA built a national network of well-known anti-government activists, professors, doctors, lawyers and affected inhabitants to block Youngkwang units 3 and 4. Through a country-wide campaign, it gathered 160,000 signatures against nuclear power in just three months. Though government approved plans for Youngkwang 3 and 4 by end-1989, the plants are still a hot issue in South Korea.

An important turning point in the country's anti-nuclear movement came in 1990, with the Anmyndo residents' struggle against a nuclear waste site. A newspaper report on November 3, 1990, that Anmyun island was selected for a nuclear waste dump site, sparked spontaneous protests among the local people. The village head resigned and students boycotted school, set ablaze a police station and mobilised more than 20,000 residents. Government was compelled to back out in the face of such mass upsurge and the minister of the Ministry of Science and Technology (MoST) resigned.

In December, 1994, government announced that the sparsely-populated Kurop Island would be the proposed site for nuclear waste dumping. But even this proposal faced the wrath of the islanders who were joined by students and people of Inchon in a mass demonstration. That plan, too, fell through because of serious geological problems at the site.

Meanwhile, plans were afoot to extend Youngkwang's capacity. Initially, MoST had not given approval to the construction of units 5 and 6, but sustained lobbying by KEPCO and the construction companies made it change its mind and the two units were ordered to be constructed in a short time. The decision not only sparked protests among inhabitants and anti-nuclear NGOs but was also criticised by the local assembly and government. In January 1996, Youngkwang county government finally cancelled permission for construction but came under tremendous pressure from central government which resorted to largescale repression. In July, three anti-nuclear movement leaders were arrested and sentenced to 18 months' imprisonment. Yet in Youngkwang, the anti-nuclear movement is gradually spreading, bringing into its fold peasant organisations and fishermen's societies. Their valiant struggle is part of a rapidly-growing anti-nuclear campaign in South Korea — a ray of hope in a society which has gone berserk in its yen for material benefits.

STATISTICS

Economic Growth

Year	GNP			Economic activity structure(%)			International trade	
	Current prices ($ bn)	Annual aver grth rate %	$ per capita	Agri. & forestry, fishing	Mining & manu-facture	SOC & other services	Export ($ million)	Import ($ million)
1970	8.1	8.7	252	26.0	22.4	51.6	835	1984
1975	20.9	7.1	594	25.0	27.5	47.6	5081	7274
1980	60.5	8.4	1592	14.9	31.0	54.1	17505	22292
1985	89.7	10.8	2194	12.8	31.3	55.9	30283	31136
1990	242.2	6.6	5659	9.0	29.3	61.6	65016	69844
1993	328.7	7466	7.1	27.4	65.5	82236	81775	

Source: *National Statistical Office 1989 & 1994 Major Statistics of Korean Economy*

Population
(in '000s)

Year	Estimated mid-year population	Annual population growth rate (%)
1986	41214	1.00
1987	41622	0.99
1988	42031	0.98
1989	42449	0.99
1990	42869	0.99
1991	43296	0.99
1992	43748	1.04
1993	44195	1.02
1994	44642	1.01
1995	45093	1.01
1996	45545	1.00

Source: *National Statistical Office (Population & Housing Census)*

Urbanisation

	1950	1960	1970	1980	1990	1992
Population	20167	24989	30852	37407	43520	44568
Urban	3711	6997	12685	21410	34622	37319
Rural	16456	17992	18167	15997	8897	7249
Urbanisation	18.4	28.0	41.1	57.2	74.4	83.7

Source: *Korea Urban Year Book 1991 and 1993*

Industry

(%)

Year	Agri. fisheries & forestry	Mining	Manu-facturing	Con-struction	Service	Govern-ment	Manufacturing structure	
							Light	Hy chem.
1970	26.6	1.5	21.0	6.6	34.8	9.4	60.8	39.2
1980	14.7	1.5	28.2	10.1	36.0	9.5	46.4	53.6
1986	11.2	1.0	30.8	10.2	37.6	9.2	40.4	59.6
1987	10.1	0.9	31.4	10.3	38.3	8.9	40.1	59.9
1988	10.2	0.8	32.1	10.4	37.8	8.8	36.8	63.2
1989	9.6	0.7	31.0	11.5	37.6	9.6	35.8	64.2
1990	8.7	0.5	29.2	13.7	38.2	9.7	34.1	65.9
1991	7.7	0.5	28.5	16.0	37.6	9.7	31.7	68.3
1992	7.4	0.3	27.8	15.9	38.2	10.4	30.6	69.4
1993	7.0	0.3	27.0	16.2	38.9	10.5	28.4	71.6
1994	7.0	0.3	26.9	15.8	39.5	10.5	26.9	73.1

Source: *The Bank of Korea (National Account)*

Agriculture

Year	Farm household ('000 units)	Farm population ('000)	%age to total population	Persons per farm house
1970	2483	14432	44.8	5.80
1980	2155	10827	28.4	5.02
1986	1906	8180	19.8	4.29
1987	1871	7771	18.7	4.15
1988	1826	7272	17.3	3.98
1989	1772	.6786	16.0	3.83
1990	1767	6661	15.5	3.77
1991	1702	6068	14.0	3.56
1992	1641	5707	13.1	3.48
1993	1592	5407	12.3	3.40
1994	1558	5167	11.5	3.32

Source: *National Statistical Office (Korea Statistics Yearbook)*

Work Hazards

Occupational Disease

Year	No. of workers ('000)	No. examined ('000)	Examination rate (%)	Positive diagnosis	Occupational disease rate
1986	3084	2817	91.3	7163	0.25
1987	3482	3213	92.3	6850	0.21
1988	3836	3279	85.5	8408	0.26
1989	3939	3467	88.0	7568	0.22
1990	4046	3530	87.2	7742	0.22
1991	3970	3435	86.5	7187	0.21
1992	4015	3550	88.4	5942	0.17
1993	4366	3731	85.5	4346	0.12
1994	4322	3778	87.4	3009	0.08

Source: *Ministry of Labour (Yearbook of Labour Statistics)*

Industrial Accident Toll

Year	No. of accidents	No. injured	No. of deaths
1986	140404	142088	1660
1987	141495	142596	1761
1988	141517	142329	1925
1989	128138	134127	1724
1990	126966	132896	2236
1991	125755	128169	2299
1992	105330	107435	2429
1993	88817	90288	2210
1994	84480	85948	2678

Source: *Minister of Labour (Yearbook of Labour Statistics)*

Waste

Solid Waste

(t/per capita/per day)

Year	Total waste generated	Domestic waste		Industrial Waste
		Total	Per capita(kg/day)	
1985	89847	57518	1.4	32329
1990	142721	83962	2.0	58759
1991	139955	92246	2.1	47709
1992	123154	75096	1.7	48058
1993	118909	62940	1.4	55969
1994	143347	58118	1.3	85229
1995	143597	47774	1.1	95823

Source: *Ministry of Environment (Environmental Statistics Yearbook)*

Wastewater & Sewage
(per capita in '000t/day)

Year	Domestic sewage	Per capita (l/day y)	Industrial wastewater	Livestock wastewater
1980	6759	180	1962	73
1986	8823	214	2731	136
1987	9529	229	2833	133
1988	10190	243	3236	129
1989	10876	256	3751	129
1990	12323	283	4106	128
1991	12866	293	5656	139
1992	13416	303	6391	153
1993	13972	314	6412	170
1994	—	—	7259	175
1995	—	—	8741	—

Source: *Ministry of Environment*

Air Pollution

Sectorwise Emission

	Sector	1986	1989	1992	1994
SO_2	Industry	583088	753036	802438	833428
	Transport	88621	132651	233200	275390
	Fuel	344917	349541	272739	164001
	Generation	318045	246649	305171	329945
	Total	**1344917**	**1481877**	**1613549**	**1602764**
NO_x	Industry	167300	233592	234083	329733
	Transport	259664	370130	566201	673718
	Fuel	56102	56493	64993	58996
	Generation	98112	120161	201724	129086
	Total	**581178**	**780376**	**1067001**	**1191533**

Source: *Ministry of Environment (Environmental Statistics Yearbook)*

Pollutants
(t/year)

Year	Total	SO_2	NO_x	TSP	CO	HC
1990	5169119	1610960	926065	420318	1991065	220711
1991	4869959	1597780	878389	431375	1759505	199910
1992	4867637	1613549	1067001	392243	1630378	164466
1993	4583839	1571700	1186697	389750	1290527	145165
1994	4526250	1602764	1191533	429398	1156464	146091

Source: *Ministry of Environment (Environmental Statistics Yearbook)*

ENDNOTES

[1] *See the paper on 'Environmental issues & Movement in Korea' by See-jea, Lee, Catholic University, 1995.*

[2] *Carbon disulphide began to be used as a solvent in the course of rubber production from the 1800s. CS , colourless and odourless, is a volatile liquid and oil soluble solvent, used in cellophane and agriculture chemicals factories. It is a very strong chemical poison and causes acute as well as chronic poisoning.*

[3] *The Han, South Korea's longest river, flows into the West Sea (Yellow Sea) through the heart of the Korean Peninsula, bringing waters to 12m people. The 525.15km-long Nakdong, the second-longest river and the Youngsan course through the southeast areas of the peninsula before emptying into the South Sea. The Keum is the fourth major river of the country watering the mid-western areas.*

[4] Please save only our children, *report on Onsan pollution and residents' movement, Korean Christian Institute on Social Affairs, 1986.*

SRI LANKA

"The growing marginalisation of peoples, rapid degradation of the environment, and the gradual sellout of the island's interests and cultural identity to international capital have created an unbridgeable chasm in Sri Lanka's hitherto peaceful and cohesive society."

SRI LANKA

Nimalka Fernando
& Vasudeva Nanayakkara

Economic Reforms in Sri Lanka: In Deep Waters

Since the begining of economic reforms in 1977, Sri Lanka has been pursuing a vigorous free-market policy to achieve economic growth, along the same path as that of the NICs. For two decades now, heavy emphasis is being laid on industrialisation, liberalisation and privatisation, relying on the World Bank-IMF formulae for correcting 'structural weakness and reducing the budget deficit.' The outcome of all this is that the island nation today is in deep waters — economically on the brink and divided along ethnic lines.

Indebted and Impoverished

Developmentalism and neo-liberal monetarism are the two predominant faces of Sri Lanka's post-reforms economic history. For different reasons, neither seems to have accomplished its objective: the economic takeoff. Applied dogmatically and without sensitivity, developmentalism has not been able to usher in the desired progress, while neo-liberalism has had calamitous results over the short time it has been in place.

With developmentalism and monetarism in full play for the last two decades, Sri Lanka's growth paradigms have been obsessed with productivity. As a result, policies have been adopted and projects implemented in such haste and speed that their long-term consequences, inevitably inimical to the people and the environment, have been ignored.

Since 1977, the emphasis on productivity has been complemented by a new thrust towards export-oriented industry that has rapidly increased the gap in the balance of trade against Sri Lanka. At the same time, the domestic market has overflowed with 'import

components' of the export industry, causing severe losses to government and damaging local industry. New patterns of consumerism, determined by the market dominated by multinationals, has also taken a heavy toll on the foreign exchange outflow.

To make matters worse, the conditional soft loans and grants, dangled like carrots, is being hastily grabbed by the government for projects, most of them in the non-priority sector. Far exceeding the market prices, these projects are imposing a heavy load on the economy through mounting external debt and its servicing. Today, the island nation's debt burden is as high as 15.8% of the GDP with a debt service ratio of 13.8%. The steadily deteriorating terms of trade is a major factor contributing to this ever-increasing burden.

The adverse balance of payments situation and spiralling indebtedness have put tremendous pressure on Sri Lanka's currency value which keeps depreciating, thereby generating worse problems for the economy and a large majority of the population. The tax structures and patterns of public expenditure, in any case, had ensured over the last 15 years an acute polarisation of wealth and poverty. An estimated 70% of the population have become poorer and 50% of school-going children have been found to be undernourished.

In the last decade, Sri Lanka recorded an average growth rate of 4.8% per annum which is higher than the 4.5% annual growth rate in the previous decade and very much higher than that in the period prior to 1977, when it was below 3%. But despite this healthy growth in the post-economic reforms period, vast sections of the people have become poorer and the poor-rich gap has widened to take Sri Lanka to an ignoble second place in the world.

Ironically, this period also witnessed widespread adoption of modern technology including computerisation and automation in production processes, boosting productivity and making available cheaper goods and services. However, a large mass of the population have been excluded from enjoying the fruits of this advancement, steeped as they are in poverty, joblessness and lack of purchasing power. The number of people who lost their livelihood to 'economic reforms' have not been recorded nor surveyed; however, according to an estimate, Sri Lanka had the highest rate of rural impoverishment in the world in 1994-95.

However, economic reforms and the era of liberal monetarism received a severe jolt in the early 90s. The economic policies of the UNP regime that had given rise to widening inequalities and increased social costs as well as erosion of national interests were rejected by the electorate, mandating a substantive change.

On assuming power, the People's Alliance government promised to provide a human face to the structural adjustment programme (SAP). Yet, there appears to be no deviation from the chosen path; on the contrary, neo-liberal monetarism is rushing along in all its vigour. Though health, education and poverty alleviation programmes have received slightly enlarged allocations in the current budgets, the balance sheet overall remains unfavourable to human and social development.

Instead of taking steps to reverse the trend of growing poverty and unemployment, the new government, like its predecessor, has gone all-out to attract foreign investors, squandering public money on them in the form of tax holidays, duty-free concessions and infrastructural facilities. At the same time, it is under great pressure to tear down the existing laws safeguarding the interests of labour, which have already begun to be feebly enforced. Government and policymakers seem not to care about the enormous national and social costs of bringing in foreign investments, costs that the people of Sri Lanka have to bear.

A Country Divided

Two decades of economic reforms have turned Sri Lanka into a slave of global capital. The island's natural resources and cheap labour continue to be a source of repatriable profits, and their exploitation has been made that much easier by the willingness of successive governments to yield to the demands of international lending agencies.

No effort has been spared to wring the land dry of every drop of the island's treasures. Large tracts of mineral-rich lands and plantations have been handed over to foreign investors at throwaway prices, commercial agriculture requiring heavy inputs of soil-degrading fertilisers and water are replacing traditional crops and marginalising farmers, while seabed exploitation for prawn farming is taking away the livelihood of fisherfolk. High-cost projects have also been initiated to tap Sri Lanka's river waters for power, displacing thousands of people, denuding hills and forests and bringing drought to once-water-rich lands. The destruction wrought by these projects have been intensified with the setting up of high-profit, polluting industries in utter disregard for the injuries that they inflict on society, people and the environment.

In this free-for-all situation, a new breed of land sharks have emerged on the scene as more and more land is being reclaimed from the sea for property development and the hotel industry. With public morality on a downslide, laws are being violated with ease and corruption is spreading its tentacles through every strata of society.

The growing marginalisation of peoples, rapid degradation of the environment, and the gradual sellout of the island's interests and cultural identity to international capital have created an unbridgeable chasm in Sri Lanka's hitherto peaceful and cohesive society. It is not a mere coincidence that the ethnic divide between the Sinhalas and Tamils — that has now grown into a brutal military war — surfaced around the time economic reforms were launched. The ravage that the continuing conflict has wrought on the country and its people is immeasureable. Thousands have died in the 20-year-war, property worth millions of rupees destroyed and over 600,000 people have become refugees in their own land.

Today, a divided Sri Lanka is in deep waters. This is the price the island has to pay for embracing the creed of undisguised monetarism of the neo-liberal kind.

GLOSSARY

Agro-business

Commercial cultivation of sugarcane, tea, tobacco and pineapple, promoted and managed by multinational companies, have contributed in a big way to degrade soil and the life-sustaining environment and displace subsistence food growers. This new form of colonisation has drawn protests from people in several plantations, but government remains unmoved. (*See case study*)

***Pelwatte sugar*:** A joint venture between Sri Lanka government and the British-owned Booker Agricultural International Ltd, the Pelwatte Sugar Co. Ltd (PSC) was set up with an estimated investment of Rs2.5m ($0.5m). The company started its operations in 1983 and the factory, described as a 'development miracle' by the UNP government, opened in June 1986. The United Agricultural Services Union was formed in 1987 to protect the rights of about 1500 sugar settlers working under the PSC. Burning of the crop before harvesting is advantageous to the company and it sets fire to sugarcane plots regularly, paying the settlers a basic price. But when on August 31, 1988, the sugar plots of more than 560 sugar settlers caught fire, the company refused to pay compensation and the workers launched a vigorous protest. The company retaliated by not allowing the union to hold meetings in settlers' areas. Premadasa Liyanarachchi, a devoted activist of the union, was taken into custody in October 1989. Today, his name is still on the list of people who have disappeared.

***Pineapple*:** In the late 70s, farmers of Moneragala district protested against a move to hand over 25,000ha to foreign companies, and finally, only around 70ha were acquired. A pineapple farm on this land has become a threat to farmers today. The company has dug a large well for irrigation, which has affected the flow of water to the Senanayake Samudraya, a large reservoir in adjacent Amparai district, thus affecting the paddy cultivation.

Chemical Contamination

Application of chemicals in agriculture and unregulated dumping of industrial waste are leaving behind a trail of destruction, affecting soil fertility and biodiversity and poisoning foodgrains and vegetables. While industrial waste has never been monitored systematically or controlled in Sri Lanka, there are no specific standards in the country to regulate the amount of pesticides and heavy metals in the food sold though testing of samples is carried out occasionally by the Standards Bureau and other institutions.

***Agriculture*:** Soil fertility and biodiversity have suffered tremendously due to chemical applications in agriculture. Requiring certain strains of developed seeds, it has fast displaced and dispersed the rich variety of seeds that Sri Lanka was known for. Soil degradation caused by commercial plantations has further compounded the problem.

***Poison in food*:** A recent study conducted by the Division of Occupational Hygiene of the department of health indicated a concentration of heavy metals, mainly chromium, at 200 PPM, an alarmingly high figure, in *keera* (green leafy vegetables) grown around the Kelani river. The source of the chromium was found to be the tanneries upstream whose effluents were dumped, untreated, into a convenient paddy field or marsh draining into the Kelani river. The same study showed that the levels of pesticides and insecticides in *keera* far exceeded WHO standards. The contamination of *keera* is particularly cruel as it is the cheapest vegetable to be found in the market and forms a part of the regular diet of the poorer classes in the city. It is fed to children in various forms for its nutritive value.

Deforestation

Sri Lanka being a tropical agricultural country, forests are essential for successful agriculture and rural lifestyles. They protect the soil and water resources, and ensure the supply of fuelwood, supplementary food and medicinal herbs. Over the past 40 years, the country's forest cover has shrunk — from 44% in 1956 to 24% in 1986, while in 1994 only 20% remained. Heavy forest cover is still found in the northern dry zone area which, being largely inaccessible due to unsettled political conditions, has escaped deforestation.

Economic Imbalance

Sri Lanka's high achievement in social development before economic reforms, in spite of low per capita income and low GNP, was due to the relentless pressure exerted by the organised action of the people. A near-total reversal of these achievements have taken place since 1977, mainly because of economic strategies imposed by the World Bank-IMF. Poverty and unemployment have spiralled as has external debt while defence expenditure keeps growing and social welfare expenditure has been nearly halved. Workers, peasants, plantation workers and the youth are now getting together to resist the reforms.

***Defence outlay*:** Growing impoverishment and unemployment has made no difference to defence expenditure which keeps rising year by year. The allocation for 1996 was Rs47bn ($940m) and the estimated outlay for 1997 is approximately Rs50bn ($1bn). One of the main causes of huge annual budgetary deficits — and consequent cuts in social sector allocations — is the enormous defence expenditure.

***External debt*:** Since the advent of structural adjustments, Sri Lanka's external debt has mounted to 15.8% of the GDP, the debt-servicing ratio being 13.8%. The depreciation of the rupee over the last 19 years has been over 90%.

***Poverty*:** Though Sri Lanka has the highest per capita income among the South Asian countries, it tops the list of 114 countries in rate of impoverishment. The rural population below the poverty line increased from 13% in 1965 to 46% by 1988 the corresponding figures in absolute terms being 1.163m and 6.101m or more than one-third of the country's total population. Ironically, budgeted expenditure in the social sector was down from 10% of the GDP in 1965 to 5.5% in 1985.

***Unemployment*:** The problem of unemployment has intensified since economic reforms, affecting mainly the rural poor and women. While women constitute more than half the unemployed force, four-fifths of the unemployed are resident in the countryside. The rate of unemployment in 1995 was 12.7%, higher in the urban sector at 20% to the rural sector's 12%.

Emigration

Poverty, lack of employment opportunities at home and ethnic unrest have all combined to force many Sri Lankans to seek greener pastures overseas. A total of 170,000 people are estimated to have secured employment abroad in 1995, reflecting an increase of 5.2% over 1994. Approximately 66% of the migrants were unskilled female workers. West Asian countries took in the largest share, accounting for about 92% of total departures. If such largescale emigration persists it will be a severe drain on the country's human resources.

Ethnic Conflict

Two decades of ethnic violence that was sparked soon after the launching of economic reforms in Sri Lanka, has created an almost unbridgeable divide between communities. Since the resumption of the Eelam War III in 1994, approximately one million people have become refugees all over the island, the displaced belonging to the Sinhala, Tamil and Muslim communities. The number of displaced among the Tamils is estimated to be around 350,000 in the Northern Province. Thousands of Tamil people seeking to come out of Jaffna as well as enter the besieged land are held for months in clearing camps for screening before being given clearance and permission to meet their families.

Industrial Infrastructure

In a bid to attract industrial investments, several infrastructure development projects have been proposed for Sri Lanka. Large-scale construction works are displacing people and causing damage to the environment even as the traditional crafts are being transformed into lucrative business ventures.

***Express highway*:** A proposal to widen the Colombo-Katunayake Airport road and convert it into an express highway was mooted in the 80s, the focus being to develop necessary infrastructure to attract investments. ODA, Japan, the main funders of the project, withheld aid following protests by environmentalists and members of a community who would have been displaced by the construction. A revised scheme has now been drawn up.

***Free-trade zones*:** Sri Lanka's aggressive free-market policy since 1977 has led to the establishment of several investment promotion zones. The free-trade zones are mainly given over to the production of garments with a few units engaged in non-garment items such as cashew-processing, gem-cutting and electronics. The labour population in the investment zones are largely women. The Sri Lankan labour force in FTZs is 134,600, second only to Thailand's 305,000. The phenomenal growth of the FTZs is an expression of the rising commercialisation of the country's traditional crafts.

Irrigation and Hydel Power Projects

In the wake of economic reforms in the late 70s, several hydel projects were initiated in Sri Lanka in order to provide the infrastructure required for rapid industrialisation. Set up at enormous cost to the land and its people, these projects did not yield the amount of power they were expected to nor did they provide adequate irrigation or control floods.

***Kotmale dam*:** The 150MW Kotmale dam, a part of the Mahaweli project, will be the island country's second-largest hydel plant, if and when completed. Apart from mass displacement and submergence of land, the dam will destroy three of the best-known waterfalls of the country, the main reason behind the sustained opposition to its construction. Sri Lankans will truly have to pay a heavy price for power from Kotmale.

***Mahaweli*:** The Mahaweli River Diversion scheme for irrigation and hydropower is Sri Lanka's largest-ever development and settlement project involving a capital oulay of over Rs40bn ($800m), constituting around 35% of the national budget. It was financed primarily by Great Britain, Sweden and West Germany, each giving around $100m. Much of the financing came in grants, but large sums also had to be borrowed on soft commercial terms. Launched in 1978, the project in the Central Hills and North Central Area involved building four Victoria dams — Kotmale, Randenigala and Rantambe among them — along Sri Lanka's 300km

Mahaweli river and constructing power stations to triple the country's energy-generating capacity. It also involved irrigating 120,000ha of new land and resettling 1.5 million people. Today, with highly adverse environmental effects and displacement of indigenous communities, the project appears to be a mega-flop. The Mahaweli development project, too, which envisaged six dams across the country's largest river with consequent inundation of land and clearing of over 200ha forest for cultivation, caused the biggest upheaval environmentally, agriculturally and socially. Initially estimated to be completed over a 30-year period, it was 'accelerated' due to political imperatives and finished in six years. The programme has been a development misadventure with the budget doubled to $14bn.
(*See case study*)

***Nilwala*:** The first phase of the Nilwala flood protection mega-project was carried out in 1983 at a staggering cost of Rs700m ($14m) with French funding and technical knowhow. The costly exercise has not only reduced paddy yield and caused salination of farmlands it was meant to protect but has also led to drought and serious damage to the environment. There are reasons to believe that the project's feasibility studies were manipulated to favour the French loaning agencies.
(*See case study*)

***Samanalawewa*:** Located in the Central Hills and southern low-lying area, the Samanalawewa hydel project is about 160km southeast of Colombo and 10km east of Balangoda. The principal aim of the $516m, 120MW project is to make use of the waters diverted from the Walawe and Katupotha rivers for power generation. The project was financed by the Ceylon Electricity Board, Overseas Economic Fund of Japan, UK Grant Aid, Commonwealth Development Cooperation and Lloyds Merchant Bank. The potential of the project has been decreased by a leak that has been continuing since October 22, 1992, draining 2 cumec water per second, substantially reducing the storage capacity of the reservoir. Sri Lanka government has arranged to finance the wet-blanketing required to plug the leakage. The rehabilitation project is scheduled to be completed by the year 2000. (*See case study*)

Marine Exploitation

The rush for commercial prawn culture, introduction of high-catch technology and trawling in the Indian Ocean have seriously endangered Sri Lanka's marine and coastal ecology and are posing a threat to the livelihood of its fishing community. The export-oriented activities are denying fish to the majority of the local people at affordable prices, reducing marine resources and adversely impacting on the competitive capability of the small fishermen. Marine exploitation is being carried out by foreign governments and companies and their local collaborators through strong-arm tactics and in total violation of the laws of the land.

***Fishing technology*:** Small fishermen — 80% of the fishing community and contributing a large share to the national catch — have been steadily cornered over the last 20 years by the use of mechanised fishing, which is invariably in the hands of big investors or *Mudalalis*. Fishing has, in any case, come to a standstill because of the military conflict in the north and east, which contrubuted one-third of the national fish harvest. Now indiscriminate mechanised fishing, speedy and high-yielding, has depleted fish stocks in the south, around the capital, crowding out the small fishermen even near the coast. The societies of fishermen are resisting the advances of big-investment fishing with some success.

***Prawn farming*:** The prawn farming industry has been expanding rapidly in Sri Lanka during the last decade and has become quite popular in the Northwest Province as well as around the Puttalam and Chilaw areas, north of Colombo. In Puttalam

district alone, there are 267 farms below 4ha, and farming operations cover as much as 2031ha. Prawn farming, undertaken mainly by foreign investors legally or illegally with local collaboration, is playing havoc with the rich, bio-diverse mangrove ecosystem, affecting the lives and livelihood of lagoon fishing communities and farmers. (*See case study*)

***Trawling*:** Foreign trawlers fitted out with modern equipment, barred from fishing within Sri Lanka's territorial waters, are doing so in violation of the law. Many of them are exploiting the agreement they have with government for use of harbour facilities to fish within the prohibited zone. Government does not have the ability to police the seacoast and small fishing boats are sometimes scared away with firearms by the encroaching foreign trawlers. Fishing grounds in the Northern hemisphere had depleted due to over-exploitation and developed countries are now rushing in to reap the harvests of the Indian Ocean. For this purpose, governments in the developing world are lured with promises of obtaining attractive technology and valuable foreign exchange.

Privatisation

The total land area of Sri Lanka is approximately 16.2mha. Government acquired nearly 400,000ha of this land from private owners — around 228,000ha under Land Reform Law no. 1 of 1972, and 169,144ha under the subsequent Land Reform(Amendment) Law no. 39 of 1975. Since the opening up of the economy to multinationals, government has been abetting the privatisation spree by handing over to foreign investors state-owned industries and plantations as well as land to set up new industries at throwaway prices, jeopardising the future of hundreds of thousands of Sri Lankan workers and farmers.

***Phosphate mine*:** The 36 sq. km phosphate deposit area in Eppawela provides the bulk of Sri Lanka's requirement of 25,000-30,000 tonne phosphatic fertiliser. During the UNP regime a partnership venture was launched with a private entrepreneur to negotiate with an American company on selling this abundant storehouse of minerals. The present People's Alliance government is continuing with this endeavour. The US company plans largescale excavation in the area and the consequent rapid depletion of this deposit will exhaust the country's mineral wealth and reduce fertiliser availability. According to campaigners, such excavation will also adversely affect the water resources.

***Steel Corporation*:** The Steel Corporation which was valued at Rs1.4bn ($280m) in 1994, is now worth about Rs2.5bn ($500m). Under the privatisation programme, a Korean Company — The Hanjung — was allowed to buy 90% shares of the corporation for only Rs840m ($168m). The People's Organisation for the Protection of the Steel Corporation has launched a massive campaign against this grossly unfair agreement. Several members of parliament have sought an open debate in the House on the grounds that the sale agreement is harmful to the interests of Sri Lanka.

***Tea estates*:** It is a widely accepted fact that Sri Lanka's tea plantations are a national asset, playing as they do a substantial role in the economy of the country, providing employment to a 700,000 strong work-force and bringing in valuable foreign exchange. However, the potential of this valuable leaf crop is being undermined by government itself which is selling off, under the privatisation programme, state-owned plantations on a 50-year holding contract to private business, claiming that they are running at a loss. Trade unions and NGOs working in the plantation areas have provided evidence to the contrary. The contracts also permit foreign companies the rights over mineral deposits in these lands, mainly exclusive rights to gemstones.

Property Development

Land developers and realtors are reclaiming lowlying areas around Colombo with complete disregard of the massive damage they are inflicting on urban ecology and health. The filling of the wetlands is choking water outlets causing floods and waterlogging, the stagnant pools thus formed providing the ideal breeding grounds for disease-carrying vectors. The biologically-rich marshlands are being grabbed in violation of land laws. (*See case study*)

Tourism

Promotion of tourism for foreign exchange since the 60s has led to a boom in hotel and resort construction along Sri Lanka's idyllic beaches. While the phenomenal growth of the tourism industry is destroying natural beauty and disrupting local economies, the influx of foreigners is playing havoc with traditional values and corrupting the youth. A kind of cultural invasion is making its way through commercial tourism. (*See case study*)

***Children in prostitution*:** Children in prostitution, an offshoot of unbridled tourism, is rising alarmingly in Sri Lanka. According to the Social Services Department, there are now about 30,000 children below 14 years of age involved in prostitution, 75% of whom are boys. Joblessness and poverty are compelling many families to support the brutalisation of their children.

***Hotel industry*:** The exotic beaches in the south of the island are falling prey to the lure of the booming tourism industry. As mushrooming luxury hotels and resorts encroach on the golden sands, conflicts with the fishing community are on the rise. The growth of the hotel industry has made coast conservation a difficult task for Sri Lanka.

CASE STUDIES

Samanalawewa Dam: Project for Plunder

> Our villagers lived a content life with a sufficient harvest to sustain themselves from the paddy cultivation. (Now) these people have not been able to cultivate their staple food and their poverty has increased. This hydro-dam has become a curse of our village.
> -- *Buddhist monk of Halvinna temple*

Since the onset of economic reforms, Sri Lanka has been setting up large irrigation and hydel projects financed by international consortiums of fund-generating agencies. In this bid to harness the rich water potential of the country for pampering the urban elite, the majority of the population is being denied access to natural resources. The Samanalawewa hydel project is a prime example of the disregard for the environment and the plight of farming communities that such projects inevitably entail.

A Leak in the Dam

The $516m Samanalawewa hydel project, constructed over 1987-91, was jointly financed by the Ceylon Electricity Board, Overseas Economic Cooperation Fund (OECF), Japan, UK Grant Aid, Commonwealth Development Cooperation and Lloyds Merchant Bank. Located on the wet zone-dry zone border in Ratnapura district of Sabaragamuwa province, on the southern slopes of the Central Hills of the island 160km north of Colombo, it is a 100m-high conventional rock-fill dam supplying water to a 120MW power station. At present its average generation is just 60MW.

In October 1992 a leak occurred as the reservoir was filling. The dam by then had already undergone three major repairs, one immediately after the start of the project in 1987 and the other two in March 1991 and October 1992. The continuous leak of 2000 l/sec (2 cumec) has resulted in the turbines operating at 430m, instead of the full supply level of 460m.

The Walawe river, which flows perennially from the wet highlands into the low-lying southern dry zone plains, had already been dammed for irrigation purposes nearly 30 years ago at a point well within the plains of the dry zone. The Udawalawe reservoir created then enabled the cultivation of some10,000ha and the settlement of over 5000 families in the plains. The flow of the river itself was not seriously affected due to the abundance of water.

The new dam was constructed to store water up to a height of 460m above sea level at the river's entry into the dry zone. Because of the leak, the water level now is at 430m, and so notices have been put up that the reservoir is being filled up to 447m and that those living below the reservoir should take care of themselves.

The project management obviously have not taken into account the tens of thousands of people farming in the lower reaches of the reservoir, specially in the event of a drought when scarce water will be stored in the dam for its own purpose.

A similar situation had earlier arisen when the reservoir was first impounded in 1992 for repairs before the leak. As a result, two seasons could not be cultivated in the Walawe basin. The meagre drought relief that the farmers received as compensation made them restless and the then UNP government hurriedly decided to give wateruse priority to paddy farming. But the resolve did not last.

In 1996, in the absence of adequate rain, water was stored away for hydro power, starving

even the fields immediately below. The irrigation valve was closed and 400ha of paddy land in Welipotha Yaya and Medabadde valley had no water at all for cultivation, while the remaining 1200ha did not yield a proper harvest. The 4000 affected families were given meagre compensation by the Electricity Board.

As all efforts to plug the leak failed, an international panel of experts met during May 13-17, 1996 to find a way out. This meeting agreed to 'wet blanketing', a process by which suitable material is dumped from a split-bottom barge into the reservoir to cover the floor so that water pressure forces the material into the leakage points to seal them. Apparently, this method has been successfully used at the Tarbela Dam in Pakistan. It is estimated that the work will be completed by 1999. The present water level will, therefore, continue to remain 20m below optimum height with storage capacity reduced by 10%. Needless to say, the repairs will fill some more coffers. The OECF has added another $2.7m to its earlier loan at an interest rate of 2.5% repayable in 30 years.

Costs Outstrip Benefits

Since inception, the dam has taken a heavy toll on funds as well as in terms of environmental and social costs. To begin with, the cost of construction overshot the estimated budget by 15%. Added to this are the losses incurred in failed paddy yield already experienced, clear felling of valuable timber in 40ha of forest and the drying up of small streams and spouts at the time the hydro tunnel was constructed and which had forced farmers to abandon vegetable and paddy farming in about eight villages. (About 5000 people in these villages lost their sources of drinking water which had to be transported by bowsers.) All these costs, together with the displacement of some 5000 prosperous households, far outweigh the benefits from the Samanalawewa project, even on a national scale. With a fraction of this cost, fuel-powered generators could have provided the required electricity.

The Wildlife and Nature Protection Society had invited an expert from Japan to assess the environmental impact of the Samanalawewa project. In his report, he stated that the OECF had approved the loan for the project and construction was started without an EIA, not a legal requirement in Sri Lanka till 1988.

In 1991, Ceylon Electricity Board commissioned local environmental consultants to undertake an environmental post-evaluation to identify key issues for the formulation of an environmental management plan and to undertake a post-project environment study on fauna and flora. It also commissioned another impact assessment in 1994 of the clay extraction and blanketing of Samanalawewa.

The international experts panel have not only asserted the dam was safe in spite of the leak, but also suggested that the water flow could be increased without any danger. They also recommended that the warnings of earlier consultants could be disregarded on limiting the height of water in the reservoir.

Losing the River

People living in the shadows of the dam are facing a piquant situation. On the one hand, they are in constant fear of a possible breach that will wash away their land and homes, and, on the other, they are happy because they are at last getting a little water that is seeping out from the leak.

Some 42 families of Halvinna, a village in the vicinity of the dam, are traditional paddy cultivators and their staple food is rice. The dam management advises them to

conserve water and replace their paddy with crops that do not require much water. Till the dam was built, the Walawe river had flowed perennially, blessing the people with plentiful harvests and a contented life. Now the river has become unpredictable, its ancient channels that the villagers had been using for irrigation are lost forever. The Buddhist monk of the village temple and chief crusader against the dam, calls it the 'curse of the villagers.'

The rivers of Sri Lanka had once belonged to the people. Now they have been usurped by greedy aliens remorselessly extracting their bounty to satisfy a few. Considering that only a small fraction of the population consumes a very large percentage of the power generated, and that nearly 60% of the island goes without electricity, foreign-funded hydel projects are nothing short of invasion and plunder of the country's resources.

Mahaweli Development Project: Boon or Burden?

Grandiose developmental projects, whether undertaken and implemented before or after economic reforms, have inevitably turned out to be costly misadventures in Sri Lanka, as in most other countries. The Mahaweli Development Project, ranked as the island nation's biggest-ever development-cum-resettlement scheme involving a capital outlay of over Rs40bn ($800m), is no exception.

An Ambitious Plan

The cornerstone of government's development programme since 1977, the Mahaweli is a major irrigation, agriculture and social infrastructure development project entailing a massive population management exercise in the uprooting and resettlement of approximately 360,000 families or one million people. The project, thus, has continued to be not merely the country's biggest investment item in recent years — constituting around 35% of the government's budget — it has also attracted more attention than any other attempted in this country. This project is easily the most ambitious scheme ever to be undertaken on the island.

Before the project got underway, an FAO/UNDP experts team, assisted by Sri Lankan counterparts, carried out surveys and investigations during 1965-68 on the irrigation and hydro-power potential of the Mahaweli river and adjoining river basins. The finding of these investigations led to the formulation of a Master Plan for the development of the available resources. The following were the projections:

- a mean yield of 6.4m acre feet per annum of water to be available at the lowest diversion point on the Mahaweli river. Through the construction of a series of reservoirs, an estimated 4.3m acre feet per annum to be regulated for irrigation with 90% frequency utilisation;

- cropping intensity of the currently cultivated area — around 100,000ha — to be increased from 1.37 to 2 in the initial stage of water issue, and further increased by improving irrigation in existing lands and covering 265,000ha of new lands;

- annual hydro-power development from total installation of 508MW to be about 2bn kWh of firm energy;

- a total of 100,000 existing settler families to be assured better water supply based on the average landholding of approx. 1ha of irrigated land per family. In addition, 260,000 new settler families to benefit on completion of the project; and

- employment to be generated in the agriculture, agro-industrial, trade, marketing and transport sectors besides job opportunities in service sectors such as construction, education, health and rural infrastructure development.

A re-phasing of the entire programme was carried out in the mid-70s to accelerate the development effort. The project cost, by then had escalated to Rs40bn on account of inflation.

Displaced and Destabilised

The main aim of the Mahaweli project was the resettlement of people for a better life. In reality, however, it led to uprooting of indigenous peoples on the one hand and disruptions in the lives of the people who were resettled on the other.

To make way for Mahaweli C, one of the autonomous and constituent parts of this mammoth development venture, the Veddaha, a forest-dwelling community of indigenous people, were forced to move out of their traditional homeland. They were given the option to become settlers in the newly-formed zones or live on in the truncated forest.

The marginalisation of the Veddahas had begun in the 1940s with the rapid spread of settled agriculture in the Eastern and Uva areas that took away 80% of their forests. Their hunting and dwelling grounds shrank further in the destruction wrought by the first irrigation scheme built in 1949-52. The Mahaweli scheme completed their decimation by claiming 150,000ha of the remaining jungle to settle 35,000 families brought from outside.

The Veddahas, whose population has dwindled alarmingly, are completely demoralised. Says Damabana, a member of the community:

> Our home is the forest. This provide us our food. Today we are limited to a small area in the jungle. This cannot provide us with our subsistence. Those days we never killed wild animals to sell. Today we have to hunt to earn money.

His sentiments were echoed by Veddaha chieftain Thisahamy:

> We were told that nothing would be changed and we'd be allowed to live our lives. About 200 families were brought here. We have been let loose like a herd in an open area. We are used to hunting. Today we have to get used to a different pattern. We have to learn how to cultivate. We have to depend on the waters of the river. If we are unable to irrigate the fields, or purchase fertiliser, we are doomed. We are not used to this rhythm of life. We never had to cultivate paddy. We had enough food in the jungle.
>
> If this pattern continues, we might even have to use the tools for chena cultivation and wage a 'war' like what is happening in the North.

At the Colombo National Hospital for treatment recently, he said on TV:

> I am now well due to the attention received in the hospital. But the sickness in my heart will never be healed. We want to go back to our lands...

Mahaweli C had taken in 1398 farmers as worker-settlers by end-1980. They were allotted individual hamlet plots and assistance was provided for housing. The concept of worker-settler, which was first introduced in this system, continued through 1981. Farm development work commenced on the targeted 600ha, and 50% of the work had been completed by end-August.

The shift to commercial agriculture coupled with cutbacks on subsidies as per the structural adjustment requirements has left the Mahaweli settler worse off than before. One of the earliest worker-settlers, 50-year-old Piyadasa, had this to say about his experience:

> I am working harder than before and I have to be just satisfied with less than before. Everything I do is less than before. I am unable to save. We have to sell the whole harvest. Nothing is kept for the household. Even before the first three months elapses we are eating bread. We cannot even have any hope for the future of our children.
>
> We grow papaya. But the middleman will take it from us only for Rs2 (in the urban market this sold for Rs20 or more).

> We have farmers' societies. We make representations to the Mahaweli Authority and to other relevant authorities from time to time about our problems. But we do not get any answers. These processes have only become a channel to give information to them.

Eking out a living was difficult enough for those who settled in the new lands. But the prospects were worse for the second generation settlers who are not even allocated any land. A large number of youth are unemployed and many are joining the armed forces in desperation. The schools in this area are managed with only meagre resources.

Myopic Planning

The plight of the settlers in system H of the Mahaweli project is no different. Here, an uneconomical scheme implemented in haste has compounded their difficulties in adapting to a new way of life. This became evident during the 1981-82 drought and which the authorities were unable to handle.

Skirting the southern environs of Anuradhapura, system H is fed by Mahaweli waters diverted from Polgolla, north of Kandy. The diverted waters spin turbines at Ukuwela and Bowatenne as they descend into the northern plains, generating 80MW of electrical power, whence they are utilised for irrigating about 40,470ha. As many as 22,000 families from diverse parts of the country have been settled here, all of whom are engaged in double-cropping their 1ha allotments. Subsidiary employment has been provided in the form of agricultural support services.

Like most irrigation schemes in Sri Lanka, the Mahaweli system, too, has been designed to retain 80% rainwaters because at 100% retention capability, substantial quantities of stored water would have spilled over and gone waste in heavy rainfall years. The excess water management in system H would not have been difficult in 1981-82 or later, had the water from the Kotmale reservoir been available.

The system H management was found lacking in a crisis and eventually about 30% of the *maha* (one of the double cropping season; the other is *yala*) crop was destroyed. Especially affected were the farmers in the outlying areas whose allotments were at the tail end of the irrigation channels.

The myopic vision behind system H planning is also reflected in the inadequacy of marketing arrangements for the crops that the settlers grow. The pathetic sight of rotting tomatoes on the wayside in the area in the 1996 *yala* season bore adequate testimony to this.

Promises Unfulfilled

The Mahaweli project is not merely the biggest-ever scheme in Sri Lanka in terms of capital outlay; it also represents the first-ever developmental effort into which health and nutritional goals have been incorporated. That such novel projections were mere rhetoric was evident from the living condition of settlers in system H.

A FAO survey revealed that around 83% of the dwellings had thatched roofs with either mud walls or cadjan enclosures and that 19.6% of the population of the new arrivals show signs of acute undernutrition. It found that acute undernutrition and chronic undernutrition were significantly lower among the children of the *purana* (old) villagers settled over two years than among those living here for less than two years. Similarly, children of farmer groups with lowland irrigation background and in settlement over two years had lower prevalence rates of undernutrition than children of highland farmer groups under two years in settlement.

Defeated Purpose

The crucial component of the Mahaweli project was to open up avenues of employment. The irrigation schemes were to ensure extensive land cultivation that would require farm workers in large numbers. Around 825,000 people were to be settled in the region in agro-based industries, and job opportunities would open up in the services sector supporting such agricultural ventures. Other complementary industrial and commercial activities were expected to absorb substantial numbers. Besides, the project itself was expected to directly provide employment to many people in the massive developmental undertakings it had planned.

However, all this came to naught because of government's decision to accelerate the project and telescope the construction period to six years. The move not only hiked up the costs but the project was also compelled to look for resources which were not available within Sri Lanka. By end-1977, the total number of unemployed had exceeded one million and the annual addition to the workforce was estimated to be in the region of 150,000. Ironically, generation of more employment opportunities was one of the main reasons behind the acceleration of the project. The dependence on external aid and the shortening of the project construction time, ran contrary to the original principles of the plan, which had stressed the use of local resources and personnel.

The original plan had envisaged settlement of landless farmers from the southwest and central areas and providing them with land for cultivation, primarily to shift the pressure of population from the heavily populated areas and also to open up new centres of agricultural and commercial activities. But the desired objective failed to bear fruit for the farmers were given lands in scattered areas and not in contiguous settlements. Such arrangements resulted in higher expenses for providing facilities which, in any case, were not distributed according to needs, but according to the capacity of government and the whims of the executors. All this was not conducive to the building up of community life.

A Costly Experiment

The Mahaweli Development Project has proved to be a costly experiment in development, with little relevance to reality. Till date, irrigation facilities has yet to reach all the areas proposed in the original plan while generation of projected hydroelectric power to build up an industrial base remains a distant goal. Though there has been a substantial increase in productivity, self-sufficiency in food has not been achieved.

The effect of accelerating or 'telescoping' the project was cataclysmic. It was a political decree that had no technical basis or scientific support. There was no economic justification or accountability for the decision, and issues of resource availability, social cost-benefit, national economic priorities, sociological considerations involved in the establishment of new human settlements and ecological problems arising from the clearing of large tracts of jungle were completely ignored, as were a host of other matters requiring careful monitoring and analyses. What was really sought to be achieved was publicity for a grandiose scheme to keep the unsuspecting masses enthralled with visions of the coming era of plenty and prosperity.

The Mahaweli experience showed that colossal developmental projects almost always run contrary to their avowed objectives. Instead of a boon they inevitably become a burden on the economy, the people and the environment.

Nilwala Flood Protection: Benevolence or Deceit?

Global capital, in its search for more profits, is resorting to manipulation and deceit. In Sri Lanka international project experts are pushing through ventures which are supposed to be in the service of the people but, in effect, are means of extracting the maximum returns for themselves.

A Grand Scheme

In Matara district in the deep South, regular flooding of the Nilwala river used to cause a great deal of hardship to the people living in its vicinity and damage crops grown on 8500ha of land. In 1983, the first phase of a Rs2.565bn ($51.3m) flood protection project was completed in the area to protect from flood damage some 24,000ha of paddy fields yielding about 15,000t of paddy.

Half the Rs700m ($14m) cost of this phase was financed by loans from Government of France and the rest from private French banks. The government loan came at 3% interest payable in 30 years, while the banks charged 11.5%, the loan to be cleared within 10 years. The annual maintenance of the project is estimated to cost Rs36.866m ($737,320) while the cost of power to operate 14000 kW installed capacity is Rs8.737m ($174,740).

The French experts working on the project had planned:

- deepening and broadening the riverbed for about 32km;
- construction of 24km high flood bunds to prevent the river from overflowing the banks;
- mechanised pumping of floodwaters over the banks into the river;
- construction of a bypass channel near the river mouth about half a mile long, 150 ft broad and 10ft deep. About half the flood volume was expected to flow through this channel to the sea, thereby preventing floodwaters upstream from rising to dangerous levels;
- a wreck-fill weir to divert water to the bypass;
- sea works to build a jetty at the mouth to prevent sand-bar formation; and
- readjustment of the riverbed, starting from the weir and extending upstream for about 5km, and regular dredging and checking every two years in order to prevent blocking of the flood outlets to the Indian Ocean by largescale erosion and deposits at the mouth.

In essence, the idea was to drain out floodwaters and alluvial soil into the Indian Ocean through a network of canals. The French experts felt that it was the only way that the heavy erosion and massive deposit formation in the Nilwala river could be overcome.

Fraud on the People

The project's feasibility studies, consultancy services and contracting firms have entirely been French and, as such, they did not take into account the needs of the local people and the negative impact the project would have on their lives as well as the environment. All that they were interested in was presenting a rosy picture to secure the deal.

University scholars, who conducted a post-installation survey of the project, concluded that the cost-benefit ratio was far below acceptable level, the economic benefits not even matching costs. If the costs of displacement and destruction of mangroves and marshes are added to this, the negative value of the project will be even higher.

Today, the people who were earlier affected by floods are worse off in many ways. The fertility of the soil in the surrounding areas have diminished due to salination caused by the deep canal network and micro-organisms of the soil have disappeared and migratory birds, that used to prey on pests, have stopped coming. Large agricultural tracts cannot be cultivated — the present harvest is lower than the district average, while the yield per hectare has fallen to one-third of the pre-project level.

In the lower regions the project has resulted in water scarcity from falling water tables and dried up sources while the quality of available water has deteriorated significantly. Some 300 families, who lived by collecting sand from the river, are now unemployed because the third stage of the project was not carried out.

The project itself is now become a burden. Its computer system, installed to signal floods is out of order, and its maintenance is beyond local capabilities. Some of the pumps, too, are not working and repairs will drain the exchequer.

It is now apparent that the feasibility studies, carried out by the French experts prior to the project without any local participation, had been manipulated to show higher domestic rate of returns. Considering the poor value of the Sri Lankan currency and its steep devaluation in recent times, the terms of credit were, in any case, not favourable for the debtor country. Now, the French loans, based on fudged feasibility studies, have succeeded in extracting high returns for the creditors and entangling Sri Lanka in a debt trap.

The Agro-industry Boom: Colonisation in a New Guise

The spurt in agro-industries in Sri Lanka following the commercialisation of agriculture has signalled the beginning of the end of the country's natural wealth. The handing over of plantations to ruthless foreign investors, clearing of forests for intensive agriculture, introduction of chemical inputs for higher yields, and the unregulated dumping of untreated agro-industrial waste have all combined to destroy the island's environment and bring greater misery to the people.

Bitter Sugar

In Sri Lanka, sugarcane used to be grown as a small farmer crop and the syrup converted into jaggery, a cheap, nutritious, unrefined sugar substitute. The production process used was simple, not destructive of the environment, and required little capital.

Then in 1977, just when the sugar crop was due to be harvested, unlimited quantities of imported refined white sugar, at very low prices, flooded the markets. The shocked sugacane farmers found it unprofitable to harvest even a small part of the crop, and field after field of the standing mature crop was set ablaze. The imports continued till the 80s when government went into partnership with multinational companies to set up sugar factories and thousands of hectares of high forest were cleared for plantations.

In 1982, about 13760ha in Pelwatte of Moneragala district, lying on the southeast of the island, was cleared for sugarcane cultivation and the sugar multinational Booker Bros. was given the management. The area had been covered by virgin forests and small-scale cultivation was a source of sustenance for the people living there.

When the plantation came up, Booker Bros. asked 5000 families among the local inhabitants to become sugarcane cultivators. Families with no land title were moved out

from their homes and given the option of working for the company or given land on which they could grow sugarcane for supply to the company.

There was also pressure on the local farmers to sell their land to the company. But when it came to settling the payment, farmers found that they owed the company more for the inputs of planting material and chemicals than what they were getting for their land. Those farmers who agreed to cultivate sugarcane, found they were not the absolute owners of their plots, while they had been, for all purposes, masters of the lands they once tilled. In fact, the sugar company determined their incomes and even directed their lives. They were now tied up with a process of work from which they were alienated, for they had no land to grow the foodgrains and other crops they used to produce for themselves and the local market. The loss of this agricultural crop has not been estimated.

The setting up of the Pelwatte Sugar Corporation and the clearing of the forest created an acute shortage of water. When the company's bulldozers cleared the jungle, traditional small irrigation works and springs in the area were destroyed, and wells dried up. The large quantities of water that the company needed for its operations were pumped up from the local river, nearly 1.2m gallons daily, leaving no water at all in the dry season.

When the forest was cleared, over 100 elephants lost their natural habitat and they took to raiding the sugarcane plantations for food. The company's elephant control unit began slaughtering the majestic beasts, in spite of them being protected animals in Sri Lanka. The hungry elephants often strayed into villages resulting in a hitherto unheard-of conflict between man and beast. The Wild Life authorities were desperately trying to salvage the situation.

A large number of environmental and agricultural mass organisations joined the local women and farmers in protests against the sugarcane company Their demonstrations were suppressed by the UNP regime.

A decade into cultivating sugarcane, the farmers are far worse off than before. The food they grew for their sustenance is no more and their income from cane-growing is not enough for all their needs, given the rise in prices. Over the ten years the land itself has become so degraded that that not even in 100 years can it be restored to what it was.

From Tea to Tobacco

The tragedy of the Palwatte lands and those who tilled them repeats itself almost everywhere that commercial agriculture has been introduced and for every crop. From the tobacco fields in mid country to the tea plantations in the highlands, farmers are losing their lands and livelihoods to mercenary corporations out to make a fast buck from cash crops. The outsiders invade the lands with sweet promises, persuade the local people, by force if necessary, to go along with their plans, extract as much as they can from the land for a few years, and dissappear, leaving in their wake a degraded wasteland and a marginalised people.

For instance, the cultivation of tobacco, grown mainly for export, got a boost when a corporation was formed with government patronage in the hilly mid country (Madugoda area). The land falls in the catchment area of the Mahaweli river and the tobacco crop devastated the hills in the absence of proper soil conservation measures. Its cultivation then spread to the central hills where it was grown for some years. Today, in many of the highland regions, tobacco is no longer a productive crop as the soil has developed a certain toxicity. The farmers on the steep slopes of Walapone and Hanguranketa in Nuwara Eliya district are impoverished today, left with plots of degraded, eroded land.

In the colonial era, the long-standing tea plantations had similarly come up on uninhabited precipitous slopes by clearing wet mountain forest cover. The crop, grown on thousands of hectares of highlands, produced many long-term ill-effects such as floods, droughts and soil erosion. Indian workers, imported and settled amidst the tealands originally as bonded labour, still remain an uprooted population. Their living standards are low and infant mortality high. Of course, what the colonialists of yesteryears did over a long period, the neo-colonialists are doing today in a much shorter span of time. The road from tea can only lead to tobacco.

Debts and Death

The present-day mercenaries are better equipped than their predecessors to extract as well as destroy. With chemical fertilisers and hybrid seeds, they have been able to obtain much higher yields — and much higher profits — from the land they have colonised. At the same time, they have weakened the regenerative capacity of the soil at a faster rate. And the more the soil degenerates, the more the requirement of chemical inputs.

It is the local farmers who have been at the receiving end of all this. The costs of chemical fertilisers, weedicide and insecticide have been rising sharply and the poor farmers, already burdened with stagnating returns are unable to afford them. The small landholders are, thus, compelled to sell their plots to big farmers, a process of transfer that has been facilitated by government through new legislation.

The World Bank report on Sri Lanka's agriculture stipulated that this process be accelerated for the sake of better utilisation of agricultural lands. It had also recommended the shift to export crops such as tobacco and gerkins from paddy for higher returns. The net result has been a decline in grain production, and degradation of the soil, while the uncertainties of the export markets are driving farmers to starvation. Even as the farmers get deeper in debt, government has enacted new legislation for quicker and easier recoveries of debt. The tragic story of a farmer in Polonnauwa is illuminating.

D K G Gunasena of Polonnaruwa cultivated gherkins on 0.2ha of his land as there was insufficient water for paddy. He did this for three consecutive seasons and each time suffered a loss. He had to get his inputs of seed, fertiliser and pesticides from the company that would buy his product. He received payment after these costs were deducted. The costs were high and he registered a loss every time. He also borrowed Rs15,000 ($300) to cultivate paddy on the remaining land with all the chemical inputs. However, both the paddy and the gherkin crops failed as the company did not give the expected price for gerkins and his paddy got swept away in the floods. Not only did he not have any food for the family, he was also severely in debt. He found a way out by drinking the insecticide that he used for his crops. His wife was left destitute with four school-going children to feed and support. That year, 1994, 13 farmers in Polonnaruwa district were reported to have committed suicide due to failed crops.

Property Development Enterprise: Snapped up by the Sharks

Economic reforms in Sri Lanka has brought in its wake a construction boom and reclamation spree in and around the urban centres, particularly the capital city of Colombo. While it has filled the pockets of real estate sharks and land grabbers, the urban environment is steadily deteriorating, causing floods, disease and loss of livelihood.

Filled Up and Flooded Out

The focal point of this property development enterprise is Colombo. The city till recently was surrounded by sprawling lowlying marshlands which acted as a natural flood barrier and where rainwater was collected. In the past three decades around 300ha of these wetlands have been filled up and built upon, circumventing, often with political patronage, laws that disallow such construction. Unauthorised land sharks have not even spared the 800ha earmarked as flood retention areas in Colombo city. Many of today's residential areas around Colombo is built on this reserve, illegally reclaimed.

While the wetland environment has suffered major losses — many species of birds thriving in the marshlands have disappeared — the encroachments have created myriad problems for the capital and its residents. The decimation of the marshes has disrupted the natural drainage system, with the result that waterlogging of Colombo's streets has become a regular feature when it rains. The worst sufferers are the city's poor shantydwellers living in the lowlying areas. The stagnant rainwater pools have become ideal breeding grounds for mosquitoes and other disease vectors, often plaguing the city with cholera, dysentery and dengue fever.

The canals crisscrossing the marshlands have also become dumping grounds for industrial and domestic waste, silting them and blocking the drainage. Of the three drainage channels linking the canals to the sea, only one, the Wellawatte outlet, is functioning but, that too, not satisfactorily. In many places, the canals are also weeded over, their surface choked with water hyacinth.

Brazen Grabbing

Muthurajawela, a 5000ha marsh area immediately to the north of Colombo, was known to have been a rich paddy growing belt prior to the advent of the colonisers. Seawater had drained into this area, probably when the Dutch built the canal system, making it uncultivable. Now large tracts of this richly bio-diverse land have been reclaimed for unauthorised buildings and other development activities.

There are provisions in the law against the filling up of paddy lands except under 'necessary circumstances,' and only with the Agrarian Services Department's sanction. Yet developers are going ahead and paddy fields are being filled up, resulting in loss in grain production and unemployment among cultivators and agricultural labour.

Government has clearly demarcated retention areas which ought not to be filled up. But private companies and rich, powerful developers usually turn a blind eye to such restrictions. Reclamation, too, needs the sanction of the Central Environmental Authority (CEA), a requirement that is more often flouted than adhered to. A stumbling block to the enforcement of landuse restrictions could be government's policy of balancing the scales between development requirements and environmental concerns. Such ambiguous policies leave a lot of room for misinterpretations, whether unconscious or deliberate.

Seeking New Pastures

With the exhaustion of land in Colombo and its neighbourhood, the reclamation drive moved further afield. In the coastal township of Ambalangoda, 80km south of Colombo, the Land Reclamation Board itself, in conjunction with the Southern Provincial Council sought to reclaim an area of about 10ha, which led to the filling up of a network of canals draining rainwater into the sea. The immediate fallout was the constant floods experienced in about five villages lying outside

the filled area. The villagers were forced to abandon their rich farmlands covering over 200ha in addition to enduring the nuisance caused by blocked road accesses affecting thousands of people.

A social activist instituted litigation against the authorities and obtained a court order against the proposed reclamation till areas for retention of rainwaters were earmarked. Developmental work was halted but the main waterways that reach the sea remained blocked at the exit points. This has since been cleared, offering some relief to the villagers, but their farmlands are lost, mostly abandoned.

Prawn Farming: Looting the Lagoons

The lagoon is no more a free area for us. Now there are new owners. The companies have taken over the lagoon. Though this is our lagoon, our village, we have no power. The road to out village, too, was closed. We find it difficult to bring water now... Fish breeding, too, has reduced...

The thrust on export oriented growth has turned prawn farming into a lucrative business in Sri Lanka. Foreign investors and their local collaborators are rushing in to set up prawn farms in the country's innumerable lagoons, creating tremendous imbalances in the coastal ecology and threatening the livelihood of thousands of traditional fishermen.

Swamped Mangroves

More than 60% of the prawn farms that are sprouting all over Puttalam district are illegal, launched without any technical groundwork or appropriate planning. Only 58 farms have so far received Ministry of Fisheries approval and 325 approved by the North Western Provincial Council, as against more than 600 unauthorised ventures. While the legal farms have been allocated some 2000ha, more than 4000ha of precious mangroves — breeding grounds for fish and varied aqua life and the haven of fisherfolk — have been swamped by shrimp farms. As much as 50-60km of bio-diversity rich tidal forests, declared as conserved area, have been mowed down by the new enterprises. Today, Sri Lanka's mangroves have declined from 8000ha in 1992 to a mere 4000ha.

The prawn farms, legal and illegal, are usurping with impunity the settlements and commons of traditional fishing communities of the lagoons. The livelihood of more than 5000 fishing families depends on the lagoons' bounty in Puttalam district.

The farms often use as their spawning ground the canals feeding rainwater to the lagoons, making them shallow and choking their flow. This has been triggering floods even during moderate rainfall, disrupting the livelihoods of thousands of farmers and destroying their crops. The incidence of malaria, too, has increased sharply over the last five years.

Soil fertility in the area is declining because of the chemicals that are used prior to the construction of prawn tanks. These chemicals have also been contaminating the lagoon waters, killing off fish and affecting the fishermen's catch. The Puttalam fishermen's catch has shrunk by more than 20% ever since the district became the hub of prawn farming. The lagoon waters are so polluted that it has not spared even the prawn farmers many of whom are suffering from the 'white spot' disease.

Unending Losses

The list of losses and expenses triggered by prawn cultivation is rather long — loss of animal husbandry due to encroachments on grazing lands; income lost from cleared coconut plantations; loss of groundwater, well-water and surface water and the additional

cost of replacement with water supply projects; loss of paddy fields and the consequent cost of importing rice; loss due to land salination; loss of employment opportunities; and flood losses to property, crops and manhours together with the cost of reconstruction. These losses and expenses can at least be quantified; but the loss of habitats, environment, scenic beauty, mud flats, avifauna, fishing grounds, to name only a few can only be imagined.

It is clear, therefore, that the colossal losses from the decline in the livelihood and earnings of the fishermen and farmers can never be compensated by the foreign exchange earned from prawn export or the scanty employment opportunities generated.

Lawbreakers Take It All

The astounding fact about Sri Lanka's prawn industry is that despite the balance sheet being evidently loaded against it, nothing is being done to curb its reckless profiteering. Political patronage ensures that the prawn mafia do not operate buffer areas, never carry out water treatment, block water channels, usurp additional land and destroy mangroves with scant respect for the law. Lax legislation and the lure of dollars prevent government from taking stringent action against such gross violation of the country's laws. Invariably, it is the big-time operators who are more destructive than the small farmers. There are instances when they have killed rare birds to prevent them from preying on shrimps, paying Rs25 per bird killed.

It is the multinational and their collaborators among the local elite who extract the maximum rewards from prawn farming. Nothing ever, not even a small portion of the huge profits, is ploughed back into the area. All that is left for the local people is marginalisation and destruction of their life-supporting environment.

Tourism & Hotel Industry: A Cultural Invasion

The enchanting beaches of Sri Lanka have been handed over for uncontrolled exploitation to the hotel industry in a bid to earn foreign exchange. While the process has had some positive impact on employment generaton and inter-cultural contact, its fallout on the local economy and the environment has been unfortunate. With the phenomenal growth of commercial tourism, degenerate lifestyles and values are making deep inroads into the Sri Lankan society and the island nation's traditional culture and values are faced with the threat of extinction.

Ruined Local Economy

Sri Lanka's long coastline and golden beaches surrounding the entire island had always been a favourite of people from all over the world. Recognising their potential, government began a move in the late 60s to develop beach resorts and promote tourism all over the island. The first areas to be developed were the coasts north and south of the capital, Colombo, where the hotel and complementary industries rushed to rake in quick gains. Government, too, realising the economic benefits, threw all caution to the winds, paying scant attention to planning and conservation.

Within a short time, the frenzied rush had spawned structures along the beaches without any sense of proportion or aesthetics. Unplanned buildings and unauthorised hotels encroached on the sands, denying public access and damaging the coastline. The pollution caused by exceeding the carrying capacity inflicted untold harm on the environment.

The luxury hotels that mushroomed at the same time turned the local economy topsy turvy. While, on the one hand, they brought good incomes to those who lived in the area and supplied their daily requirements, on the other, prices of locally-produced goods sky-rocketted, putting them out of reach of the native population. For instance, fruits and seafood such as cuttle fish or shrimp, an essential part of the daily diet of the common people prior to tourism, was no longer affordable to the large majority.

Since the early days of tourism there existed a conflict of interests between hoteliers and the fishing community, even though the fishermen had an advantage in getting better prices. The bone of contention was the space on the beaches where the fishermen kept their boats and dried their nets as well as the fishing points where the nets are pulled into shore. The tourist season coincides with the fishing season, and the large number of bathers and beach crowd dispersed the shoals, reducing the catch of the fishermen who fished near the coast. Hoteliers, on the other hand, felt that fishermen were usurping valuable beach space.

Government was so obsessed with the money-churning capabality of the tourist trade that it was not even concerned about the destruction of some of Sri Lanka's centuries-old heritage. For example, it sanctioned the construction of a five-star hotel in the catchment area of an ancient irrigation tank at Kandalama in the North-Central province, disregarding large-scale opposition and paying little respect to a culturally enshrined norm prevalent for over two thousand years.

Insidious Impact

The most insidious, and by far the most important, impact of such commercial tourism was on the moral and ethical standards of the Sri Lankan people. If tourism was meant to enrich cross-cultural sharing of values, the experience of the island nation has been in its subversion. Luxury tourism invaded the cultural preserves in the rural areas, turning them into the hunting grounds of the playboy culture. As the sex trade flourished, a whole generation of young people, including many who are still children, were subjected to unbelievable human and social degradation, the hangups of their reluctant livelihood weighing heavily on their psyche.

The power of the dollar, the ideology of the rulers, and western lifestyle and values made a great impression on the youth in the village, who considered these essential for social advancement. This set a new trend in Sri Lankan society in terms of consumption patterns and perpetuated a new kind of enslavement. Counter social movements could not emerge in the face of the strong government policies in favour of open tourism. Local police protected the tourist while there were none to protect the people and their heritage. Clearly, tourism today has become a pivotal vehicle for a global cultural invasion.

STATISTICS

Socio Economic Indicators

Indicator	Year	Value
Total population — mid-year estimate (in million)	1995	18.1*
Population density** (per sq. km)	1995	289*
Foetal deaths — Male	1994	805*
Foetal deaths — Female	1994	711*
Crude Birth Rate (per 1000 pop)	1995	19.3*
Crude Death Rate (per 1000 pop)	1995	5.8*
Infant Mortality Rate (per 1000 live births)	1994	16.8*
Rice production ('000 mt)	1995	1,910.7
Increase in rice production over 1994	1995	4.7%
Rice imports ('000 mt)	1995	9.4
Rice exports ('000 mt)	1995	46.2
Wheat flour import ('000 mt)	1995	782.5

** Provisional*

*** Revised according to land area as at 1988*

Source: *Department of Census & Statistics April/June 1996*

Labour Force
(Excludes N &E Provinces)

Item	1995			
	1st qrt	2nd qrt	3rd qrt	4th qrt
Labour Force *(in '000)*				
Total	6075	6062	6115	6172
Employed	5316	5340	5340	5433
Unemployed	759	722	775	739
Participation Rate *(%age)*				
Both Sexes	47.7	47.8	47.9	48.3
Male	63.8	64.2	65.5	64.1
Female	32.1	31.0	31.1	32.8
Unemployment Rate *(%age)*				
Both Sexes	12.5	11.9	12.7	12.0
Male	8.8	8.8	9.3	9.2
Female	19.7	18.4	19.7	17.3

Budget 1995

	(Rs million)
Approved current expenditure	137,100
Add	
Defence	4676
Samurdhi programme	3135
Subsidy for wheat flour	1500
Interest payment	1883
Salaries & wages	1607
Pensions	591
Rehabilitation	585
Transfer to University Grant Commission	348
Grants to Sri Lanka Transport Board	300
Total	15,307
Revised recurrent expenditure	152,407

Access to Drinking Water

- Occupants of 62% of the housing units have access to safe drinking water
- of the housing units get drinking water from protected wells.
- take drinking water from unprotected wells
- receive pipe borne water,
- use tube wells as their main source of drinking water,
- get drinking water from rivers, tanks or streams

Access to Power

- No. of consumers by tariff — 1991: 882,373 (About 35% of the population)
- Only an estimated 24% of households have access to electricity
- The maximum sales occur in the Division of Colombo
- The Colombo Division contains 20% of the total CEB consumer accounts

REFERENCES

'Accelerated Mahaweli -massive problem,' Lanka Guardian, *1982.*

AMM Abeysinghe, Accelerated Mahaweli Programme, *Paper Mahaweli Authority, 1989.*

Bulletine, *The United Agricultural Workers, 1992.*

Caspersz Paul, HK Wickramanayake & S Vijesandiran, The Privatisation of Plantations.

Central Bank Annual Reports, *1995 & 1996.*

Ceylon Daily News, *Aug. 12, 93; Jan. 1, 94; Feb. 19, 96.*

Deheragoda K & Sarath Fernando, Globalisation 85, National Seminar on Food Security.

Economic Review, *Feb. 80; April-May 92; July-Aug. 85.*

Economic Review, *Jan. 1996 & Feb. 1997, People's Bank Publication.*

Economic Review, *Tourism, Aug. 1993.*

Final Engineering Report, *Executive Summary, Ceylon Electricity Board .*

Mahaweli Ganga Irrigation and Hydropower Survey, *UNDP/FAO, Rome, 1968.*

'The Mahaweli Project,' Economic Review, *vol. 4, no. 8&9, Nov-Dec 1978.*

Nutritional Survey Mahaweli H Zone-Publication No 9, *Ministry of Planning, 1989 .*

People's Memorandum, Movement for National Land and Agricultural Reform.

Research Papers, *SEDEC, 1996 .*

Sunday Leader, *Dec. 4, 94.*

The Island , *June 11, 93; Dec. 21 & 27, 94; Jan. 19, 96.*

The Leader, *Dec. 4, 94.*

Tribune, *June 30, 1979.*

Voice of the Voiceless, *vol. 3, March 1987.*

THAILAND

"Due to the skewed economic development pattern, conflict and violence over natural resources management is likely to grow in Thailand, especially between the urban rich and rural poor..."

THAILAND

Naruemon Thabchumpon

Economic Transition in Thailand: The Hidden Costs of Development

Thailand, located in the northern tropical zone in the centre of the Indochina peninsula, is shaped liked an axe, the Malay peninsula being the handle. The country has a total land area of approximately 321m rai (514,000 sq. km), the maximum distance from north to south being 1648 km and from east to west 806 km. The coastline along the Gulf of Thailand is 1875 km and on the west along the Andaman Sea 740 km. Thailand has common borders with Myanmar, Laos, Cambodia and Malaysia.[1]

Since 1961, economic development of Thailand has been guided by five-year plans prepared by the National Economic and Social Development Board (NESDB). As a result of three decades of industrial and export-oriented development policies, the nation's economic growth has remained around 7-8% per annum. The economic strategy adopted during this long process of development has taken several turns at various stages.

Success at a Price

In the 60s, Thailand promoted agricultural and manufacturing industries to achieve growth. Of its 8% rate of increase in GDP in this period, agricultural products contributed a healthy 4.2%.[2] The major source of revenue was also the agricultural sector, rice being the main item for export. In its national development plan, government emphasised agricultural diversification strategy by introducing new cash crops such as cassava, maize, sugar and pineapple. Most of the growth in agricultural production came from expansion of cultivated areas and diversification in crop pattern. New cash crops had been introduced to Thai farmers to reduce dependence on rice as the only crop for export. By the end of the 60s, Thailand became one of the major food exporting countries in the world, behind only the United States, Canada, Australia and France.[3] By then the number of agricultural commodities for export had gone up to at least 15 major items. It is with this agricultural surplus that Thailand could mobilise funding to launch its industrialisation process.[4]

The next move in Thailand's development strategy was import substitution. In this phase, at least one-third of the industrial sector's growth was based on the expansion of the domestic market. However, in the 70s, the increasing volume of industrial exports stimulated further industrialisation. In order to pursue this export-oriented policy, government encouraged linkages between agriculture and industry by promoting small-scale labour intensive units such as textiles, garments and food-processing, particularly in the Third Economic Development Plan (1972-76). Through foreign direct investment and joint ventures, the Thai economy was able to capture and share in the global growth of the textile market. The export policy also received a boost in 1977 with the passage of the Investment Promotion Act,[5] which aimed to introduce measures such as surcharges on competing imports, reduction of import duties on raw materials and tax incentives.

Over the past three decades, Thailand has made impressive progress in economic development. Since the 80s, the national economic growth rate has remained over 7% per annum,[6] while the annual per capita income has shot up from 2100 baht ($84) at the beginning of the first national development plan in 1961 to 68,000 baht ($2720) at the end of the 7th national plan in 1995.[7] Thailand's development strategy has, thus, become a model for many developing countries seeking to improve their own economic performance.

In 1986, the focus shifted to other sectors such as manufacturing, utilities, banking and services industries which became the revenue generators of the economy. However, exports continued to hold sway over the accelerating growth rate, rising in volume by as much as 14% every year on an average. One reason for the success of the export-oriented policy was the low costs of production as compared with those in competing countries — a function of low wages and price stability in Thailand. During 1986-90, the rate of economic growth peaked at around 10% per annum.[8]

But Thai society had to pay hidden costs for such rapid economic growth as differences in income levels between rural and urban areas had become wider. Agriculture was ruined and farmers were forced to leave their homes and migrate to urban areas, swelling the ranks of the urban poor and unskilled labour in the cities.

New Challenges

Today, Thailand is facing more competition from the labour-intensive industrial markets of Indonesia, Vietnam and China. The economy can no longer depend on cheap labour as the pivot of its industrial growth since these emerging countries are adopting a similar strategy and their labour is cheaper. To cope with the new situation, government is thinking of opening up new avenues for industrial development.[9] The NESDB is considering a five-pronged solution to reverse the situation:

- change the export market to the East Asian region including the Chinese Economic Areas (CEA) comprising China, Hong Kong and Taiwan;
- promote subregional economic cooperation,[10] among the six Mekong Basin countries and the Growth Triangle — southern Thailand, northern Sumatra and northern Malaysia — for enhancing cross-border trade and investment;
- expand and diversify the Thai industrial base, especially six target industries — agro-industry, textiles and garments, automotive and engineering, electronics, petrochemicals and iron and steel, which will have to switch from simple to high-technology industries;
- liberalise the financial sector and foreign exchange market in order to speed up industrialisation and mobilise capital; and
- apply appropriate technology to production processes and high technology in several sectors in order to increase productivity and quality of products.[11]

To achieve these goals, Thai government will concentrate more on education for creating skilled workers; put in more investment in infrastructural projects in urban areas and new economic zones; introduce improved technological capabilities in its industrial processes; and generate greater income in the rural areas by speeding up industrial growth there through a broader sub-contracting policy.

Bankrupt Farmers

Economic development for three decades has destroyed a major portion of the natural resources of Thailand through unsustainable consumption. Because of the use of 'low technology' in agriculture, as much as 60m rai (9.6mha) of land had to be cultivated to produce just 12mt milled rice a year, and the country's paddy and other major crop yields were among the lowest in Asia. To support the export-oriented policy, government, on the one hand, adopted the strategy of Green Revolution of cultivating new rice varieties for higher yields, while on the other, taxed the rural sector to generate revenues for the state and keep prices of foodstuff low for the urban wage earners. The 'new' rice, needing more water, chemical fertilisers and pesticides, constantly created problems for farmers whose dependence on irrigation and bank loans increased as a result.

Because rice was a product with 'no future', its price was determined by the world market, compelling the farmers to replace rice with cash crops with disastrous consequences. Even today, most of them cannot go back to their traditional farming practices because chemicals and monoculture have destroyed their naturally fertilised soil.

Farmers, who constitute the bulk of the country's population, have never had any say in deciding on a development strategy appropriate for their needs and livelihood. Though they form the backbone of the economy, their lives have become debt-ridden, many having lost their lands and gone bankrupt after the demise of their cash crops. Their sons and daughters have migrated to the big cities, toiling as unskilled labour in labour-intensive industries leaving their kids in the care of the older people in the villages.

By the year 2000, the new economic strategy is expected to reduce the number of farmers from 65% to 40% of the labour force in farm households. The rest of them will leave the villages to seek wage work as industrial labour or domestic servants.

Widening Disparities

The basis of Thailand's economic development plans was industrialisation and modernisation. To achieve this, not only have the rural poor been sacrificed, but most of the country's natural resources have also been exhausted. The more the country is being industrialised, the greater is the intensity of the conflict over distribution of resources and stronger are the voices of the people demanding their rights from government. While many conflicts have been created by state developmental projects such as dams, roads and mega-projects, others are the fallout of the unregulated economic growth and environmental degradation.

The evidence of inequity is everywhere, from the most macro-level of income distribution to micro-level disparities. The present income gap between poor and rich, 1:20, is getting wider.[12] The income share of 20% of the richest group increased from 54% in 1988 to 59% in 1992 while income share of 20% of the poorest group decreased from 4.6% to 3.9% over the same period.[13] Despite high rates of economic growth for three decades, income disparities in Thailand have widened in different spheres — between urban and rural, and between Bangkok Metropolitan Region (BMR) and other regions, especially the northeastern

region. The annual household income per capita in the Northeast is 12 times less than that of other regions.[14]

Due to such high social and environmental costs, Thailand's development is at a critical juncture. Rapid social changes arising out of industrialisation have led to the emergence of luxurious consumption patterns and unsustainable use of natural resources is bringing about environmental degradation. Poverty and social inequity, created by production patterns and development policies, are also increasing. Even though the main workforce in development projects comprises the poor — farmers, migrant workers and young prostitutes — the condition of their lives is worsening day by day. It is true that there is a huge price to pay for economic development. The question is, who pays the price and how.

Prelude to Conflict

The dark side of Thailand's development will be a never-ending story as long as the approach of growth through rapid accumulation is practised. In order to maintain the current rate of growth, the country has no option but to continue with industrialisation and its export-oriented policies. The decision-makers, therefore, will concentrate more on technological investment and be more interested in 'Internet' rather than 'Humannet', and there will be a greater demand for infrastructural projects to sustain an 'investment environment'.

Due to the skewed economic development pattern, conflict and violence over natural resources management is likely to grow in Thailand, especially between the urban rich and rural poor, and it is probable that many regions of the country will witness more protests, more fighting and more killings. However, there is some room for optimism that confrontations may be prevented through decentralisation, conferring of community rights and people's participation in the development process. Grassroots democracy has to be adopted to change economic and social conditions, equitably distribute power among groups of people and settle conflicts. Only then can the hidden costs of Thailand's development be reduced.

A man tries to identify the body of his daughter by searching through dozens of coffins at the Bangkok Forensic Department. Relatives took on the gruesome task of searching for loved ones among the remains of 209 Thai workers who died in the world's worst factory fire. Apichart Weerawong, Reuter.

GLOSSARY

Air Pollution

Many industrial provinces in Thailand, especially the new Industrial Estate Zone and Export Processing Zones (EPZs) such as the Eastern Seaboard Area are getting heavily polluted from industrial processes. Out of a total 102,723 factories in Thailand, 8120 factories pollute the air and 26,235 factories pollute both air and water. The capital, Bangkok, called the city of angels, is among the worst air-polluted metropolises in the world.[15]

***Bangkok*:** The transport gridlock in Thailand's capital city is reputedly the worst in the world, with the vehicle population increasing by 2000 cars a day. The city is shrouded in a constant haze, even at midday, from suspended particulate matter and pollutant gases emitted from these vehicles, together with that from power engines and factories and dust from construction sites and mass transit projects such as Thanayong. Around 340t lead is released from exhaust pipes in the air every year, its level in 1992 being over 0.17 $\mu g/m^3$ in the air and more than 40 mg/l in the bloodstream. At present, the lead levels in the blood exceed the standard safety level of 10 µg/decilitre among 27.4% of Bangkok's children and 5.7% of children in the rural provinces. In 1994, Bangkok's air contained 2.3mt carbon monoxide, 494,246t hydrocarbons, 134,249t oxides of nitrogen and 31,691t spm. In 1996, a number of traffic policemen were affected by diseases caused by air pollution, and some of them died.[16]

Biodiversity Loss

Thailand's tropical forests host approximately 20-25 thousand varieties of plants including 15,000 flowers and 1000 orchids. It is also home to some 282 kinds of mammals, 405 reptiles, 50,000 insects and 916 varieties of birds. However, according to a Royal Forestry Department (RFD) report, 37 animal species are endangered and 190 species of birds are extinct. The reason for this biodiversity loss is the shrinking of primary forests in every region, especially the North, Northeast and South.[17]

Coral Damage

Thailand is bounded by the Gulf of Thailand and Andaman Sea. Part of the South China Sea, the Gulf of Thailand spreads over 350,000 sq. km or two-thirds of the country's total land area. Once it used to be the most important productive ecosystem for marine life including corals. A population of 100,000 fisherfolk live along the Gulf coast. The Andaman Sea, bordering six provinces of the South, was known for its beautiful coral reefs. The coral reefs are gradually shrinking and 95% of the reef along Pang Nga province has been destroyed by mining activities. The balance of the marine ecosystem is being steadily destroyed by mangrove deforestation, combinations of harmful fishing technology and drainage into the sea of polluted water from mining, shrimp farming, and industrial and household effluents.[18]

Dams

Dam construction was back in the news in Thailand after the drought of 1993. On the eve of his 66th birthday, the King called for building two dams in the Central region — Pasak in Lopburi and Mae Wong in Nakorn Sawan — and another one in the South — Kaeng Krung in Suratthani — to cope with the water crisis. Two years later, when Thailand faced floods in the Chaopraya basin in 1995, dam proponents brought forward a proposal to construct the Kaeng Sua Ten dam. Today, Thailand has 25 major dams with over 100mcm capacity reservoirs all over the country,19 of these mainly for electricity generation. According to an EIA study, water capacity of these big dams should be 65,848mcm. But in reality the reservoirs can only hold 15,169mcm of water or just 23% of their capacity.[19]

***Kaeng Sua Ten*:** The Kaeng Sua Ten dam (KST) project, proposed by the Royal Irrigation Department (RID) in 1989, met with strong opposition from local villagers and environmentalists when it was awaiting approval for a feasibility study. It was expected to provide water to irrigate 386,000 rai (61,760 ha), generate 48MW power and collect rainwater during the rainy seasons before flowing into Sirikit dam. The project was estimated to cost 2969m baht ($118m). The dam site was to be located in the Yom basin, 50km north of Phrae province, which, academics argued, was directly located on a geological fault. The submergence from the dam reservoir was expected to destroy 30,000 golden teak trees, 123 bird and 174 wildlife species while around 620-2000 families had to move out (depending on the water level). Thousands of villagers facing eviction from the KST dam site have staged more than 20 protests against the dam since 1989.[20]
(*See case study*)

***Pak Moon*:** A streamwater hydro-electric power project, Pak Moon dam was built to divert the Moon river waters for generating hydel power before flowing into the Mae Kong river. The Electricity Generating Authority of Thailand (EGAT) proposed the project in 1990 and started building the dam after the 23 February 1991 coup d'etat. Before construction started, environmentalists had urged EGAT to review the project because it would destroy many native fish and affect local villagers whose lives and livelihoods depend on the Moon river. The dam site is located at Ban Hua Hae, Kongjiam district of Ubonratchathani province. It is expected to provide 136MW electricity a year for industries in the Northeast. At least 400 families had to move out from its submergence areas. One of the biggest issues of this dam was the violence inflicted by the dam proponents in collusion with EGAT.[21] (*See case study*)

Energy Spending

Thailand's energy resources are owned by the state and run by state enterprises such as EGAT. The energy policies of Thailand are reliant on fuel, natural gas and water from 19 hydel dams. With industrial development, power demand has increased from 8876MW in 1992 to 13,075MW in 1996, and to meet this demand, EGAT has not only to build more dams and operate more lignite plants in its own land, but also import electricity from neighbouring countries. In 1996, the National Energy Policy Council set certain conditions to the power purchase agreement between Laos and Thailand. It ruled that Laos would have to build a transmission line from Yunnan in China to Thailand. Right now, EGAT is the main customer buying electricity from Laos. By AD 2000, Laos will build 15 more dams for generating electricity for selling to Thailand. Another way EGAT proposes to augment its power resources is by diverting waters from the Mekong and Salween rivers to major hydel dams.[22]

***Acid rain*:** In October 1992 acid rain in Lampang province brought to the fore the dangers of running lignite power plants without sulphur filters. The EGAT had set up 13 such units in the Mae Moh power plant with 2625MW capacity, using 42,000t lignite per day or 15mt a year. In the October 1992 incident, 17 villages of five subdistricts in Lampang province received acid rain as sulphur dioxide spread over the area. On October 10 an atmospheric test revealed that sulphur dioxide over Mae Moh valley had increased to 357.6μg/m^3, which was above international standards. Ten days later, it had shot up to 2122.9μg/m^3. The pH of sulphuric acid in rainfall had touched level 4. The toxins affected hundreds of people, cattle, and agricultural crops and fruit trees. At least 900 people suffered breathing problems (80% of patients), itching and other associated ailments.[23] (*See case study*)

***Nam Theun-Hinboun*:** The 210MW hydel power project on the Nam Theun river, a tributary of Mekong, in central Laos, has been proposed as part of a run-of-the river and trans-basin project along the borders of Laos' Bolikhamsay and Khammouane provinces. As much as 98% of its electricity generated would be sold to Thailand. The project would dry up a 40-km stretch of the river channel downstream from the dam but create 16 shallow pools associated with a number of rapids along the river channel. This would affect some fish species such as *pla taphian* and their breeding grounds as well as migration between Mekong and Theun rivers. Laos environmental groups have expressed concern about the adverse effects of this dam, stressing that the EIA for this project had been done in a very short time and did not answer many serious questions. Villagers would be compensated for the loss of fish downstream of the dam through increased catches at the head pond.[24]

***Salween Project*:** Thai government has prepared the Salween scheme to divert about 2000-3000mcm water a year from Salween river to the two major dams, Bhumipol and Sirikit, which do not have enough water to provide electricity during the dry season. The Salween water diversion project will be divided into two parts: the first, called the Upper Salween project, 76km north of Mae Sarieng district of Mae Hong Son province, would be a dam storing 21bn m^3 of water with a power plant generating 4540MW electricity. This project would cost 75,000m baht ($3000m). The second, called the Lower Salween project, and to be located 30km south of Upper Salween project, is meant to divert Salween river waters to the Mae Taeng river in Chieng Mai. This water diversion could make a maximum of 10bn m^3 of water available for irrigation. A reservoir of 245m m^3 would also be built to generate 790MW from its power plant. This project is estimated to cost 21,450m baht ($858m). Actual sites of both projects would be in Myanmar. The project is an example of how Thailand is incurring huge expenses for its energy supply at enormous environmental costs to its neighbouring countries.[25]

***Thai-Myanmar Pipeline*:** To accommodate Thailand's energy plan, the Petroleum Authority of Thailand (PAT) initiated a joint project with the junta government of Myanmar to import natural gas from Yanada gas field in Myanmar for power generation. This pipeline project is expected to supply 550m cubic feet of natural gas per day from Yanada to Ban E-tong of Kanchanaburi, at an estimated cost of 16.9 bn baht ($676m). The EGAT is the main purchaser of the natural gas to be used in its 2800MW power plant in Ratchaburi. The 230km pipeline will be routed through 34.6 km of conservation forest and watershed areas in Tong Pha Phum, Kanchanaburi, adversely affecting the ecology of 112.5 rai (18 ha) of designated national park rich in forest resources and endangered wildlife species. The Office of Environment Policy and Planning is yet to accept the EIA study.

Forest Destruction

Of Thailand's total land area of 321m rai (514,000 sq. km), forests covered 171m rai (274,000 sq. km) or 53.3% in 1961. There are six types of forests in the country — tropical rain, hill evergreen, mixed deciduous, dry dipterocarp, mangrove and swamp. In 1988, the forest cover had been reduced to 89.9m rai (14mha) or 28% of total land area and by 1992, the conservation and watershed forests covered barely 59m rai (9.4mha) or 18.4% of total land area. More than 1.5 million families or 12 million people from 12,000 communities dwell in the 30m rai (4.8mha) of reserve forests. At present, forests are shrinking at the rate of 0.85% every year. At this rate, Thailand's forest cover will be down to 23.85% by AD 2010.[26]

***Agro-industry*:** In order to achieve NIC status, government began supporting the agro-industry business in 1982, which required huge plots of land and a sub-contracting policy. This kind of agricultural process and land speculation destroyed forest areas. Between 1982-90, many poor farmers sold their lands to the agro-industry business, encroaching into the forest and occupying new plots.

***Community forests*:** In rural areas, poor people are dependent on land, forest and water in harmony with nature. For them, forest is a lifeline, supplying food, wood, medicine and materials for survival. In 1991, the concept of community forests was proposed by NGOs to solve conflicts over natural resource management. The total area of community forest is 1.7m rai (277,031ha) or 10% of total forest area. Traditional community forests cover around 1.4m rai (225,849ha) and the new development community forest — degraded forests replanted by communities — 319,753 rai (51,160ha). Conservation and expansion of community forests depend on how the state responds to the right of local communities to natural resources.[27]
(*See case study*)

***Counter-insurgency*:** In a bid to combat the Communist Party of Thailand (CPT), the Thai Army has constructed many access roads in the forests controlled by the CPT. For 30 years, primary forests have been regularly cleared, highlighting the predominance of military and political matters in Thai public life rather than ecological considerations. The military not only chopped or burnt trees in the impenetrable forests, especially along the borders, that were the strongholds of the CPT, but also encouraged local people to occupy, cultivate and settle in them. Many strategic roads were built for two purposes: facilitate transportation of agricultural products and destroy CPT bases. In an agreement between the army and the RFD, villagers were allowed to settle on land up to one kilometre from the roads. During 1976-79, the years of the heaviest anti-communist operations named 'Cities encircling the jungle', 7m rai (1.14mha) of forest areas in the North, Northeast and South were destroyed.[28]

***Deforestation*:** One of the main causes of rapid deforestation in Thailand is government policies. In the Central Region, forests have been wiped out to cultivate rice and cash crops for export, while forests in the North have been cut down by logging companies. The logging business started in the Northeast in 1968 and, following the export oriented policy, the rate of deforestation rose from 2.6m rai (416,000 ha) a year in 1973-75 to 3.2m rai (512,000 ha) a year in 1976-78. Deforestation in the South came from rubber-tree plantations, 35% of which are located in forest reserves and conservation areas.[29]

***Evacuation*:** The RFD had planned to relocate two hill tribes occupying approximately 1.2m rai (192,000ha) in conservation forests to lower lands in the North. In March 1994, 178 families of Yao, Lahu and Lua hilltribe groups were evacuated from Doi Luang — which was declared a national park in 1990 — to be resettled in a degraded reserve forest at Ban Pa Chor in Lampang province. Each family was given 10 rai (1.62ha) for cultivation. Then, in

August 1996, 224 families of Pgaz K'nyau (Karen) and Mong hilltribe people were moved from Ban Loa Ko, Ban Pa ka and Ban Pa mark of Khlong Wang Chao national park for resettlement at Kosampee and Pongnamron district of Kamphaeng Petch province.[30] (*See case study*)

***Export crops*:** The thrust on exports had been pursued in the national development plans since the 60s, which led to agricultural expansion at over 5% per annum until the mid-70s. New cash crops such as cassava, maize, sugar, pineapple and jute were introduced and expanded very rapidly. Because of the use of low technology of cultivation, most Thai farmers had to expand and occupy more land to grow these crops leading to enormous deforestation in the rural areas. Far from restricting this loss of forests, government also collected land taxes and provided facilities such as schools and district offices to the people in these reserve forest areas. In 1961, Thailand had 171m rai (27mha) of forest cover, 38m rai (6mha) of paddy fields and 8m rai (1.2mha) of agricultural crops. In 1985, while the forest areas fell to 93m rai (14mha), paddy fields increased to 73m rai (11mha) and cultivated areas to 39m rai (6mha).[31]

***Flood disaster*:** In the South, rubber and palm are the most valuable crops. Many people cut primary trees and planted rubber in the forest areas, especially after the Rubber Control Act was enacted in 1975. In 1988, heavy rain and storm led to a massive landslide and floods in Kratoon district of Nakornsrithammarat province. The flood waters, carrying thousands of trees that had already been cut down and prepared for logging, together with the landslide debris swept over whole villages in the district. The worst-affected village was Ban Kireewong where three people died and many others were injured while hundreds of houses and farmlands were completely destroyed. After the floods, sustained campaigning by environmental groups compelled government to withdraw logging concessions in 1989. However, illegal logging still goes on because of increasing demand of wood for furniture-making and in industry. Since 1990, Thai logging companies are destroying primary forests in neighbouring countries by seeking concessions, cutting and importing timber from Burma and Indochina to Thailand.

***Forestry Master Plan*:** In 1985, the Royal Forestry Department proposed that reserve forest areas should cover 138.7m rai (22mha) or 43.25% of total land area of which 82.36m rai (13mha) or 25.65% was to be conservation forest and 46.68m rai (7.6mha) or 14.4% commercial forest. However, Thailand has only 89.9m rai of forest cover left. In order to implement the reforestation policy, governmental agencies have plans to evacuate 12m people living in reserve forest areas and give concessions in these lands to the private sector for commercial plantations.[32]

***Infrastructure projects*:** Mega-projects such as dams, roads and irrigation reservoirs in conservation forests have always received support from government. Most of the 25 major dams with over 100mcm capacity reservoirs are located in watershed and conservation forest areas. In just one year,1988, 34m rai (5mha) or 10% of reserve forest areas (both conservation and commercial forests), were taken over by government agencies for the construction of several infrastructural projects such as 11 dams, several reservoirs and strategic roads.[33]

***Logging concession*:** In 1941, government began to grant logging concessions to the British companies and other local commercial enterprises. The Royal Forest Department had been set up by King Rama V to regulate the concessionary and stumpage price in reserve forest areas. However, without a proper reforestation plan to balance the ecosystem and due to largescale corruption among RFD officials and logging companies, forests in Thailand were rapidly destroyed, especially in the North and the Northeast. Deforestation decreased by as much as 80% a year after the total ban on logging in 1989.[34]

***Mangroves*:** Thailand's mangroves once spread over 2.3m rai. However, with land concessions to commercial companies and shrimp farming, mangrove forests have dwindled to 800,000 rai or 13% of what it was and almost all the mangroves along the Gulf of Thailand coast has been wiped out. The heavy doses of chemicals and antibiotics used in shrimp-farming, promoted by government for more than 20 years because of quick and high returns, has adversely affected all aquatic life. Even then shrimp-farming is expanding in the east and south in Trang, Songkla provinces. Along the Andaman Sea coastline, some villagers still use traditional methods of harvesting among the mangrove roots instead of shrimp farming.[35]

Industrial Accidents

After 1977, the industrial sector grew rapidly, especially labour-intensive industries such as textiles. Thailand now has at least 102,723 factories, 20,378 located in Bangkok. Many factories do not have safety gear for workers such as safety hats, earplugs and masks and most of them have not installed safety equipment to prevent fire and other accidents. Even though the Environmental Act enacted in 1991 authorised ambient standard regulation by the Department of Pollution Control (DPC), enforcement rests with the Department of Industrial Works (DIW). There is a crying need to separate environmental quality control — water and air pollution, use of hazardous chemicals, toxic waste disposal — and industrial safety standards from overall industrial policies, and set proper criteria for project approval.

***Gas car explosion*:** In an unprecedented accident in 1990, many people died, some roasted alive inside their burning cars, during rush hour on Petchaburi road, a major expressway. A long queue of traffic was waiting for the green light when a Siam Gas Company vehicle collapsed, causing gas to spill from its tank onto the road, sparking a chain of fires among the stationary vehicles. Many people inside burning cars could not escape because their air conditioning prevented them from hearing the explosions. The fire also spread to a flat nearby, killing some of the highway sex workers who were sleeping there.

***Hotel collapse*:** On August 13, 1993, the five-star Royal Plaza Hotel in Nakornratchasima province, gateway to the Northeast, collapsed, killing 133 persons and injuring 351 others. The cause of the accident was found to be the unsafe and illegal extension work carried out on the hotel without any corresponding strengthening of the foundation pillars. The extension plan was easily passed by the Civil Works section of Nakornrachasrima municipal administration during the period of the Indochina boom. After the collapse, the Civil Engineering Association of Thailand recommended that the government set standards of engineering and ensure stricter checks.[36]

***Kader factory fire*:** Tragedy struck on May 10, 1993, when a fire at the Kader Industrial Company killed 188 workers — 174 women and 14 men. There was neither firefighting equipment nor fire exits in the building, so the workers were trapped. At least 469 workers were seriously injured when they jumped off the fourth-floor onto the concrete. In terms of the number of victims, it was ranked as the second worst industrial fire disaster in the world in 25 years. While the victims still suffered, Kader Industrial Company was allowed to restart business operations in 1995 under the new name of Earth Industrial Public Co. Ltd.[37] (*See case study*)

Land Injustice

In Thailand, 70% of total land is owned by the State and Crown Property Bureau, the remaining 30% being private property. Almost 90% of Thai people own only 10 rai (1.62ha) per head while 10% own around 100 rai (16 ha) each, and just 1000 persons own more than 1000 rai (160 ha) land

each. Earlier, the state's rights were conferred on individuals so as to let them and their community enjoy the use of land. However, this customary right ended with the passage of the Forest Reserve Act in 1964. Now land can only be classified as either public land or privately owned. Of the total land area of 320.7m rai (51mha), 150m rai (24mha) is agricultural land, but with all kinds of land deeds being issued by the Royal Land Department (RLD), this has been reduced to only 83.04m rai (13.45mha) or 55.4%. Land documents are awaited for 66.96m rai (10.71mha).[38]

***Khor-jor-kor*:** The Khor-jor-kor project has led to one of the biggest conflicts between the military and the poor people of the Northeast. The project, started in 1991 after the February 23 coup d'etat, was a joint programme between the RFD, National Security Council (NSC), Ministry of Interior and 64 other agencies, but the army came to play a dominant role. The programme planned to move 5.8 million people, farming degraded forest areas all over the country, into resettlement villages under military control. The aim was to boost forestry and give people land for livelihood, with 40% of the vacant land given over for commercial tree plantation. The first stage was a resettlement programme for 46,132 families of 364 villages in 21 forests of 17 provinces in the Northeast. However, the resettled people were not given land rights as promised.[39] (*See case study*)

***Land distribution*:** Though 65% of Thailand's population live in rural areas, there are over half a million landless farming families in the country, their numbers increasing day by day. The growing impoverishment in the countryside is because rural spending has concentrated on irrigation, roads and electricity, benefiting more the people of the Central Region. While these projects did benefit the nation, they displaced people from their land. Most farmers, especially the poor in the North and Northeast, do not possess any land. Government's land allocation programme did not succeed and according to a 1994 survey of 51 provinces in irrigated areas, 362,702 families or 9.5% were landless; 11% or 424,179 families owned land less than 5 rai (0.8 ha); and 12% farmers owned less than 10 rai (1.6 ha). In the upper North, 45% of all farmers were landless or nearly landless. The only way the landless could survive was to encroach on the reserve forest areas for survival.[40]

***Landuse*:** In 1975, when the land reform programme was initiated, it aimed to solve poverty and inequitable income distribution. At that time, land required for allocation to landless farmers was about 13m rai (2.08 mha); 20 years later, the figure had increased to 15m rai (2.4mha) and the number of farm labourer to two million. Though the land reform policy was meant not to consider public land for redistribution but takeover private land, during 1975-92, only 378,087 rai (60,494 ha) was bought from the private sector while 2.3m rai (368,000 ha) was given to 123,571 families out of public lands or degraded forest areas.[41]

Mega Transport Network

The urbanisation boom in Bangkok started in the the 60s when the First Five-Year Economic Development Plan was implemented, and heavy public investment in infrastructure and utilities allocated to attract foreign investment. Bangkok Metropolitan Region (BMR) today is one of Asia's premier metropolises with a population around 10 million — more than 50% of Thailand's urban and 15% of the total population. To support economic activities in this metropolis, construction of transport network — expressways, mega mass transit project (elevated and subway trains) — were initiated by government, using land acquired by evacuating the urban poor living on public or crown properties. The largescale displacement was prompted by the soaring prices of private land in the city.[42]

***Rapid transit*:** The Ban Krua Muslim community in Bangkok has been fighting for nearly a decade for its rights to retain its ancestral lands, proposed in 1990 to be taken over by the Expressway and Rapid Transit Authority (ETA) for the construction of the collector-distributor road to solve traffic congestion in the inner city. Between 200 to 700 Ban Krua families will have to be relocated for the construction. The Ban Krua community is as old as Bangkok, its ancestors, the Jam group from the Mekong delta, having migrated from the south of Vietnam since 1792. King Rama III gave the migrants land to stay on and weave silk cloth. The original migrants were not concerned about land deeds, which has reduced the bargaining power of the present generation. In 1993, the Ban Krua residents proposed a 'Public Hearing' to peacefully resolve the conflict. It was accepted by the Interior Ministry and understood that both sides would abide by the committee's ruling. After hearing arguments supported by data and evidence, the Public Inquiry Committee ruled that there was no justification for the road. However, the ETA defied the ruling and petitioned the Cabinet to continue the project on the ground of its commitment to a private company contract. The fierce fighting between development and conservation forces is still on without any sign of a peaceful resolution.[43]

Mining

Thailand has 791 mines, mostly located in the Central and Southern regions and employing around 20,000 people. The country exports 40 kinds of mineral resources and has 1000mt of reserve minerals. It also has five types of smelting works — tin, antimony, iron, tantalum and lead. However, coal and petroleum are the most exploited of all underground resources, 29,959m baht ($1198.36m) worth of which are produced and used by the country. Because of depleting mineral resources and increasing protests on environmental grounds, many mining companies are now investing in Indochina, in units such as Thai-Lao Lignite Co. Ltd in Hongsa province of Laos and Phadang Industry in Vietnam. Conflicts over environmental degradation from mining has occurred several times in many places. Forest and watershed areas in Nakornrachasima have been destroyed by limestone and salt mining, waterways in Lamphun changed by coal mining and coral reefs in the Andaman Sea near Phang-nga wiped out by the spurt in sea-mining.[44]

***Salt mining*:** One of the most important water sources in Mahasarakam province is the Nam Seaw river. Farmers used water from this river to cultivate their paddy rice and cashcrops. But because of the good price of salt, three mining companies in Borrabue district of Mahasarakam encouraged people to go in for salt mining. The process of pumping water, boiling and drying to get salt has adversely affected the level and quality of water in the river, and increased the salinity of soil in that area. All aquatic life in Nam Seaw died and people could not use its waters because of salinity. Violence erupted when rice farmers protested and forced salt miners to stop using the river's waters for mining. They also compelled the miners to dilute the salty water up to the standards required for cultivating the rice fields. During the violent incidents, several farmers and students were injured from assaults by salt-miners and local policemen. The protests ended when government passed a new mineral law to effectively regulate mining activities, including salt mining, and granted 800m baht ($32m) to develop the environment of areas along the Nam Seaw basin.

Occupational Health Hazards

Promotion of agro-industry to attract foreign investors used to be the main strategy of Thai economic policy, but it was not entirely successful. So, government set up textile, metal and plastics industries in the Industrial Estate Zones, supported by the Board of Investment (BoI) with tax

exemption incentives, bringing in large number of investors from Japan, Korea, the US, Australia, Taiwan and Thailand. In the Northern Region Industrial Estate (NRIE) at Lamphun, 62 factories with an investment of 8500m baht ($340m) are in operation. The sudden influx of industries brought with it health problems for the workers. At least 14 people died of mystery diseases in Lamphun while in the textile factories on the outskirts of Bangkok, workers were affected by byssinosis, a disease caused by cotton-dust that damages the lungs. However, the concept of environment-related occupational diseases is still not totally accepted and compensation funds do not take these into account. When occupational diseases began to be identified several NGOs began a campaign but were not given any information. Instead they were accused of damaging the country's 'investment environment'.[45]

***Alumina poisoning*:** Between March 1993 and January 1994, 14 people died of unknown causes, 12 of them workers at NRIE in Lamphun, and the other two their children. The governor of NRIE claimed that 10 of them died of AIDS. The first person to seek compensation for an occupational disease was Mayuree Teewiya, a former employee of the Electroceramic factory at NRIE, who was suffering from alumina poisoning. The level of alumina in her body was around 560µg whereas workers from other industries had less than 26.5µg. The level of alumina declined to 460µg and then 390µg microgrammes after treatment with anti-lead and anti-toxic drugs. The NRIE administration, the factory owner and the compensation fund refused to accept the diagnosis and pay compensation. Mayuree, with the help of the Law Society of Thailand, had to bring this case to court to get compensation.[46]

Tourism

During the economic recession, Thailand promoted tourism to bring in foreign currency into the country, leading to an unprecedented increase in prostitution. According to official statistics, 76,000 prostitutes were registered in government medical records in 1965; their numbers had increased to 700,000 by 1986. Today, NGO records show that the total number of women in prostitution has already reached two million while there are 800,000 children in prostitution. The growth in tourism also led to the destruction of the environment as government supported the private sector to build hill resorts, golfcourses and luxurious hotels in forest reserves and watershed areas.

Water Mismanagement

Thailand receives 1550mm rainfall annually over a catchment area of 513,110 sq. km, amounting to 794,330mcm. The Southern region between the Andaman sea and Gulf of Thailand receives the maximum rainwater at 338,000mcm while the Northeast gets 236,000mcm, North 220,000mcm, Central 91,000mcm and East 5,900mcm. In the catchment area, there are 25 big, 120 medium and more than 1400 small water basins and the amount of runoff water is 219,000mcm a year. The per capita water demand is very high in the urban areas with the big cities seeking 250 litres per person per day and small cities 120 litres. In rural communities, the demand for drinking water is only 5 litres per person per day and 50 litres per person a day for other uses. However, for agriculture, the demand of water is between 2500-16,000 litre/rai (0.16ha) depending on the type of crops. There are no official records on demand for water by different industries.[47]

***Golfcourse needs*:** In October 1990, the cabinet passed a resolution not to allow RID to provide water to golfcourses. When Thailand faced drought in 1994, the RID banned farmers from using irrigation water to plant their second rice crop in the dry season. Though golfcourses claim they have their own reservoirs, the RID water allocation logbook showed that it allocated 322,516m^3 water to a golfcourse

in Chonburi, while allocating only 179,836m³ for agricultural purposes. There are many ways in which golfcourses siphon off water from public water resources — from RID reservoirs, canals and rivers — to fill their lakes, reservoirs and fairways. They build concrete channels from irrigation canals, lay pipes from the public reservoirs to course lakes and dump rocks into rivers to make the water level rise so that it would flow into their territory before going to cultivated areas. The use of excessive chemicals on golfcourses pollute waters downstream.[48]

Groundwater: In cities, especially in BMR, many industries pump out groundwater to serve their needs. Because of depletion of aquifers, government passed the Groundwater Act in 1985 to stop drawal of groundwater and promote use of piped water instead. A huge shortfall in water is anticipated in providing water to the 10m people in BMR with the population steadily increasing, even if government tries to use every means it can to save water — higher industrial water cess, less leakage and recycling. To support cities in the future, water from the Chaopraya basin alone will not be enough. The Me Klong project proposed by the Metropolitan Water Authority (MWA) to carry water from Me Klong river to needy areas is likely to create conflict between agriculture and industry, especially in the Central basin and other areas upstream.

Resource policy: Allocation of water to Bangkok — which has only 15% of the country's population — is 12,816m³ per 1000 persons. The South comes second with 823.6m³ per 1000 persons, North 571.3m³ and the Northeast — the most populated region — merely 386.3m³. A Thailand Development Research Institute report in 1993 showed that two-thirds of Thailand's water supply was wasted through mismanagement. Two national committees — the National Water Resource Committee and the National Rural Development Committee — formed with representatives from 30 departments of seven ministries, are in charge of setting water use guidelines and coordinating between different agencies, but they have not been very successful because of arbitrary decisions with regard to water allocation. The problems between the RID, EGAT and MWA on using waters of the Chaopraya basin is a prime example of this lack of coordination and absence of a clear policy on water management. There are no legal guarantees for age-old community institutions in rural areas such as the *muang faai* system (community irrigation scheme) in the North, through which villagers were managing, protecting and conserving their water sources. The traditional irrigation system, too, has been disrupted because it existed autonomously and outside the boundaries of RID projects.[49]

Shortage: Thailand faces water scarcity in 25 major basins during the dry season. In 1992, of a total capacity of 65,848mcm in 25 reservoirs — of which 23,790mcm is dead storage — the actual usable water was only 15,169mcm. In order to provide water to cities, government proposed a four-point conservation policy: reduction of second-crop rice area plantation — ricegrowers being the largest consumers; campaign for water conservation in both rural and urban areas to bring about behavioural changes; setting up of a Water Ministry to control water from the centre; and, not surprisingly, building a new dam.[50]

Upland-lowland conflict: Usually, lowland farmers are located within the RID's irrigation project areas, while upland farmers manage water allocation in their communities through traditional systems. In upland areas, disappearing watersheds are creating hardship for farmers in the dry season and in the lowlands people are apprehensive of the quantity and quality of the water that comes to them after flowing through the cultivated areas upland and in the hills. In Chomthong district of ChiengMai, violence occurred when lowland farmers, agitated by the drop in water supply, walked up the mountain to destroy cash crops of hilltribes. Such conflicts require more effective third-party interventions to balance the needs of lowland wateruse practices and that of upland autonomous community-based irrigation systems.

Water Pollution

In 1991, Thailand had 102,723 factories of which 20,378 were located in Bangkok and its outskirts, the remaining 98,995 spread over 76 provinces. At present, at least 20,221 factories are identified as sources of water pollution including 274 located along Chaopraya river which supplies water to BMR. Polluted waters are affecting people living in the Chaopraya basin as well as around water sources in different regions.

***Chaopraya*:** Industrial effluents released into Chaopraya river have polluted 3927.14 mcm of its waters, the volume of waste amounting to 400mcm. Along the Nontaburi-Pak Nam stretch of the river, sediments measure 258mg/l of water against the acceptable standard of 15mg/l, while the BOD is 192 mg/l against the standard of 20mg/l. The most polluted stretch is in Samutprakarn province where factories release waste water direct into the Chaopraya. The bacterial level in the waters of the canal links to Chaopraya is, therefore, very high — Prasrijareon canal bacteria measures 70,000mpn/100 ml, the acceptable level being less than 4000mpn/100 ml. At present the MWA is managing with $35m^3$ per second pure water to cleanse the polluted water and make it fit for drinking, but it will face problems within the next 10 years when an estimated 60 m^3 per second pure water will be required. The most-affected will be the villagers upland since water pollution in Chaopraya will increase four-fold at least, the quality dropping to 0.8 per unit.[51]

***Nam Pong*:** Nam Pong is the name of the stretch of Chee river that flows through Khonkan and other provinces before emptying into the Mekong. The Phoenix Pulp and Paper company releases its wastewater into a canal connected to Nam Pong. In 1993, the company launched 'Project Green', growing Eucalyptus trees with the wastewater, and encouraged villagers around the factory to join in. However, by 1995, the polluted water increased soil salinity in the farmlands around the factory, affecting other trees and plants. Many perennial plants died, the paddy crop was destroyed and people in eight villages suffered from skin diseases and other infections. With active support from NGOs, an environmetal group, 'People Network on Conservation and Recovery of Nam Pong River' was formed that organised demonstrations demanding that government close down the factory and control pollution of the river. The Governor did stop 'Project Green' and send doctors to take care of the affected villagers, but the factory was not closed down. The Phoenix Pulp and Paper is still in operation.[52]

***Siam Steel*:** The Siam Steel Pipe Co. Ltd, located at the edge of Chaopraya river, discharges wastewaters with acid content higher than that stipulated in its contract with the wastewater company. The untreated effluent pollutes the river in violation of the 1970 Industrial Act and 1982 Industrial Ministry Regulation which require factories to set up effective treatment systems to dilute their wastewater before discharge into waterbodies. People living near the Chaopraya river have been fighting a 14-year-long battle for the closure of this factory, without success.[53] (*See case study*)

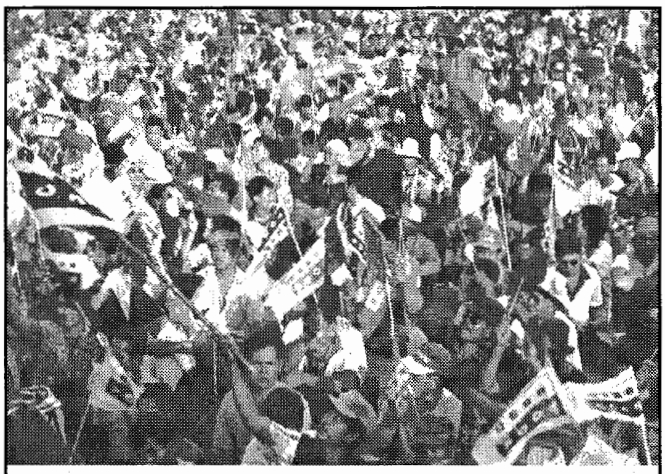
Waste Hazards

Thailand has at least 3000 factories that use hazardous chemicals in their manufacturing processes and generate around 2mt industrial and hazardous waste annually. Of the125,000 industrial accidents in 1993, at least 10% occurred in chemical factories. The country's industrial regulations and laws do not have an evaluation programme to measure the effect of chemicals on people living in the vicinity of hazardous industrial units. At the end of 1996, Thailand's industrial waste was expected to be around 3.4mt, and projected to touch 6mt in AD 2001.

***GENCO*:** In an effort to solve the problem of industrial waste, Ministry of Industry (MoI) and Industrial Estate Authority of Thailand (ISAT) tried to set up one waste treatment plant of capacity 500t a day or 182,500t a year in each region, at an estimated cost of 2000m baht ($80m). A pilot project was launched through a joint venture with GENCO Company in Plaukdaeng district of Rayong to treat industrial waste from factories of the Eastern Seaboard Zone. Local people began protests against the project because it was situated barely 600 metre from a reservoir. Resistance grew stronger following the assassination of a leader of the protestors and on 28 January 1996, a 2000-strong group, supported by students and NGOs, held a rally at the funeral demanding that government move the plant out of Plaukdaeng and locate it inside the Industrial Eastern Zone. Government agreed to move only the plant but the waste, after treatment, was still allowed to be dumped at Plaukdaeng. The conflict continues with no effort to review the industrial waste treatment policy.[54]

***Hangdong*:** When a conflict arose between the local community and electronic factories in NRIE in Lamphun which used to dump their industrial waste outside their premises, Provincial Electricity Authority of Thailand (PEAT) planned to build a lignite-based plant to generate electricity from this industrial waste and household waste from Chieng Mai. The siting of the plant generated further controversy and it was finally decided to set it up at Hangdong district in Chieng Mai. However, fearing toxic emissions from burning waste and lignite, people protested against the project, insisting that "polluters must pay". The people were supported by three subdistrict councils of Hangdong which opposed the plant and argued for the community's right to natural resources management. The people of Hangdong succeeded in their campaign after 18 months of protests during which they were threatened by hooligans.[55]

***Klong Taeo*:** The Port Authority of Thailand (PAT) has several depots storing chemical products in Klong Taeo, the biggest slum community area of Bangkok. The area has witnessed at least three chemical fires in recent times. In the first incident, a chemical explosion set off a fire, and in the second, there was an acid leak. The third, that wrought the most destruction on the people of Klong Taeo, was the explosion in a hazardous chemicals store-house. The fire raged for two hours, killing five people, injuring at least 27 and burning down 625 houses. Some 5417 persons were temporarily displaced, 650 people had breathing difficulties after inhaling poison gas and 700 people erupted in skin rashes. The victims of the Klong Taeo fire continue to suffer.[56] (*See case study*)



A mobilization of the Forum of the Poor in Bangkok.

CASE STUDIES

Kaeng Sua Ten Dam: Don't the Minority Have a Heart?

The Kaeng Sua Ten dam project (KST), proposed by the Royal Irrigation Department (RID) in 1989 for electricity generation and irrigation, met with strong opposition from thousands of local villagers facing eviction, when it was approved for a feasibility study.

KST is one of the biggest dams of the hydroelectric project, Kok-Ing-Nan, which plans to divert water from four main rivers, Yom, Kok, Ing and Nan, to the Sirikit Dam in Uttaradit. It is expected to provide water to irrigate about 61,760 ha and provide 48MW electricity worth 62m baht ($2.48m). It also proposes to build a reservoir for collecting monsoon rainwater before it flows into the Sirikit dam. The dam, located in the Yom basin, 50 km north of Phrae province, will flood around 350 sq. km and damage around 6400 ha of the richest teak forests in the river basin. Some 300,000 golden teak will be submerged besides other tropical vegetation, 123 species of birds and 174 of wildlife will be affected and 620-2000 families are likely to be ousted. The project, estimated to cost 2969m baht ($118m), has already received loans from the World Bank.

Villagers facing eviction by the KST have staged more than 20 protests since 1989. It started with the holding of a rally of 7000 people from Phayao and Phrae provinces to voice their concerns before the project was to be approved by the Cabinet on May 13, 1989. A year later, 47 villagers went to submit their petition letter with 1000 signatures to the Phrae governor registering their opposition on the grounds that government had not taken into account the negative impacts of the dams. The Governor admitted that he had never been informed about this project by any agencies and had no information to answer the villagers' queries.

However, the resistance movement was not publicised because of the 23 February 1991 coup d'etat. It was only after the general election in 1992 when Thailand regained its democratic atmosphere that the opponents of KST dam submitted a letter to Government House seeking details of the project. Government refused to oblige and, therefore, 3000 villagers from three villages held a meeting on December 27, 1992 in Sa-iab subdistrict of Phrae province to express their disappointment

In the next two years, mainly in 1993, Thailand faced an acute water crunch and dam-building returned to the fore as a solution. This was when the KST dam received loans from the World Bank and survey of the flooded area began in June 1994. Violence erupted when thousands of affected villagers held a day-long protest and told the World Bank-sponsored survey team to go back and withdraw from the project. The study team was forced to stop at a village in Song district of Phrae and its vehicle was damaged by angry villagers. Because of the violence, a meeting of affected villagers, NGOs, academics and students was held at YMCA in Chieng Mai which was attended by some 60 people, including representatives from Sa-iab subdistrict, This was the first northern symposium on the conflict between villagers and government over rights to manage natural resources in their community. The participants vowed to eschew violence and proposed a smaller reservoir as an alternative project to replace the controversial one. The villagers showed distrust of the state's promises on compensation, citing the example of the Pak Moon dam project .

The KST's EIA was rejected on 36 counts, including insufficient, outdated and confusing information, but the RID felt the problem of water shortage in three provinces Phrae, Sukhothai and Phichit — could be solved only by a permanent reservoir. The

concept was supported by Phrae Governor who said that as it would benefit a large number of people, affected villagers should make a sacrifice. The House Monitoring Committee also called a Public Hearing in Phrae, inviting 30,000 villagers from downstream provinces to listen to pro-dam speeches and fill up questionnaires supporting the KST project. The affected villagers and NGOs did not join this meeting, fearing it would not be a fair trial. It was commented by the newspaper that this pro-dam meeting was a 'kangaroo court', not a 'public hearing'. They organised an alternate seminar — The Truth about Keang Sua Ten — in Bangkok and submitted a complaint to the House Committee on Justice and Human Rights.

After the 1995 flooding of Chao Phraya basin, the Minister of Agriculture and Cooperative (MoAC) declared that the KST project be proposed before the cabinet. However, the OEPP again rejected the proposal and suggested instead an EIA study of KST in three parts; geology, ecosystem and the evacuation of local people. A working group was set up to study and revise the EIA within 90 days. While affected villagers held a rally against the project in front of Government House, a 1200-strong pro-dam group held another rally at Phrae province. During this conflict, a television programme on Channel 9 — Nation News Talk — held a panel debate on the issue. However, public discussion was silenced when the King indicated he supported dam construction, following the flood in lower Northern provinces and Chao Phraya basin.

Meanwhile, thousands of villagers under the banner 'Forum of the Poor' staged demonstrations at Government House, demanding that the state reconsider the impact of the project. The Minister of Science, Technology and Environment (MoSTE) admitted that he did not have power to stop the KST project, but promised a review of its environmental impact. A month later, 2000 dam supporters, supposedly with financial backing of local authorities, held a rally at Phrae province, demanding immediate construction of the KST dam. MoSTE promised to sanction the KST project within the 1998 budget year.

The controversy over the KST dam is still going on. The RID and Phrae Governor, believe the dam will solve the water shortage problem in dry season and refuse to accept that if there is no forest, there will be no water. Environmentalists, NGOs and grassroots organisations, on the other hand, are opposing a major dam because of its largescale negative impact and have suggested a smaller reservoir instead. As no compromise appears possible in the near future, Forum of the Poor plans to continue its agitation.[57]

The anger and despair of the affected population against the KST dam has been best expressed by Yaowarak Srikampha, a 16-year-old schoolgirl from Donchai village, Sa-iab subdistrict, in an essay. She is a member of *Takon Yom* (sediment of the Yom river), a local youth group campaigning to save the golden teak forest.

> ... Don't the minority have a heart? ...
>
> If danger is approaching your home, what do you do? I don't believe you can stay quiet and do nothing.
>
> All the villagers in Sa-iab and I see catastrophe coming to our home. How can we keep silent?
>
> The Kaeng Sua Ten dam project will destroy everything in my hometown, including the forest, the wildlife, valuable herb, rice fields, and our home.
>
> Everything will be flooded, and we will have to be moved out. No one can know whether our lives will be better or worse. But at least the dam builders should tell us what will happen to our valuable golden teak forest.
>
> Also, what will life be like in a place we have never known before? Who can ensure that the new place will be better than our existing home ...
>
> They are forcing us to accept their project by claiming that we should sacrifice for the majority of the people in the country.

But don't the minority have a heart? Don't they love their hometown?

Don't forget that no one owns the forest. It belongs to everyone in the country.

In the name of villagers who lived here for decades, we have the right to protect our land, the last golden teak forest in the country. Nothing can replace the forest. We will not surrender and we will not be made into scapegoats.

I only hope that the government will find another way apart from building dams to solve our country's water problem.

Don't the minority have a heart? Don't they love the forest? ...[58]

Pak Moon Dam: The Natural Kind Become Rare

The Pak Moon dam was a stream water hydroelectric project proposed by the Electricity Generating Authority of Thailand (EGAT) and approved in 1990 by the Chatichai cabinet. It was built to divert water from the Moon river for power generation before the waters flowed into Mekong river. Located at Ban Hua Hae, Kongjiam district of Ubonratchathani province, the dam was expected to generate around 136 MW power a year to industries in the Northeast, besides providing waters for irrigation. Around 400 families were expected to be displaced by the waters that would rise 108 cm above sea level.[59]

Ever since the proposal was announced, NGOs and environmentalists began raising questions on the project's ecological impact on the area though the Chatichai cabinet went ahead to approve 3,880m baht ($155m) for its construction. Construction continued smoothly in 1991during the military dictatorship, amidst allegations that the EGAT had used dynamite to destroy rocky rapids along the Moon river in Kangtana National Park, which was against the law. The EGAT admitted to the blasting and announced that it would carry out another explosion for the reservoir. Nothing could be done to stop such unlawful activities besides waiting for a new government after the general election.

When the political atmosphere became more democratic after general election following the May Event, villagers and NGOs started the second round of protests against the dam which was already 70-80% complete. This time round the focus shifted from environmental destruction to that of compensation for affected villagers whose ways of life depended on the Moon river. They asked EGAT to release information on six points related to the dam: water level; contract with affected villagers; guarantees on fish species in the Moon river; epidemics and parasitic worm; compensation to local fishermen during construction; and a public explanation on the rock rapids explosion.

As the dam waters were expected to flood land in other districts, villagers along the Moon river from Don Moddang, Pibul Mangsahan and Kongchiem districts joined hands with those already affected, staging a rally to demand social contracts and fair implementation of compensation from EGAT. It was also apprehended that the dam would harm the livelihood and well-being of local fishermen and their families and several species of fish in the Moon river would be extinct by the interruption of natural flow of water. The affected villagers, therefore, sought compensation, which they called compensation for social costs and job opportunities.

A major cause for concern for the anti-Pak Moon dam agitators has been the violence unleashed on them by local policemen and dam supporters for six years. There is evidence to suggest that the EGAT has been colluding with dam supporters in attacking the opponents.[60]

The first violence occurred in March 1993 when 400 dam opponents entered, occupied and held demonstations at the dam site. The EGAT and local authorities,afraid that the protesters would use the dynamite stored for blasting the rock rapids to destroy the dam, agreed to negotiate. However, the dialogue failed when the protesters asked for a contract to demolish the dam if the water level rose 108 mm above sea level. After seven days, the dam supporters showed up by holding a counter rally on the other side of the bridge and blocking food supplies for those occupying the dam site. This was an excuse for the police to step in and restore peace. At midnight, the dam supporters launched an attack with rubber sticks and pebbles. They were joined by policemen who used batons to breakup the demonstrators and destroy their shelters, injuring 33 people, two seriously. The EGAT then got back the dam site and construction resumed while the opponents could do little more than hold another rally at Government House where the injured were presented.

During the six-year-long agitation against the Pak Moon dam, there were two other incidents of violent retaliation. On November 25, 1994, 500 policemen broke up a 2000-strong rally at the dam site, where the protesting villagers had gathered after completing a 15-day walk from Provincial Hall. Two of their leaders were arrested and charged with attempting to destroy EGAT property. The lawsuit is still pending in the Ubon Rachathani court.

Just over a week later, on December 3, some 500 affected villagers from Sirindhorn dam, built 26 years ago in Sirindhorn district of Ubon Rachathani, held a rally expressing solidarity with the Pak Moon dam oustees. As 300 people tried to cross a bridge leading to Pak Moon dam site, where the Pak Moon villagers were in the 50th day of their sit-in protest, 150 policemen used batons to beat them and arrested 14 leaders, charging them on five counts, including breach of peace. The marchers claimed the attack was unprovoked; one of the injured was hit in the chest while he was praying for peace, while a 12-year-old girl was hospitalised after being kicked in the abdomen.[61]

Today, the dam being complete and in operation, fish in the Pak Moon river is fast disappearing and the size of the catch is shrinking. Fishermen now earn barely 10 baht a day against their earlier average 500-600 baht ($20-24) a day. After fighting for six long years, the affected fishing families have received only a one-time package of 90,000 baht ($3600) per family as compensation. Many of them are being forced to work as low-paid labourers or sex workers in cities. Government has rejected the idea of setting up a tribunal comprising people without any links with either EGAT or protesters to investigate the Pak Moon case. The promises of a better life for the local villagers has not come true and today they face a bitter life.

Sri Buayai, a villager, talks about her life after the dam:

> In the past, there were so many fishes that you could fill a basket in an hour....Now, that we fish in the reservoir, we have to buy nets which are quite expensive. However, the number of fish is declining. There are only a few kinds left — pla nil, pla nai and pla khao sai tan — which are released into the reservoir. The natural kind become rare. I myself might have to find another job.[62]

Mae Moh Power Plant: No End to Toxic Trauma

On May 17, 1996, more than 2000 people living around the Mae Moh lignite power plant held a rally to demand that the Electricity Generating Authority of Thailand (EGAT) solve their problems. These rallyists came from five subdistricts of Lampang; Sob Phad, Sob Thoen, Ban Dong, Jang Nua and Na Sak. They were the affected villagers from toxic emission from the plant five years before.[63]

Because the energy demand had been increasing rapidly, especially from the industrial sector, EGAT had to generate more electricity, one of its main sources being lignite. Around 11,724,691mt

lignite a year or 80% of all lignite produced in Thailand was used for power generation. The Mea Moh plant alone held lignite reserves of around 491.5mt or 67% of the country's production. The number of lignite power plants had gone up from 11 to 13.

In October 1992, acid rain fell over 17 villages of five subdistricts around the plants, the result of massive sulphur dioxide emission. On October 10, sulphur dioxide in the atmosphere over Mae Mo valley was measured at 357.6 $\mu g/m^3$, against the international standard of less than 200 $\mu g/m^3$ and Thai stipulation of less than 300 $\mu g/m^3$. The levels increased rapidly to 2122.9$\mu g/m^3$ within the following 10 days and the pH of rainfall over valley touched 4 from sulphuric acid contamination. Hundreds of people, cattle, agricultural crop and fruit trees were affected by the acid rain. Some 900 people had health problems, 80% of them complaining of breathing difficulties, many suffering from itching and rashes from the toxic emissions.[64] Giving 5000 baht as compensation to the affected villagers, EGAT promised to set up a sulphur-filter machine in each plant, but said the timing would depend on governmental budget approval.

Five years later, affected villagers complained that they were still suffering. Their children could not breathe easily, while they could not plant any crop because their lands and cattle had been completely destroyed by the toxin. On May 17, 1996 they held a rally asking for relocation to safer areas. They marched to the Mae Moh power plant led by five pickup vans and 10 motorcycles. Breaking through a police cordon they stormed the EGAT head office called Red building and violence nearly erupted when securitymen tried to spray water from fire engines to stop the demonstators.

In an effort to defuse the crisis, a tripartite meeting was held between 15 representatives of the demonstators, EGAT authorities and the Lampang deputy Governor. The villagers demanded relocation of 14 villages, reduction of toxic emission from 300$\mu g/m^3$ to 125$\mu g/m^3$ a day and free medical care for affected villagers. However, the meeting could not reach any agreement initially because EGAT could not reduce sulphur dioxide emissions as it would have meant stoppage of generation. The setting up of sulphur-filter machines too was undecided because of the delay in passing the budget, which was also the reason for the inability to relocate the affected people, though in principle EGAT accepted the relocation programme.

After seven gruelling hours of talks, EGAT accepted the villagers demands and, in a written agreement, pledged to relocate people from the 14 villages after studying potential land areas. It also agreed to reduce toxic sulphur dioxide emission to 125 $\mu g/m^3$ a day and provide free medical care for the ailing at any hospital in the country. However, solving the toxic problem was not easy. The Mae Moh plant's manager admitted that EGAT had to operate more lignite power plants in order to meet cities' and industrial electricity demands. The only way to reduce sulphur dioxide emission was to set up the filter machines, and not by closing down any plant. The plan was to begin installing sulphur filters in four plants in 1997 and another seven plants in 1998 or later because of the lack of funds and dearth of limestone. Till this was done, the Mae Moh victims would continue to suffer.

Evacuation From Conservation Forests: Born in the Mountains, Abandoned Like Cattle

In order to implement its reforestation policy, the Royal Forestry Department (RFD) had planned to relocate hilltribe people from conservation forests to lowland areas. The concept was based on the Forestry Master Plan which articulated deforestation through landuse imbalance. According to this plan, the country had been losing its forests to agriculture at the rate of 3.2m rai (512,000 ha) a year and the state-owned land was being encroached upon by poor people affecting the environment. Such encroachments were

identified as the cause for deforestation, soil erosion, flooding and water shortage. To curb deforestation and support the concept of Tropical Forestry Master Plan, the RFD required the forest cover to be a minimum 40%, of which 15% would be conservation forests. To achieve that goal, agricultural use in the higher lands had to be reconciled with forestry projects and people had to be barred from living in the conservation areas.

In March 1994, the forest department evacuated 178 families — 855 people — of the Yao, Lahu and Lua hill tribes from Doi Luang which had been declared a national park in 1990. It is spread over three provinces; Chieng Rai, Prayao and Lampang. The displaced were resettled in a degraded forest reserve at Ban Pa Chor, the lower land area in Lampang province, where each family was given 10 rai for cultivation.[65] The RFD also moved 224 families — 1327 people — of the Pgaz K'nyau (Karen) and Mong hill tribes from Ban Loa Ko, Ban Pa Ka and Ban Pa Mark of Khlong Wang Chao national park in Kamphang Petch province. Reports of the relocation here suggest that the plots distributed were dry and rocky and all the cultivated land had been occupied before the evacuees arrived. Naturally, they did not have enough rice to eat till the next harvest.

Sanching Sae Lee, who had been moved from Doi Luang national park to resettle on degraded land at Ban Pha Chor in Wang Nua district of Lampang, has this to tell about the evacuation. "... *State officers came, arrested villagers, seized our products and arrested anyone who wanted to go up to the hill ...*" From his point of view, all hilltribe people who had to live in the lowlands suffer a lot. After evacuation, they received only 5 kg rice per family, no water was provided for agriculture, the land was dry, unfertilised and rocky and some plots just could not be used. Only 168 families received land, but another 68 families had to wait their turn to be relocated. For instance, on March 3, 1995, officials told villagers to clear 6 rai of land for resettlement, but after the work was over, other officials said that the land belonged to Jae Son National Park.

Because of the hard life, many of the hilltribe people went to work in towns, their numbers increasing steadily. However, their life ithere was not much better. Without identification cards, nationality or housing documents, they could not apply for good jobs. Sanching said,

> ...Our children do not have education because we don't have a teacher and no school building...most of our girls have gone to work in restaurants, entertainment places where they might end up in prostitution one day...[66]

Narit Lertpetcharak, a 28-year-old Yao tribal who was moved from Khlong Larn national park of Kamphang Petch province to Doi Luang in 1987 and faced the same situation again in 1990, said some of them were told to pay 2000 baht ($80) for every 2 rai, but they got only 5000 baht ($200) for relocation expenses. The money was enough only for building new shelters. Narit said he himself had to rent land for farming at about 200 baht ($8) per rai and he may have to go to find a job in town like others. He said with his deeply bitter feeling;

> ... The hilltribe people should not be blamed for being born in the mountains and should not be abandoned like cattle...[67]

Community Forest Management: Villagers Win Their Rights

According to the 1992 RFD report, of the total community forest area of 1.7m rai (277,031ha), traditional community forests would cover around 1.4m rai (225,849ha), the remaining 319,753 rai (51,160ha) being given over to new development community forests.[68] The preservation of community forests would be based on the villagers' knowledge of local ecosystems, even though their knowledge had never been recognised by the state. The strength and potential of local wisdom in natural resource management is displayed in the use of forests to sustain village communities while preserving the ecosystem for future generations. In Thailand methods of farming are different

in different communities according to geographical location and the relationship between peoples and forests depend on the peculiarities of local cultures and ecosystems.

In northern Thailand, more than 200 community forests are protected by the '*muang faai*' system in which people organise themselves in cooperatives to build and maintain their traditional irrigation systems and protect forests. Usually a set of rules and regulations determined by a village committee are followed to control the use of resources. A group of villagers is entrusted with the job of ensuring that the rules are complied with, and poachers from outside are kept away.

In the Northeast, people collect food and medicinal herbs from the forest. Their ages-old relationship with the forests has contributed to their accumulated knowledge of wild food and herb. In 1987, research conducted in 18 villages on Phuvieng highland of Khon Kaen province found 229 species of flora and fauna and 160 kinds of medicinal herb. An estimated 90% of northeastern people earn their living from gathering vegetables and herbs from the forests.

Before the expansion of colonialism, Thailand's most important agricultural activity was farming of rice for domestic consumption. People were encouraged to clear forests and till the land for cultivation and village settlements. The central state also recognised the villagers' rights to land. It was only after the Bowring Treaty in 1855 that the Thai central state divested local communities of their rights to use and manage natural resources, keeping the rights for itself and instead instituted concessions such as on teak in the North that was given to the British. The Forest Conservation and Protection Act which was enacted in 1938 stated that 'forests' were the state's common land which could neither be occupied nor cultivated. The government had the power to allocate forests to its agencies such as the military or state enterprises or contract them to private parties. In 1985, the first national forest policy was created to solve deforestation problems and increase the forest cover from 28% (at that time) to 40% of total land area. The policy focused on issuing contracts to business and private sectors to take part in the reforestation programmes instead of local communities. Its target areas were degraded forest lands occupied by landless farmers or used as community forests.

A historic incident which led to the first-ever recognition of villagers' rights to manage their community forests occurred in Chieng Mai province in February 1989. An influential deputy minister of Chatichai Choonhavan's cabinet secured a concession — under his wife's name — for a mango orchard on 235 rai (37.6 ha) of degraded forest, a move which snowballed into a major controversy. The orchard, it was feared, would damage a community forest of vital watershed area and was merely a ploy for building a hill resort. Villagers submitted a petition to Chieng Mai Governor and the then Prime Minister but got no response. Four months later, in July, students from Kasetsart University surveyed the area and concluded that the land acquired was not degraded and that the concessionaire had encroached outside the approved area. In September that year, the Counter Corruption Commission (CCC) confirmed 140 rai (22.4ha) of good forest outside the concession had been included illegally. The case was taken up by Chieng Mai University students, environmental groups and the media to put pressure on the government. Violence erupted three months later, when two village leaders and a student activist were arrested on December 14, supposedly for stealing saplings and encroachment. One of them was mysteriously shot dead the next day. This sparked a large student demonstration, demanding that the government revoke the concession.

Finally, on December 23, the RFD director announced that 1600 rai (256 ha) surrounding two villages would be declared as the first community forest.

Kader Factory Fire: Like it Happened Yesterday

On May 6 1996, relatives of the 188 workers who died in Thailand's worst factory fire joined a ceremony to commemorate the third year anniversary of the Kader fire. Three years earlier, a devastating fire at a toy factory belonging to a Hong Kong investor had killed 174 women and 14 men, and injured 469. The Kader factory fire was ranked no. 2 on the list of the world's fire disasters over 25 years.[69]

The Kader factory was located at 22/20 M.6 Phuttamonthon 4 Road, Sampran district, Nakorn Prathom province in a southern suburb of Bangkok. Four buildings were enclosed in a compound, two owned by Kader Industrial Company Limited, the third belonging to Thai Chiewfu International Co. Ltd. while the last housed KPC Toys Co. Ltd. In all there were 2800 workers in the compound, 2000 employed by Thai Chiewfu and the remaining by KPC Toys. The workers got a minimum wage of 135 baht ($5.40) per day. As toy factories are labour-intensive and do not need skilled labour, they preferred to employ female workers, hired mostly on a temporary basis. Most of these workers were between 15 and 25 years old, working during school semester break and did not have the rights and welfare benefits enjoyed by permanent workers.

Kader had begun operations on September 5, 1987 under the name King Toys Company, owned by the Chierawanont group with 20m baht ($8m) as capital share. After joining with Hong Kong and Taiwanese business groups, the company changed its shareholding structure and increased capital share to 100m baht. Later, on June 26, 1993, the company increased its shareholdings to 200m baht with 79.96% of total shares belonging to KPC Toys, Hong Kong.[70]

The Kader company had experienced at least three incidents of fire. On August 16, 1989 a fire damaged all machines and buildings of the factory. Two floors of four buildings had collapsed and some 30 workers had been injured. The Department of Industrial Works (DIW) withdrew the factory's operating license on the grounds of safety. However, the company applied for another license for setting up a new factory through the provincial industry officer of Nakorn Prathom province. Its construction standard was guaranteed by a civil engineer —Pisuth Kolkakorn — on November 28 and the application approved by Minister of Industry, Pol Gen Praman Adireksarn, on July 9, 1990. The stipulation was that the company would renew its license every year. An application for a license for operations in 1993-97 was under consideration.

The second fire occurred on February 13, 1993 on the second floor of the building which Thai Chiewfu had rented from the Kader company. The DIW did not withdraw the license and the Kader company continued its operations unhampered. Then, the third fire occurred on May 10, 1993.

The fire started on the ground floor of the first building around four in the afternoon and quickly spread because a lot of combustible materials such as cloth, cotton and plastic was lying around. The workers — mostly female — tried to escape from the inferno but found no way out. The factory had only two stairs in the same wing and the blaze already blocked the first floor exit way. There was no fire exit and workers climbed up to the third and fourth floors in a bid to escape. Being stuck on the top floor, they jumped out of the four-storeyed building, one by one, hitting the cement surface. While some workers were sent to the hospital with broken bones, others died instantly. Ultimately the entire building collapsed, burying those still inside.

The Kader company gave 200,000 baht ($8000) to the next-of-kin of the dead as compensation. It also paid the medical bills of injured workers. The Compensation Fund also paid 50,000 baht ($2000) for the dead and 5000 -10,000 baht ($200-400) for medical treatment. After

the tragic incident, the government promised to improve safety standards in workplaces, provide effective measures for safety and change the law to promote safety norms.

At the commemoration of the third anniversary of the tragic incident, Arunee Srito, a woman labour leader, said there had been no improvement in safety standards, which remained as low as ever. The initiatives to improve safety in the workplace had not been put into practice. The Kader Industrial company, renamed Earth Industrial Public Co. Ltd, is doing brisk business and making profits while the victims are still suffering.

Rassmee Supaem, a 21-year-old victim, broke both her legs after jumping from the second storey and has been walking on crutches ever since. She said doctors have told her she will not be able to walk normally again. She had taken a job with a publishing company and was earning 4000 baht ($160) per month. She has to pay taxifare to and from Siriraj hospital where she is being treated for complications arising from her broken legs. She still remembers the tragic event like it happened yesterday.[71]

Khor-Jor-Kor Resettlement Project: Fighting for the Motherland

For more than a century agriculture was the mainstay of Thailand's economy as well as the source of its urban growth and government revenue. The government promoted agrarian expansion for economic growth and urbanisation by permitting peasants to occupy vacant land, mostly forests, to increase agricultural production. At a time when economic growth peaked, GNP growing at over 8% per annum, forests were wiped out rapidly for expansion of cultivation. After the 80s government changed its policy towards industrialisation through export of goods and services produced in the cities and degraded forests were needed to regain forest cover.

To achieve 40% forest cover — 138m rai (22mha) — the RFD, in its Forestry Master Plan in 1985, earmarked 82m rai (13mha) as conservation forests, The remaining 46m rai (7mha) was to be set aside for commercial reforestation, including eucalyptus plantations for pulp industries. Government agreed to rent out degraded forest areas at the rate 10 baht per rai ($2.5 per ha) at 15-30-year concessions. This encouraged the paper industry to go in for commercial plantation for high profits. Therefore, 1.2 million families (20% of all Thai farmers) who occupied the forest reserve areas had to move out to make way for big business.

The Khor-Jor-Kor, the Thai name for a project to resettle poor people living in degraded forest reserve areas, led to one of the biggest clashes between the military and poor villagers. Started in 1990 and scrapped in 1992, the project is even now rendering thousands of peasant families homeless. Though a joint programme between the RFD, National Security Council (NSC), Department of Interior and 64 other agencies, its actual implementation was in the hands of the army, especially after the February 23, 1991 coup. Khor-Jor-Kor was a nationwide five-year land allotment programme for the poor living in forest reserves and watershed areas (1991-95) and planned to move 5.8 million people who farmed on degraded forest areas all over the country into resettlement villages under military control. According to the project document, the displaced were to be given land for livelihood in exchange for the forests that government would acquire. There were subplans for resettlement, reforestation and village development at new sites. The total project cost was estimated at 12,000m baht ($480m).

The project would affect 1253 forest reserve areas and 9700 villages — 352 forests, 2500 villages and 1.4 million people in the Northeast, the corresponding figures for the North, where the highest number of people were affected , being 253, 5200 and 3.9 million, for the South, 468, 1080, and 645,000 and for the central area 180, 920, and 550,000 respectively.[72]

In the first stage, the military planned to resettle 276,092 villagers from 21 forests of 17 provinces in the Northeast. The reason for selecting the Northeast first was that it was the poorest region, and the people would be easiest to deal with. Besides its poor soil and degraded forests made it a perfect place to plant eucalyptus. If the programme at all had any good intention, it was never reflected in its implementation. By denying land rights to the poorest, it turned out to be an operation that took away the livelihood of poor, lowly-educated peasants. Instead of eliminating poverty, it caused extreme suffering.

After the return of democracy in May 1992, the military was sidelined. The affected villagers now began opposing the programme and demanded its abandonment. Finally, the project was stopped in July 1992, but only after many villagers were moved out into resettlement areas. When they returned to their homes and tried to settle back to normal life, they had to continuously fight the local authorities who refused to carry out the land reform programme which was to replace the old Khor-Jor-Kor. Industrialists and bankers continued to lobby with government for taking over degraded forests for commercial plantation.

Bamrung Boonpanya, a 48-year-old social activist and a leader of the struggle, aptly summed up the spirit of the affected villagers:

> We want the right to return to where our ancestors have chosen to live, where their bone and ashes are kept for children and grandchildren to pay respect, where their spirits provide us with peace and protection, and where the umbilical cords of every generation are buried at the foot of each family's step...[73]

An anti-Khor-Jor-Kor rally at Pak Chong district of Nakon Ratchsima province was organised on Friendship Road to block the 'gateway' to the Northeast — an imitation of the pro-democracy May Event movement on Rajchadhamneon Avenue in Bangkok. That had been controversial because many pro-democracy academics feared that the military might use the 'chaos' as an excuse to 'restore order'. Mass rallies in the past had often ended in bloody confrontation. Bamrung disagreed with this view, saying:

> People in cities might not understand the pain of watching helplessly one's home being destroyed right before your eyes, while your children screamed with fear and confusion.
>
> They don't understand the violence of dehumanisation process involved when you are forced to comply with your enemies who took your land and destroyed your home because you can not stand seeing your children crying from cold and hunger.
>
> Because they don't understand, they said no to the uprising of the poor but yes to the middle-class. They believe the villagers can be taught by attending seminars to learn the importance of democracy. For me, it is ridiculous and sad...[74]

The resistance was justified. The relocation programme had no regard for the history and culture of decades-old village communities. The operation was military style, the forest being the battlefield. Peasants were enemies who had to cleared, if not by persuasion, then by force. In the eyes of the affected villagers, the military and government officers had no moral basis for their action. It was their basic right to defend themselves.

The solution for reforestation of the Northeast is not easy. Bamrung suggests that changes must begin by going back to cultural roots, relearn respect for rural culture and respect for the poor as equals. The forests can be extended through ecological farming, by setting up community forests and by acknowledging the diversity of cultures. He insists that deforestation of the Northeast was not caused by the ignorance of farmers but the huge debts and state resistance they faced. It was not that they did not know what was good for them but they were unable to get out of their extreme poverty. To his people, the land not just land, but it was their motherland they were fighting for.

> ... This is the land we want to return to, the motherland which nurtures our inner life with a sense of belonging, pride and identity... We want to return to our roots...[75]

Siam Steel Pollution: Endless Wait for Clean-up

The 1970 Industrial Act and the 1982 Industrial Ministry Regulation stipulates that each factory has to set up an effective capacity wastewater treatment system to dilute its wastewater based on Department of Industrial Works (DIW) requirement. However, people living near Chao Phraya river had to fight for 14 long years to close down a factory polluting air and water.

The Siam Steel Pipe Import-Export Co. Ltd is located on the banks of Chao Praya river. Since 1979 people had been complaining about the air and water pollution the factory was causing as well as the noise emanating round-the-clock from its operations. Land was being affected by the acids and wastewater released directly from the factory.

In January 1979 the DIW, after receiving several complaints, ordered the factory to solve all its polluting problems within 30 days. However, nothing happened. A year later, DIW ordered a temporary closure on the metal immersing and rust rinsing processes. In September, after almost eight months, the factory was asked to develop a wastewater treatment system, but needless to say, no action was taken. In January 1982, following increasing complaints, the DIW again ordered the factory to solve its carbon fumes problem and waited 11 months before issuing a warning in November. Three years later the factory launched an expansion project without having done anything to reduce its pollution. The expansion was halted but government took no steps on the pollution front.

This state of affairs continued for another seven years when Siam Steel issue was raked up again with the passage of the Environmental Act. DIW submitted a report to the Industry Minister in November 1992 after the media took up the pollution case. A Department of Pollution Control (DPC) check of samples of wastewater discharged to the Samaedam Treatment Centre on February 12-13, 1993[76] revealed acid levels higher than that stipulated in the contract with the waste treatment company. On March 8, 1993 the Environmental Adhoc Committee submitted its report on Siam Steel recommending its closure to the Industry Minister. The factory had not only not repaired its wastewater treatment plant, it had also not installed a dust-filter machine. On the other hand factory staff had tried to buy a plot nearby on a defferent pretext to use as a landfill site for the untreated waste.

The closure order for 60 days came on March 29 but a newspaper reported on April 29 that this factory was still operating without any action from the DIW. The staff worked illegally in the early mornings and afternoon and the wastewater was not being released outside. The surrounding areas thus grew less contaminated, especially a canal behind the factory.

For more than a decade the DIW's authority was flouted by the factory and it was unable to take any punitive measures. News reports suggest that the reason for this inaction could have been the status of the owner who is a senator. It could also be because the thrust is on unbriddled industrial development and not regulation of pollution for a cleaner environment.

Klong Taeo Chemical Fires: Where People Die Again and Again

It was lunch time on April 20, 1993 when a small fire at the chemical container-boxes located near storehouse no. 15 of the Port Authority of Thailand (PAT) in Klong Taeo, sparking a series of protests from the residents in the neighbourhood. Explosions and fires in stored chemicals and hazardous waste was normal for the poor migrants who lived in the densely populated Klong Taeo — the central port closest to Bangkok.

On April 23, 1989, a container of dimethylate in the storehouse, had exploded, starting a blaze in the area, the chemical fumes affecting at least 531 people. On March 2, 1991 another explosion of hazardous chemicals resulted in a two-hour inferno, to be followed six days later by a nitric acid spill which released poison fumes into the air.[77]

The March 2 incident wreaked the most havoc on the Klong Taeo people, many of whom are still suffering from the chemical poisoning. It happened at one o'clock in the afternoon when hazardous chemicals exploding in storehouse 3 sent up white and black fumes into the air before causing a fire. Within minutes, the fire spread to storehouses 2 and 4 and raged all over. Around 625 houses were burnt down, five people died and hundreds of people living within 100 metres of the storehouses and slumdwellers at Ko Lao community were affected by the smoke and poison gases. More than 10 tonnes of some 23 dangerous chemicals such as formaldehyde, methyl bromide, carbon black, soda ash, calcium carbide, ethanolamine, phosphoric acid and sulphur blew up, and trichroridesocideaneuric, a chemical that was present in the in Bhopal gas leak.

The blaze rendered homeless 5417 persons while over 1000 people were affected by skin ailments, breathing problems, neurosis, digestive trouble, and eye and urinary tract infections. Tests revealed several cases of blood bromide of over 3%, and formic acid presence of over 30% while abortions and still births rose sharply . Sample of water from Kok Lao tested at the Pasteur Institute of France showed traces of bromide phosphate —uses as a pesticide.

A survey research on chemical effect and public health conducted by the Division of Epidemic, Ministry of Public Health between March 12-14, 1991, concluded that almost half the population of Kok Lao slum — infants, children, men, women and the aged — were suffering from combined chemical effects. The survey recommended a long-term study on health impact on the people of the area. It also recommended that the state authorities store hazardous chemicals and waste away from settlements. Another survey conducted by Duang Prateep foundation concurred with these views. After the explosion, government moved the charred remains of the hazardous chemicals to Karnchanaburi province and buried it there, despite strong protests from rural people.

At the time of the storehouse 15 fire two years later, government still did not have a plan for hazardous waste storage. On April 23 and May 5, 1993, around 300 slumdwellers of Klong Teao held a rally in front of Government House demanding the removal of chemical substances from Klong Teao port. They submitted a petition to the Prime Minister seeking a ban on transportation and storage of hazardous chemicals near residential areas and legislation on hazardous chemicals management.[78]

Whatever be the response to this petition, it cannot help the child victims of Klong Taeo.

- Eleven-year-old Peerapat Thong Sri died on July 24, 1991, of leukemia, four months after the March 2 fire.

- Noppadol Kerdpradith and Chaturong Suntornvej, born after the explosion, are suffering from Down's Syndrome and epilepsy.

- Krisana Prasith was just four months old. Today his brain is impaired and being deaf, he cannot speak.

STATISTICS

Land

Land Divisions

	Total area (million rai/mha)	% of total land
Total	321/51.36	
North	106/16.9	33
Forest	59/9.44	18.38
Northeast	105.5/16.8	32.87
Central	65/10.4	20.25
South	44.2/7.07	13.77
Agricultural land	150/24	46.72
Privately-owned with land deed	83.04/13.28	25.86
Awaiting land deed	66.96/10.71	20.86

Source: *RFD in 1989*

Land Holding and Land Use Patterns (1991)

	Land holding (%)			Landuse (%)			
	Owned land	*Rented*	*Other*	*Paddy*	*Upland*	*Fruit*	*Vegetable*
North	73.84	17.70	8.46	51.70	35.64	5.97	0.94
Northeast	87.76	5.22	7.35	65.79	23.31	3.19	0.36
South	91.58	3.18	5.24	20.84	0.87	69.93	0.37
Central	62.15	33.14	4.71	60.77	24.77	7.17	0.71
East	68.54	27.45	4.01	42.24	39.70	28.40	0.70
West	70.12	24.85	5.03	5.03	38.77	41.03	20.94
Total	**81.20**	**12.03**	**6.77**	**55.25**	**20.58**	**8.58**	**0.23**

Source: *Agricultural Statistic Division (ASD), MOAC, quoted in* TDN, *no.27-28, 1995*

Forests

	Total area (million rai/mha)	%age of total land
Total	89.9/14.38	28
Conservative forest	59/9.44	18.38
Economic forest	30/4.8	9.34
Community forest	1.7/0.272	1.8
Illegally occupied forest	30/4.8	9.34
Agricultural land in forest reserve	30/4.8	9.34

***Source**: RFD in 1989*

Water

Water Resources

Major river basins	25
Rainfall per sq. km	1700 mm
Total rainfall per year	800,000 mcm

Usable Water (1990)

Household	2000 mcm
Industrial	1000 mcm
Agriculture usable	40,000 mcm

***Source**: TDRI, quoted in* Feature Magazine, *1994*

Major Dams and Reservoir Capacity
(in mcm)

Reservoir	Total capacity	Usable volume	Usable water (1992)
North			
Bhumibhol	13462	9662	3254 (34%)
Sirikit	9510	6660	1964 (29%)
NE			
Lam Pao	1430	1345	1111 (83%)
Lam Takhong	310	290	45 (16%)
Ubonrat	2263	1761	506 (29%)
Sirindhorn	1966	1135	708 (62%)
Chulabhorn	188	144	85 (59%)
West			
Vachiralongkorn	710	643	168 (26%)
Srinagarind	7745	7480	2858 (38%)
Khao Laem	8860	5848	1807 (31%)
East			
Bang Phra	110	95	31 (33%)
South			
Ratchaprabha	5639	4287	871 (20%)
Bang Lang	1404	1144	553 (48%)
Others	2251	2064.2	1293 (57%)
Total	65848	42558	15169 (35%)

Source: Feature Magazine, *April 1993*

Economy

Indicators

	1995	1996
GDP at constant 1988 prices (% change)	+8.9	+8.6
Agriculture	+1.9	+2.7
Manufacturing	+10.7	+9.9
Services	+8.9	+8.7
Inflation	5.5	5.2
Exports (billion baht)	1364.8	1615.8
Change (%)	+22.1	+18.4
Imports (billion baht)	1689.2	1984.7
Change (%)	+25.6	+17.5
Trade balance (billion baht)	-324.3	-368.9
Income from tourists (billion baht)	170.8	190.0
Change (%)	+17.7	+11.2
Current account balance (billion baht)	-312.9	-357.3
As % of GDP (%)	-7.7	-7.6

Source: *TDRI, quoted in 'Economic Review Year End 1995',* The Bangkok Post, *29 December 1995*

Percentage of People Below Poverty Line

	1963	1976	1981	1986	1990
North	63	35	23	22	16
Northeast	74	46	36	41	28
Central	40	18	16	17	13
South	44	33	21	23	18
BMR	28	12	4	5	4
Nation	**57**	**33**	**24**	**26**	**18**

Source: *National Accounting Division (NSO), NESDB, 1994*

Annual Household Income Per Capita

(*Based on current prices, in baht per person per year*)

	1962	1981	1988	1992	1995*
North	1,075	8,447	11,158	17,172	22,305
Northeast	993	5,910	7,804	12,756	16,680
Central	1,174	10,228	12,739	22,248	29,811
South	1,822	8,880	11,228	19,500	26,206
BMR	2,346	17,063	28,098	55,965	76,480
Nation	**1,601**	**9,008**	**12,766**	**22,644**	**30,369**

As % of Total Annual Income Per Capita

North 13	Northeast 9.7	Central 17	South 15	BMR 44	

** 1995 figures are estimated from linear trends of income for 1988 to 1992 period*

Source: *NSO, quoted in 'Economic Review Year End 1995,'* The Bangkok Post, *29 December 1995*

Income Share of Population by Quintile Group

	1962	1975	1985	1989
Richest 20%	49.80	49.26	55.63	55.01
Next richest 20%	21.60	20.96	19.86	20.30
Middle 20%	12.10	14.00	12.09	12.20
Next poorest 20%	8.60	9.73	7.87	7.98
Poorest 20%	**7.90**	**6.05**	**4.55**	**4.51**

Income Gap Between Poor and Rich

% income share of poorest 60% (1990-91)	23.41	Ratio in 1988	1 : 12
		Ratio in 1993	1 : 15.8
% income share of poorest 20% (1990-91)	4.05	Ratio in 1995	1 : 20

Source: *NSO, quoted in* ***TDRI Year End Conference 1992****, 12-13 December 1992*

Pollution

Growth of Factories

	1986	1988	1990	1991
BMR	16,661	17,465	19,892	20,378
Other provinces	68,819	73,623	79,103	98,995
Total	**58,480**	**91,088**	**98,995**	**102,723**

Source: *Thai Farmer Research Center, 1992*

Number of Polluting Factories (1989)

Water pollution	20,221	**Air pollution**	8,120
Air and Water pollution	26,235	**Hazardous waste**	17,056

Hazardous Waste from Industries

(Waste per tonne)

	1991	1994
Manufacturing	157,058	272,727
Coal	1,278	1,854
Petrochemical	3,914	7,032
Lead & Metal	521,508	922,893
Services & Commercial	78,479	141,681
Transportation	75,849	134,681
Lab & Hospital	76,078	123,219
Household	11,787	19,090
Electricity	No record of import PCB after 1975	
Agriculture	6,687	11,835
Total	932,638	1,634,104

Hazardous Waste Discharge
(in tonne)

Waste Product	1991	1996
Oils	188,254	332,779
Liquid	311	522
Organic	6,674	11,951
Inorganic	19,163	31,850
Lead and metal	536,322	946,565
Solvents	36,163	66,532
Acid	31,432	53,793
Alkali	9,839	16,846
Not up to standard product	25	52
PCB	No record of import PCB after 1975	
Aqueous	242	499
Polluted water from film industry	16,348	30,398
Household waste	11,787	19,090
Contaminated waste	76,078	123,219
Total	**932,638**	**1,634,104**

***Source**: Engineering Science, USTDP Study 1989, quoted in* EST, *1994, 152.*

ENDNOTES

[1] *National Economic and Social Development Board (NESDB), 1987.*

[2] *NESDB, quoted in* Thailand's Socio-economic Development: Achievements and Challenges, *TDN, no. 27-28, 1995.*

[3] *Ibid.*

[4] *NESDB,* Thailand National Report, *Workshop report for preparation of the World Summit for Social Development, 6-12 March 1995 in Copenhagen, Denmark, 21-22 September 1994.*

[5] *Ibid.*

[6] *NESDB,* The 8th National Development Plan *(draft), March 1996.*

[7] *Ibid.*

[8] *NESDB,* The 7th National Development Plan, *1992.*

[9] *NESDB,* The 8th National Development Plan *(draft), March 1996.*

[10] *NESDB,* Thailand 2000: A Guide to Sustainable Growth and Competitiveness, *1994.*

[11] *Ibid.*

[12] *NESDB, quoted in* Matichon, *26 April 1995.*

[13] *Ibid.*

[14] *NESDB,* The 8th National Development Plan *(draft), March 1996.*

[15] The Siam Post, *9 September 1996.*

[16] *The Green World Foundation,* Environmental Situation in Thailand (EST), *1994;* Matichon, *27 January 1996.*

[17] *Royal Forestry Department (RFD), quoted in* Thailand Report 1992, *Thailand Development Research Institute (TDRI), December 1992.*

[18] *The Green World Foundation,* Water, *1993;* The Southern Business *quoted in* EST, *1994.*

[19] Thai Development Newsletter *(*TDN*), no. 25, 1994.*

[20] The Nation, *6 August 1994.*

[21] The Bangkok Post, *2 July 1993.*

[22] *Electricity Generation Authority of Thailand (EGAT),* Generation Information on EGAT Power Development Plan (1992-2006), *1993; NESDB,* The 7th National Development Plan (1992-96), *1992.*

[23] The Nation, *16 June 1994.*

[24] TDN, *no. 25, 1994.*

[25] EST, *1994;* The Manager, *17 May 1996.*

[26] *RFD, quoted in* EST, *1994.*

[27] *Komol Preakthong,* Community Forest, *RFD, 1993.*

[28] *Chai-anan Samudavanija and Kusuma Sanitwongse,* The Environment and Security: the State's Security and the Villagers' Insecurity, *December 1992.*

[29] *RFD, quoted in* EST, *1994.*

[30] The Bangkok Post, *2 July 1994 and 15 August 1996.*

[31] *Office of Agricultural Economics (OAC), Ministry of Agriculture and Cooperative (MoAC), 1961-85.*

[32] *RFD,* Thai Forestry Master Plan, *1990.*

[33] *RFD, quoted in* EST, *1994 .*

[34] *Ibid.*

[35] The South China Morning Post, *10 May 1996;* EST, *1994.*

[36] *The Special Committee on Industrial Accident,* Report on Kader Fire and Royal Plaza Collapse Cases, *National Committee on Preventive Accident, 1993.*

[37] The Bangkok Post, *6 May 1996.*

[38] *National Statistic Office (NSO), NESDB, 1994*

[39] TDN, *no. 22, 1993*

[40] *Office of Agricultural Land Reform (OALR), quoted in 'Land Reform: the Policy that took a Wrong Turn,'* TDN, *no. 26, 1994.*

[41] *Ibid*

[42] *Suwattana Thadaniti,* Urban Planning and Environment: A Look at Bangkok, *Faculty of Architecture, Chulalongkorn University, October 1995.*

[43] TDN, *no. 23, no. 27-28, 1994.*

[44] EST, *1994.*

[45] The Bangkok Post, *19 June 1994; Union for Civil Liberty (UCL),* Sansith *(Human rights message), March-April, 1994.*

[46] *Arom Pongpa-ngan Foundation (APF),* Report on Death and Illness of Workers in the Northern Region Industrial Estate, *December 1994.*

[47] *Jiraphol Sinthunawa, Association for Development of Environmental Quality (ADEQ), February 1993; Prakob Wirojanakud, Faculty of Engineering, Khon Kaen University, June 1994.*

[48] The Bangkok Post, *7 March 1994.*

[49] *Mingsan Kaosa-ard,* Economic Instrument for Water Resource Management in Thailand, *TDRI, 1993.*

[50] *Ibid; Prakob Wirojanakud,* Water Resource Situation in Thailand, *Local Development Institute (LDI), 1993.*

[51] EST, *1994.*

[52] *Prapas Pintoptang,* Demonstration and Ecological People Movement, CPD *Newsletter, 1996.*

[53] The Manager, *8-29 March 1993 and 29 April 1993.*

[54] The Manager, *9 August 1996;* Matichon, *28 January-22 April 1996.*

[55] Siam Post, *27 January-19 November 1995.*

[56] EST, *1994.*

[57] *Thai Development Support Committee (TDSC),* Summary of Social Situation in Thailand 1995, *July 1996.*

[58] The Bangkok Post, *24 September 1994.*

[59] EST, *1994.*

[60] TDN, *no. 26, 1994.*

[61] The Nation, *6 December 1994.*

[62] The Bangkok Post, *2 July 1993.*

[63] The Manager, *17 May 1996.*

[64] Matichon, *10 October 1992.*

[65] The Bangkok Post, *21 August 1994.*

[66] *Ibid.*

[67] The Bangkok Post, *18 July 1994.*

[68] *RFD, quoted in* EST, *1994.*

[69] The Bangkok Post, *6 May 1996.*

[70] EST, *1994.*

[71] *APF,* Labour Review, *vol. 9, no. 6, 6 June 1995.*

[72] *Rural Development Institute (RDI),* Forest, Land and the Military's Land Relocation Programme, *February, 1992.*

[73] The Bangkok Post, *17 August 1992.*

[74] *Ibid.*

[75] *Ibid.*

[76] The Manager, *8, 25, 29 March 1993 and 29 April 1993*

[77] EST, *1994.*

[78] *Summary of the Seminar on* 5 Year after the Chemical Explosion', *Cholapratan Rangsarith Temple, 24 March 1996.*

[79] *RFD in 1989, quote in* EST, *1994, pp. 98.*

[80] *Ibid.*

[81] *Agricultural Statistic Division (ASD), MOAC, quoted in* TDN, *no. 27-28, 1995.*

[82] *TDRI, quoted in* Feature, *1994.*

[83] Feature, *April 1993.*

[84] *Engineering Science, USTDP Study 1989, quoted in* EST, *1994, 152.*

[85] *TDRI, quoted in* Economic Review Year End 1995; The Bangkok Post, *29 December 1995.*

[86] *Thai Farmer Research Centre, 1992.*

[87] *National Accounting Division (NSO), NESDB, 1994.*

[88] *NSO, quoted in* Economic Review Year End 1995, The Bangkok Post, *29 December 1995.*

[89] *NSO, quoted in* TDRI Year End Conference 1992, *12-13 December 1992.*

REFERENCES

Arom Pongpa-ngan Foundation, 'The Industrial Victim is Facing Ill Fate and Broken Home', Labour Review, *vol. 10, no. 9, September 1996*

Bandith Thanachaisetthavuth (ed.), Report on Death and Illness of Workers in the Northern Region Industrial Estate. *Bangkok: Arom Pongpa-ngan Foundation, 1994*

Chai-anan Samudavanija and Kusuma Sanithwongse, The Environment and Security: the State's Security and the Villagers' Insecurity. *Bangkok: Institute of Security and International Studies, Faculty of Political Sciences, Chulalongkorn University, 1992*

Committee on Hazardous Chemical Protection, 'Tragic Memory: the Continuing Events in Thailand', Seminar on 5 Year Anniversary of Chemical Explosion, *24 March 1996 at Chonpratarn Rangsarit Temple*

Electricity Generating Authority of Thailand (EGAT),General Information on EGAT Power Development Plan (1992-2006). *Bangkok: EGAT, 1992*

Feature *Magazine, April 1993*

Komol Preakthong, Community Forest. *Bangkok: Sukothaithammathiraj University, 1996*

Matichon, *10 October 1992; 27, 29 January & 22 April 1996*

Mingsan Kaosa-ard, Economic Instrument for Water Resource Management in Thailand. *Bangkok: TDRI, 1993*

National Economic and Social Development Board (NESDB), The 7th National Development Plan. *Bangkok: NESDB, 1987*

_____, The 8th National Development Plan (Draft). *Bangkok: NESDB, 1992*

_____, Thailand 2000: A Guide to Sustainable Growth and Competitiveness. *Bangkok: NESDB, 1994*

Pasuk Phongpaichit, 'The Army's Redistribution Programme in Forest Reserves: Case Study of the Active Exclusion of Poor Villagers in Northeastern Thailand', Thai Development Newsletter, *no. 26. Bangkok:* TDSC, *1994, 33-40*

Pittaya Wongkul (ed.), Environmental Situation in Thailand. *Bangkok: The Green World Foundation, 1994*

Prakob Wirojanakud, Water Resources Situation in Thailand. *Bangkok: Local Development Institute, 1993*

Prapas Pintobtang, 'Demonstration and Ecological People Movement', Campaign for Popular Democracy Newsletter. *Bangkok: Campaign for Popular Democracy, no. 3, March-May 1996*

Royal Forestry Department (RFD), Thai Forestry Master Plan. *Bangkok: RFD, 1990*

Rural Development Institute (RDI), Forest, Land and the Military Land Relocation Programme. *Khonkan: RDI, 1992*

Sanitsuda Ekachai, 'Silenced No Longer', The Bangkok Post, *17 August 1992*

Suwattana Thadaniti, 'Urban Planning and Environment: A Look at Bangkok', Paper prepared for the Northeast Asia/Southeast Asia Consultation on Environment and Development. *Bangkok: Focus to the Global South, Chulalongkorn University, 1995*

Thailand Research Development Institute (TDRI), 'Thailand Report 1992', TDRI Year End Conference, *Bangkok: TDRI, December 1992*

Thai Development Support Committee (TDSC), Summary of Social Situation in Thailand 1995. *Bangkok: TDSC, 1996*

_____, Thai Development Newsletter, *no. 24,1994; no. 25,1994; no. 27-28, 1995; no. 30, 1996*

The Bangkok Post, *2 July 1993; 7 March, 19 June, 2 July, 21 August; 24 September 1994*

_____, Economic Review Year End 1995, *29 December 1995*

_____*6 May 1996*

_____, *15 August 1996*

The Green World Foundation, Water. *Bangkok: The Green World Foundation, 1993*

The Manager, *8 March 1993*

_____, *29 March 1993*

_____, *29 April 1993*

_____, *17 May 1996*

_____, *9 August 1996*

The Nation, *6 August 1994*

_____, *6 December 1994*

The Siam Post, *27 January 1995*

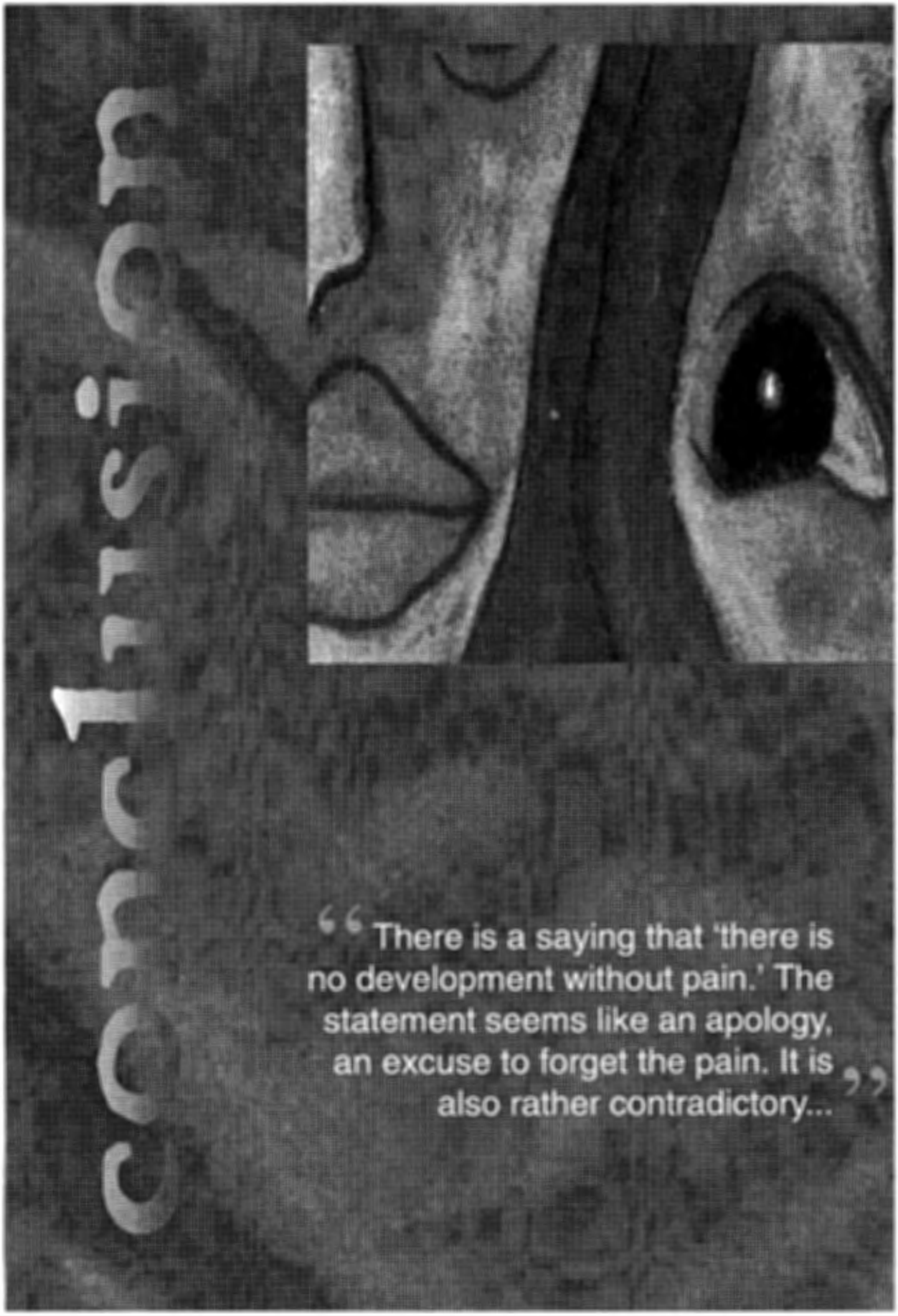
_____, *19 November 1995*

_____, *9 September 1996*

The Special Committee on Industrial Accident, Report on the Kader Fire and the Royal Plaza Hotel Collapse, *Bangkok: Committee on National Preventive Accident, Office of the Prime Minister, 1993*

The South China Morning Post, *10 May 1996*

Union for Civil Liberty, Sansith, *March-April 1994*


contusion
“There is a saying that ‘there is no development without pain.’ The statement seems like an apology, an excuse to forget the pain. It is also rather contradictory...”

conclusion

Chantana Banpasirichote

There is a saying that 'there is no development without pain.' The statement seems like an apology, an excuse to forget the pain. It is also rather contradictory, because what we all expect from development is to get out of sufferings or what US President Harry S Truman called 'underdevelopment.' No doubt, more than half the world is trying to eradicate poverty but the efforts never bear fruit as poverty always returns in ever-newer forms. Even the so-called poverty eradication programmes often lead to unexpected consequences, putting people in greater difficulties.

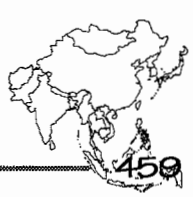
In fact, understanding the pain should be one of the fundamental objectives of development; but unfortunately it is treated as an externality. The irony is that a large number of those who suffer through the course of development have no intention of putting themselves in jeopardy. Yet, the circumstances arising out of certain development policies and projects create conditions whereby people lose their options and eventually get caught in a trap of vulnerability. They become victims of development.

An understanding of this process of victimisation goes well beyond the study of the direct impacts of development. A broader perspective starts from the identification of the wide range of victims and the particular manifestation of their victimisation. Moreover, being victims implies a passiveness because they are being acted upon or made to be. But victimisation usually does not just happen overnight, though in many cases it may. It is possible that in the process, passive victims might turn active and try to liberate themselves from suffering, thereby changing the course of unjust development.

There is an urgent need to look into the processes of development and consequent victims in each country, not just to find fault but to learn from mistakes. Experience also sheds light on ways victims are empowered. In several cases, they find a way to struggle, overcoming their passiveness. The triumph of the victims' struggles can, thus, lead to a new arrangement in the power equations in the development process, or at least to a more prudent policy-making structure.

The Book

This book is an attempt to portray the minimum of what actually takes place behind the current pattern of development. It traces what is left behind in terms of costs and impacts which are not properly managed and lead to emerging vulnerable groups. While development covers a large area of human activity, environmental and industrial disasters are the most explicit examples, which is the focus of this study.



The ten countries in Asia represented in this book show a great degree of variation in geography, culture, socio-political background and, of course, in their levels of development. For instance, there is a vast difference in the growth of material wealth between Japan and, say, Pakistan or Nepal. Yet, Japan, which may be suffering from 'over-development,' has its own victims just as Pakistan, Nepal, China or Sri Lanka, countries struggling to lift large sections of their populations above the poverty line, have theirs. Likewise, South Korea which is already industrialised is facing a set of problems similar to those in Malaysia, Thailand, the Philippines, and India, which are trying to boost their growth and join the NIC group. China, an erstwhile socialist country, too, is confronting the same challenges as it moves fast towards a market economy.

This shows that despite the diversity of these countries, there is not much difference in their development approach. All of them are experiencing a uniform process of structural adjustment, liberalisation, free market, setting up of special economic zones, and inflow of foreign direct investment. Each country is opting for a change from agriculture to industry, using both import substitution and export promotion to boost the economy. In this inexorable process, growth has become both the end and a means in itself, and the special characteristics of each economy are losing their meaning and fading from the terminology of economic strategy. Development has become the creed for all of them.

In this context, it is significant that the process of victimisation from development relates to the transfer of costs and economic externalities from the developed to the underdeveloped world. Even within Asia, the most advanced country like Japan is playing the role of a growth agitator through direct investments in the NICs as well as in the subsistence economies. Such disparities in the levels of material development are making the process of victimisation different in different countries.

Conversely, these processes, as evidenced in the country glossaries and case studies of this book, point to common experiences in all countries, rich and poor nations alike. Victims are emerging from similar causes such as dumping of industrial wastes and hazards, accidents caused by industrial malpractice, man-made natural disasters, largescale infrastructure creation, increasing energy consumption, deterioration of ecological and subsistence systems, and exploitation of nature and peoples. Although the focus of this book is on environmental destruction and industrial malfunction, what emerges is a clear link between these and social and economic disorders. There are new forms of slavery and socio-cultural dislocations caused by the breakdown of subsistence systems — migrant workers, child labour and forced prostitution being among many such examples of bondage. It is also observed that some incidents of a similar nature — industrial accidents, chemical leaks or toxic dumping — occur repeatedly within a country and across the region, indicating their low learning capacities in overcoming the disastrous impacts of development.

Categories of Victims

If the victimisation process varies from country to country, it follows that victims of development are different in different societies. In less developed countries, victimisation is manifested not by affluence but by the sacrifices necessary for progress. Case studies from Pakistan, Nepal and Sri Lanka reveal that victims emerge even in the efforts to eradicate poverty. In fact, as seen in the impacts of rapid urban growth, any transition towards modernisation, if not properly managed, could push some people into an unbearable situation.

Victims in such economies appear to be confined more to a particular class — the already marginalised and the poor. In industrialised countries, on the other hand, the adverse impact of development cuts across classes. Yet, it cannot be denied that those who are powerless suffer more and, therefore, fall prey to development more easily than the powerful. Case studies from all the

countries in the book show that minority groups — indigenous communities, forest-dwellers, mountain people, the rural proletariat, and even religious or ethnic minorities — are the most vulnerable to the developmental process. This is due to two reasons: first, the livelihood of these groups depends on sustainable ecological systems; and, thus, when the source of their subsistence living breaks down, their livelihood is jeopardised. Second, the marginalised are not in the centre of power and, hence, decision-making regarding their destiny is not really in their hands.

Victims can also be categorised according to the nature of the development activities that create them. The majority of the victims of, say, industrial disasters are workers toiling in unsafe work environments. But victims of industrial calamity may also include ordinary people living in the proximity of the disaster site. The victims of industrial hazards, therefore, constitute a separate category. The Minamata tragedy and the Bhopal gas leak are classic examples of the creation of victims in this category, which knows no boundary. Case studies from various countries are replete with such instances.

In recent times, transportation of toxic waste and dangerous chemicals within and across countries have become yet another type of high-risk activity, creating victims of a particular category. And such processes are no longer confined to the industrial sector, but are spreading out into commercial agriculture and forestry as well. For instance, large plantations and agribusinesses in the Philippines, Sri Lanka and Malaysia have left the land fallow through chemical residues, creating a new group of development's victims.

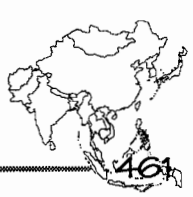
Another category of victims are people who are evicted or displaced from their settlements in the name of development. Such victims are emerging in ever-increasing numbers mainly in countries aiming toward NIC. Most of the infrastructural development activities in these countries — expressways, airports, deep seaports or industrial estates — are largescale projects which frequently come in conflict with human settlements. Energy generation — hydro, geothermal or nuclear — which deny people their right to their land or change the subsistence landscape, too, has become a common issue in most of these developing countries.

It is ironic that displacement is justified in the name not only of development but also of conservation. In Thailand, for instance, there is a rising trend towards bureaucratic forest protection which inevitably leads to removal of indigenous peoples from their forests. For centuries, these peoples have lived on their ancestors' lands in rare harmony with the forests; today, they have become victims of 'conservation.' Likewise, there are victims of 'national security' who have been living on the land that has now turned out to be suitable for, say, launching missiles, and their sacrifice is needed for the country's defence.

Victims in this category may not necessarily lose their lives or directly suffer from environmental disasters. They are vulnerable from social and cultural dislocations and are deprived of their own peaceful, sustainable lifestyles. In many cases, the issue of justice is being raised by those who do not receive a fair compensation or settlement for their lost land and homes.

Then, there are victims of modernisation and the corruption that it spawns. Shoppers in departmental stores, motorists and even pedestrians can turn victims overnight by the collapse of a highrise or an overbridge or other types of substandard construction that is the hallmark of the times. Cutting across region, class, gender and age, these victims suddenly face death, disability or sickness which may result in their being economically inactive, and eventual breakdown of the family.

There is also a large group of victims falling into the grey area between development and underdevelopment. The case study from Pakistan identifies that those living in congested and unmanaged urban areas are exposed to environmental



hazards from contaminated water and lack of sanitation. Though the ever-expanding cities depend for their very survival on the informal sector — poor slumdwellers, for instance — which forms a large part of the urban economy, it is these poor who are most vulnerable to the high risks of the urban environment.

Among the various categories of victims, those of natural disasters cannot be overlooked for being unrelated to the development process. Case studies from various countries show that disasters such as floods, landslides and earthquakes that take the lives of hundreds of thousands of people are the result of massive logging, quarrying and deforestation, river diversion, mismanagement of dams and so on. It has also been found that natural disasters are not confined to poor and developing countries, but they impact on the advanced industrial countries as well, the high levels of technology often intensifying the damage manifold. In other words, the victims in these countries are victims of a self-destructive society.

The most important category of victims emerge from conflicts over the use of natural resources. During this era of high economic expansion, resource utilisation becomes highly competitive and the losers automatically become victims. Thailand, Malaysia, China and Sri Lanka are increasingly showing such conflicts among competing economic activities — golf course vs. agriculture, salt mining vs. ricefield, aquaculture vs. mangroves and traditional fishing. In this competitive game, activities that earn the maximum foreign exchange receive higher priority while people in traditional sectors are often swept out.

Economic imbalance and inequalities also create victims of a particular category. If we look closely, it may be seen that ethnic conflict in Sri Lanka stemmed from socio-cultural disparity between two ethnic communities. Over a period of time, discontentment accumulated and turned to violence, making the rival groups victims of development.

Finally, as the various stories of development's victims in the book reveal, there is a bouncing effect of the victimisation process that creates yet another secondary set of victims. For instance, when one member of a family is victimised, it is likely that other members, too, will be affected. The psychological, social and economic impact of losing a family member, thus, creates 'the second batch victims.' Moreover, a victim can possibly be victimised more than once. Almost every case that has to go through complicated legal wrangles shows this symptoms. It is obvious that marginal and disadvantaged victims are, for all practical purposes, helpless in the arena of legal business and, hence, they are victimised through abuse of law.

A large number of victims may not realise their own destiny because of their colonised mind and ignorance. There are also victims who unfortunately do not want to make themselves known because of the stigma of being a minoritiy and the fear of alienation from the mainstream. Their apprehensions are entirely unfounded as in several countries, the issue of development's victims is often reduced to a battle between the majority and the minority, between superiority and inferiority, between pro-progress and anti-development. The worst is that in times of affluence, as in Japan and Malaysia, the public remains pathetically unresponsive to victims' plight. Under such a scenario, making their voice heard is a long, long struggle.

The Victimisation Process

There can be many explanations as to why people become victims of development. The most significant reason is, perhaps, the enforced consensus on development. It is often forgotten in the euphoria over development that it extracts a huge cost and those who pay are those who have little opportunity to defend themselves. It is also overlooked that in most cases, decision-making regarding mega-projects does not involve public participation. Limited access of the people — the

victims — to information about these huge projects hinder their capacity to prepare and respond to imposed changes. What is at stake here is the legitimacy of knowledge, and the way the authority and the people face each other as competitors in determining the rationality of development. Knowledge is power; yet, in this case, power legitimises knowledge. Government is the sole authority in determining the path of development.

The role of the state in imposing and legitimising development is explicit in the NICs, especially in South Korea and southeast Asia. In these countries the state is a coercive apparatus and it resorts to land reclamation, acquisition or appropriation with full legitimacy. The rationality of economic growth and accumulation of material wealth is so strong that those who oppose them automatically become anti-state.

More often than not development projects are imposed on social groups or communities who are thought of as expendable — slumdwellers, farmers, rural population, ethnic groups and minorities. In a number of cases, forcible imposition is introduced subtly, by turning the creed of development into socio-cultural hegemony. It is projected as the most acceptable goal for everyone in society, while the sacrifice by minorities is the real price of progress.

Under such a dispensation, the victims are in greater difficulties if government happens to be authoritarian or undemocratic, and if social and economic disparities are ever-widening. The potential victims then have to go through not only the storm of public prejudice but also a long process of tussle with government.

It may be argued that the code established by the EIA is always applied in the decision-making process for largescale infrastructure development projects in some countries such as Thailand, Malaysia and the Philippines. However, it may be remembered that there are problems related to the application of the EIA. In many cases, it does not answer problems at the grassroots and does not always reflect people's concerns. It is based only on so-called 'modern scientific knowledge,' and does not rely on public participation or provide the people access to information. Being accountable only to the authorities and their clients, it runs the risk of being used as a rubber stamp and a side-dish to improve, not to reject, the environmentally-destructive mega-projects.

In some countries, for instance, Thailand, public hearing is sometimes brought into the decision-making process. Here too, with the state of current legislation being what it is, public hearing is only a means of getting information across to the public, and not necessarily to determine decision-making. In a way, it works more to legitimise the project than otherwise.

Victims become more manifest when the impact of development activities start being felt. Once a project is finalised, the only remaining concern is how things can be done in the context of high economic competitiveness. The focus is on profit generation as safety is given the go-by. Though pollution prevention and environmental protection measures are supposed to be an integral part of hazardous industries, malpractices occur every day causing industrial accidents, even in countries with stringent regulations. The law, as usual, is only on paper and its enforcement is weak, hampered as it is by the old patron-client relationship between government and big business.

It is not possible to find out whether the advanced countries produce larger numbers of victims of development. But if victimisation is a fallout of the current nature of development, then the most economically progressive countries must have already sacrificed a lot to achieve their present affluent status. It is often argued that these countries are in a better position to manage the costs of development and minimise adverse impacts because they have all the resources and technology. This may be true only within their own domain, for there is always the possibility that these countries may pass on their environmental problems to the less developed world. Today, as the case studies in this book indicate,

advanced countries are transferring a part of their industrial and environmental risks to underdeveloped countries through foreign direct investment, dumping of toxic waste and so on, making them more prone to environmental destruction.

It has been observed that the state is strong in promoting industries and investment but not so in protecting the people. This is because the state is unable to keep abreast of the industrial monitoring system on account of a lack of political will, absence of relevant legislation, confusing environmental policy, persistent bureaucratic inefficiency, loose law enforcement, low penalty, and no mechanism for conflict resolution.

Such weaknesses enhance the ordeal of the victims manifold, as Minamata and Bhopal reveal. It took more than 20 years for the Minamata disease to gain credence, another decade to prove that it had a connection with the industry, and more than 10 years to settle the compensation. The plight of the victims of the 1984 gas leak in Bhopal has been no better.

In this long-drawn process of conflict resolution, the victims are under constant threat of exploitation as they enter the arena of vested interests and power politics. They have to fight against all odds and on various fronts — the state, local and multinational corporations and even the public. Some have the determination to fight till the very end, but many lack willpower and are coopted by the system. This creates divisions among the victims themselves, a situation which is welcomed by the vested interests. In addition, the physical manifestations of victimisation, such as the Minamata disease, lead to the victims being stigmatised or isolated and their consequent alienation from society acts as a barrier to an effective fight.

The Fightback

It is perhaps clear now that victimisation in most instances occurs when the state imposes development policies and projects on the people. In recent years, this power of the state is being challenged, either when a project is about to be implemented and the people still have a chance to alter the decision, or when the impact of projects is felt by the people.

In the first instance, people are handicapped by lack of information and have no access to the decision-making process. Their fight, therefore, is often dependent on small active citizens' groups which may expand into a larger coalition through networking.

They can also resort to direct action to prevent the project activity. In such cases, their resistance is usually peaceful, but can become violent depending on the reaction from the opposite side. Such actions cover signature campaigns, petitions, public awareness generation, demonstrations and protests. Sometimes peoples' resistance attains a symbolic stature — the Chipko movement in India.

Empowerment is the first step towards the success of this type of people's movement. The strongest weapon that the people have is their numbers, and collective action is the only way to fight the establishment. It is important that they transcend the majority-minority polarisation that may occur between the proponents and opponents of projects. The struggles which succeed are those that can build bridges and those which network to turn protests into social movements.

Needless to say, the state does not allow protests to go unretaliated. Sometimes leaders of movements are assassinated or protesters are arrested or injured in clashes with the police or the opposite side. Unleashing of such repressive measures may subdue a movement or may create a new group of victims.

In the second scenario when development impacts have already been felt, the focus of the

struggle is geared towards fair treatment of the victims. There are people who are sick, disabled, insecure, displaced and people whose family members are dead. These people want justice, suspension of harmful activities and to ensure that the lessons have been learnt. The central issues of this kind of struggle are compensation, rehabilitation and a shift in development policies.

In such cases, visibility of the victims is important to let everyone know exactly who are affected by the impacts and where to locate them. Identifying victims is a big undertaking that includes investigations into the problem and assessments of adverse impacts on individuals and communities. Here again, the process of knowledge-sharing is very important.

The process of seeking just compensation for the victims is not straightforward because of political interference and the large sums of money involved. Usually, negotiations are carried out within the framework of existing laws, if there are any. However, the law often has no answers to complicated problems such as those faced by the victims. Any action from the victims, therefore, puts pressure on the state for negotiations. At times, a tug-of-war ensues between using the existing legal framework by the state and the establishment of new standards by the people. Under these circumstances, new knowledge is needed and the victims have been aided by advocates and support organisations such as local and international NGOs and networks.

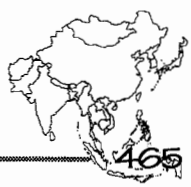
Victims today have ensured that they cannot be taken for granted. There are probably more cases of failure than success in people's struggles, as is evidenced from the continuation of offensive development practices. In fact, liberalisation has made development rationality acquire stronger dimensions in the age of globalisation.

However, it cannot be denied that the message has been sent across. At least, the victims have been able to present an agenda of severity of costs and impacts of the current development creed. A number of victims have been saved, not by the rules but by the power of people's pressure. Despite state backing, many industries have had to close down due to sustained protests. Similarly, the economic legitimacy of the erring industries is being questioned wherever people have been successful in campaigning against the industries to boycott their products.

A further impetus to people's struggles is being provided by new policies and plans regarding environmental protection that are born out of victims' protests. They also include more progressive legislation, such as enforcing the right to information and application of public hearing in some countries. The victims' movements are now setting up new norms for development practices. They have raised the issue of an opportunity cost that should be included in the compensation scheme. In some countries, the role of advocates and mediators has become less controversial, although not yet entirely accepted. It is self-evident that people's pressure is more effective than the existing law enforcement.

The people's movements have also learnt some lessons — that knowledge is essential for a successful struggle. That is the reason why professional support is important — local and external experts make a good combination to counterbalance the sole authority of knowledge, while networks of victims within and across regions are proving to be beneficial.

Today, people's movements are resisting the paradigms of development which deprive them of their livelihood and dignity. Their struggle can lead to the end of victimisation from development. It is the beginning of a search for an alternative pattern of development.



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