

Environment, Embankment and Fisheries in Bangladesh

by Dr Shahadat Ali

ment. As a result, the ecosystem gets disturbed with the construction of embankment. The disturbance in ecosystem, through a disaster, tends to bring back natural relationship of interdependence among various system. Embankments on the water realms also put hindrance to the natural cycling of water which is very important to support lives in our planet. Thus the different progressive developments have so far been achieved by man towards his cultural system

fore. Embankments have also been made along some portion of coastal belt to provide protection against tidal waves and sudden uprush of sea water. The planners also suggest to embank the full length of the major rivers to hinder the flood flow entering the country and to pass the water of flood safely to the Bay of Bengal. The flood control, drainage, and irrigation embankments, so far completed, are profoundly influencing the aquatic and terrestrial environments of the

- from river systems.
- o Perennial wet lands are turned into seasonal while the seasonal wet lands are either completely or partially dried up.
- o River within embankment turned into stagnant water bodies.
- o Moisture content of soil is reduced.
- o Ground water recharge is reduced.
- o Luxuriant growth of aquatic

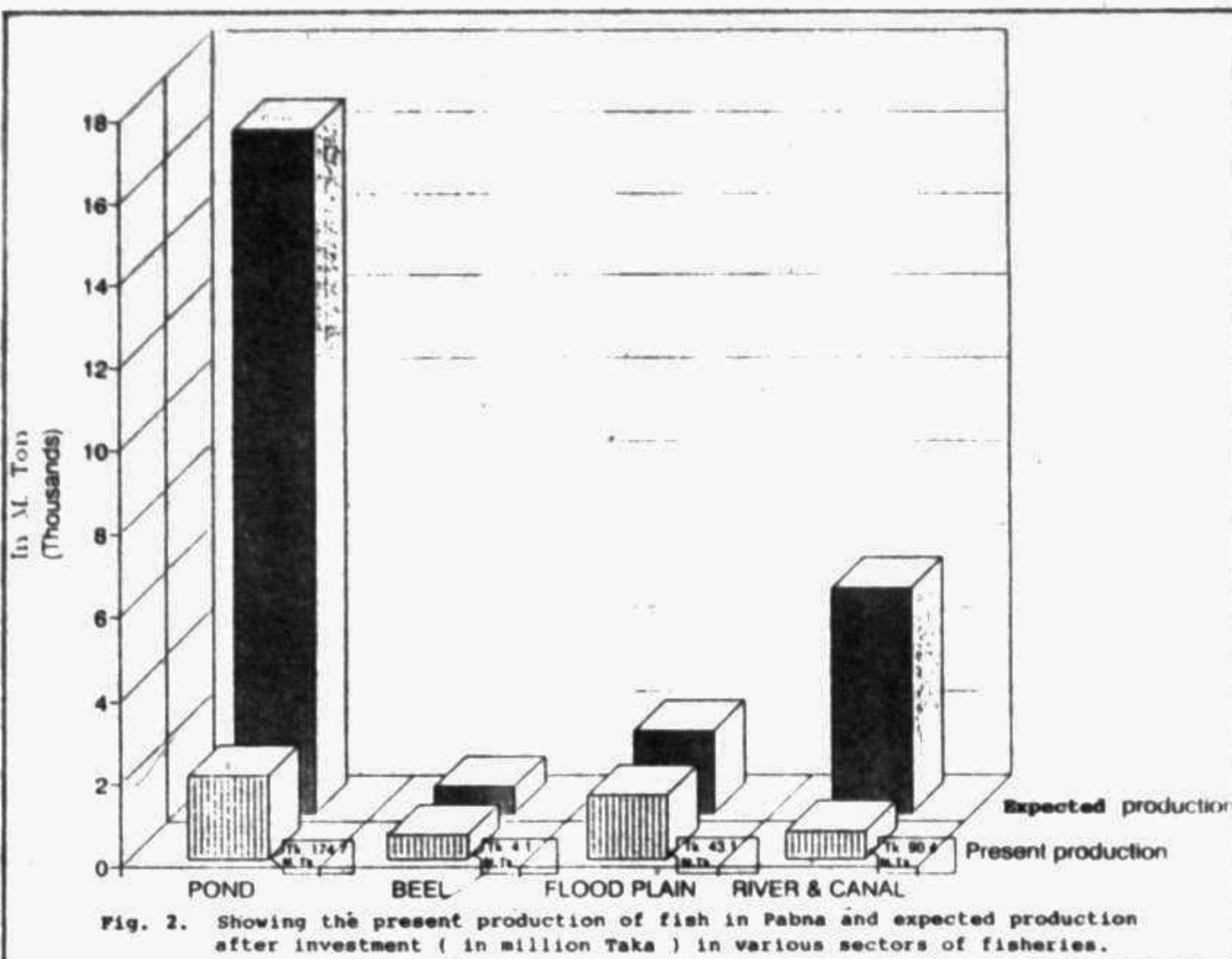
Bangladesh, which are one of the richest in the world are blessed with tremendous genetic diversity of over 500 species inhabiting in vast areas of inland water occupying a fifth of total surface area of the country. The flood control, drainage and irrigation embankments have direct and indirect role in reducing, population compositions and abundance of inland fishes of Bangladesh. The steady decline in fish production from inland waters has been attributed to combined effects of embanking river systems, inside and outside the country, and increased agricultural activities through overexplosion of waters for irrigation and excessive use of agro-chemicals. Perhaps, the most detrimental impact of embankments of fisheries is caused by minimising the areas of flood plains and blocking them, partly or fully from rivers systems as these flood plains act as natural nursery grounds for fishes living in rivers, beels, lakes and other waters. Thus in Bangladesh, embankments are causing the following changes in fisheries.

- o Reducing areas of open water capture fisheries.
- o Blocking the natural recruitment of major carps and other riverine fishes.
- o Blocking spawning migration of mature major carps and giant fresh water shrimp from beels, flood plains to rivers.
- o Reducing production of fish.
- o Reducing species compositions of fish and other species.
- o Reducing number and size of large commercial species.
- o Reducing economic well being of fishermen.
- o Reducing number of full time fishermen.
- o Increasing population of small fishes.
- o Causing over exploitation of fisheries.
- o Increasing scope for practicing managed fisheries.

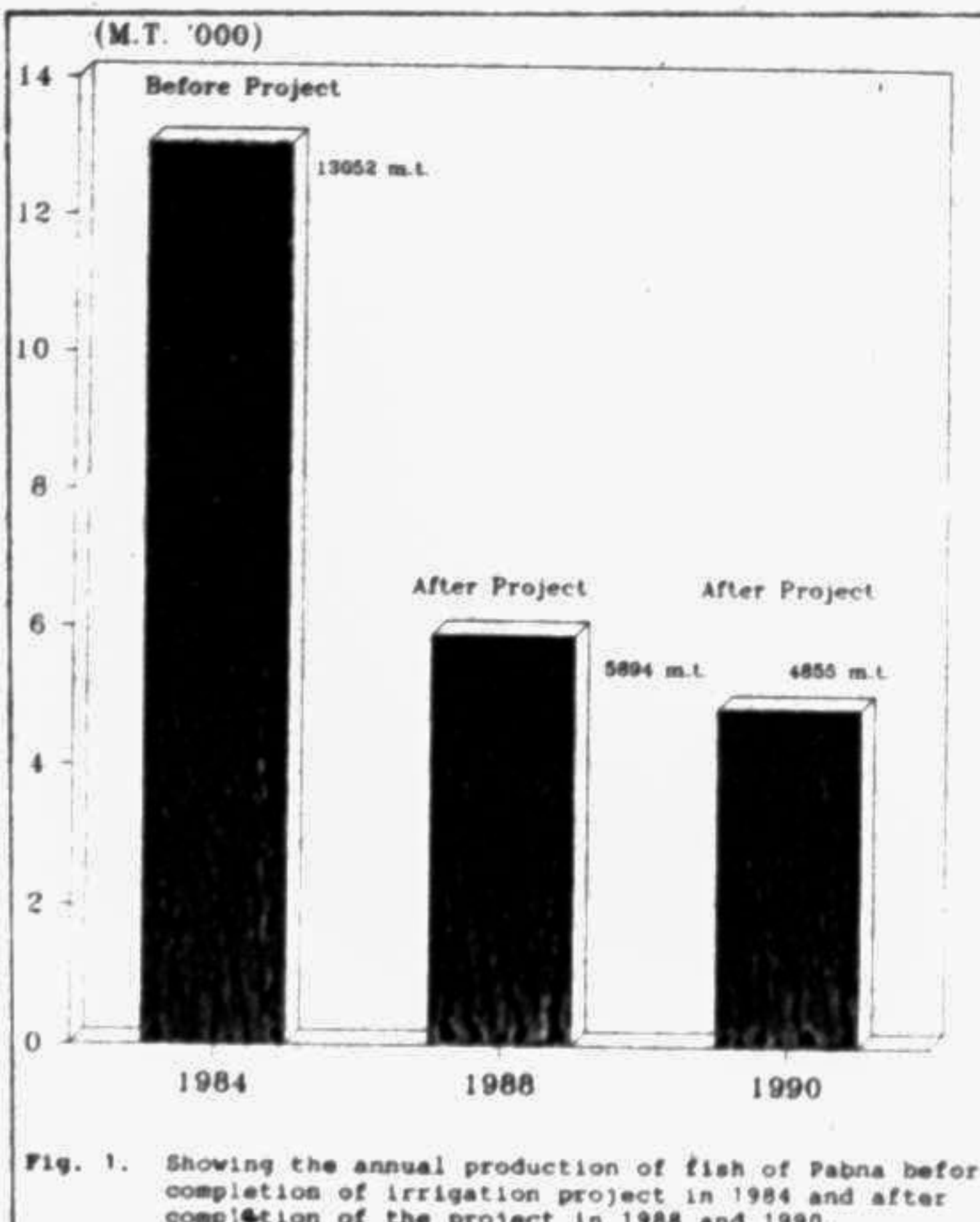
The embankments thus have caused profound changes in fisheries. Apart from reducing area of capture fisheries, the embankments have blocked the spawning, migration

and natural recruitments of commercially important fin and shell fishes such as Rui, Catla, Mrigel, Rita, Aor and Lobates etc. Thus the populations of major carps, large cat fishes, fresh water large prawns, and other commercial species which form the bulk of fish production in the country, are being declining. A remarkable reduction in population of a major carp species *Labeo Calbasu*, has been

(Shrimp) etc. have increased considerably. The reduction of the population of commercial species has caused decrease in commercial fisherman catch. On the contrary, it has helped increase the subsistence fisherman catch of small-size species to some extent. Thus the inland fisheries within embankments are exposed continuously to ruthless exploitation pressure resulting



through the application of scientific knowledge such as construction of embankment in natural water systems have resulted in grave environmental issues. Similarly man-made environmental issues have been developed in Bangladesh. In recent past embankments were constructed along the major river systems of the country through over 150 flood control and drainage projects to get rid of the devastating floods which are known to have occurred in Bangladesh in the present century and be-



country by shrinking the areas of natural waters specially those of flood plains and wet lands. The situation has been further aggravated by unjust manipulation of river through embankments beyond the international boundary of the country. In Bangladesh the impacts of flood control, drainage and irrigation embankments on environments are as follows.

- o The areas of flood plains, which are the largest in world, are reduced.
- o Wet lands, in most cases, are made discontinuous

of Pabna decreased to 5994 MT. In 1990, the annual fish production of Pabna was further reduced to 4855 MT. More or less similar trends in reducing fish catch been prevailing in all the areas within embankments. On the other hand, the embankments have created opportunity of introducing managed fisheries through practicing advanced aquacultural techniques. It however, requires high investment for improving technology and training manpower in the field of aquaculture. It has been estimated that if we afford to invest Taka 312 million in every year the annual fish production of Pabna might be increased from 4855 MT. to 24468 MT (Fig. 2). So it needs huge funds to uplift the present status of fisheries through aquaculture within embankments. Moreover if aquaculture is initiated in all available waters within embankments it would further minimise production of subsistence fisheries which has tremendous social and national importance as the 90 per cent of our population mostly depend on freshwater subsistence fisheries for their daily intake of animal protein. On the top of it, the introduction of aquaculture would not redress other environmental problems which have been created with the construction of the embankments. Thus it is suggested to make possible structural modifications of embankments with a view to revitalizing the wet lands and beels within the polders and embankments by establishing natural contact as far as permissible between river systems and wetlands and beels (swam) and thereby help to protect diverse life forms which are necessary to exchange materials of environment we need. The embankments and scarcity of water within, also remind us the necessity to rationalize the use of water between agriculture and fisheries in the country. Thus we need to formulate and national policy of sharing water between agriculture and fisheries with an approach for ensuring environmentally sustainable development. The sooner we do so the better for us.

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Freedom Comes Too Late for Aral Sea

THE Aral Sea, divided between Uzbekistan and Kazakhstan, used to be the world's fourth largest lake, but not any more. The Aral Sea is shrinking as it dies — a long-term consequence of the former Soviet Union's centrally planned development policy that blatantly neglected environmental concerns. The Kremlin is to blame for this tragedy, said Orazbay Abdirahmonov, head of the Committee for the Protection of the Aral Sea. There is enough water to save the lakes, but not the Aral, he said referring to the many small lakes in the vicinity of the Aral's receding shoreline. Under Communist rule, a cotton farms spread across Uzbekistan, the largest and most populous of the Central Asian republics. It turned this sleepy backwater into the world's third largest cotton producer at the expense of developing other crops. Water to irrigate the thirsty cotton fields came from the Aral Sea, which has shrunk to half its original volume since

diverted for irrigation. The shrinking of the Aral Sea has had a profound effect on the local population in Karakalpakstan, a sovereign republic of 1.3 million situated in the Uzbek part of the Aral region. Beginning in the early 1960s, we have seen a steady upward increase in illnesses. Ecological damage wrought by the former Soviet Union is slipping into focus and provoking harsh questions of responsibility and guilt. The shrinking Aral Sea is just one stark example. Laura Le Cornu of IPS reports. due to unsanitary water from the Aral Sea, said Ziba Serisivenova, director of the Children and Mothers' Clinic in Nukus. Around 35 per cent of the clinic's patients are affected by illnesses related to the Aral Sea. The Aral's coastal towns have also been severely affected. Muynak, a prosperous fishing community in the early 1960s has seen its population drop in half to around 26,000. The region's fish processing industry, which supplied around

30 grams of salt per litre, up from seven grams in the early 1960s. The Nukus-based Committee for Protection of the Aral Sea produced a film in 1987 on the Aral. The stark black-and-white film plays more like a horror show than a documentary, with its funeral-like march and images of animal carcasses lying on salt marshes, children sick with tuberculosis and anemia and abandoned homes. Environmental activism to

the republic's recent struggle for independence. According to 1991 statistics, the proportion of sick people in Karakalpakstan is nearly twice the national average of Uzbekistan. Last year 283 of 1000 Karakalpak children were hospitalised compared to the national average of 142. In 1991, the republic's parliament declared its sovereignty, becoming the first autonomous region to do so in Central Asia. Our sovereignty is only on paper. We are still economically to Tsashkent," said Abdirahmonov, himself a Karakalpak. Several plans to save the Aral have been scrapped due to lack of financing and Moscow's policy to maintain Uzbekistan's cotton industry. A canalisation project first proposed by Leonid Brezhnev during the early 1970s to transport water from Siberia to the Aral was cancelled during Mikhail Gorbachev's reformist administration. A more recent plan would transport water from the nearby Caspian Sea to the Aral. IPS

Fishing Nets Threaten New-Found Dolphins

DOLPHINS of a rare species have been found in a remote segment of the Mekong river in Champasak province, southern Laos. Their existence was for long a secret known only to local villagers. A survey team found an estimated population of 30 Irrawaddy dolphins last December. The animals were congregating in a Mekong deep-water pool right on the Lao-Cambodian border. It was a sensational discovery, confirming the existence of the species in Laos. But it has also now become apparent that the Irrawaddy dolphin, of which very little is known, is under threat. When Ian Baird, Thailand-based regional coordinator of the Earth Island Institute, went back to the area in April he found many animals were being killed. They were down when accidentally caught in the gillnets of local fishermen. Baird says: "The dolphin is not intentionally caught. The Lao fishermen believe that the

dolphins are reincarnated human souls that are friends of the people." Nor are they in any way hunted, although soldiers have been reported shooting dolphins in Southern Laos and Cambodia. In the gillnet season 1991/2, extending from November to April, eight animals were killed. The dead animals are often left on the river banks to rot. Bringing parts of them into the villages would bring "bad luck"

Whale and Dolphin Conservation Society, will also encourage the use of sustainable traditional fishing methods. Gillnet fishing is not the sole, and maybe not even the worst, threat to the dolphins. Fishing with explosives is extremely damaging because fish are killed indiscriminately. It is also wasteful. Only a fraction of the fish killed will float to the surface. Even fewer will be scooped up and, eventually, consumed. The bombing could have more than a local impact. Imre Csavas, of the Food and Agriculture Organisation (FAO) in Bangkok, says: "The Cambodian-Lao border zone is a well-known spawning area for Mekong fish. Fishing with explosives there would be very destructive to stocks, especially in the spawning season." Baird says: "In a village on the Sekong river, a Mekong tributary, one old man asked 'Will there be any fish left to feed our children?'" No studies have been carried out since the 1960s in this area, long made inaccessible by war and political strife. Today little is known about Mekong fisheries and even less is known about dolphins. This is because dolphins are

A rare species of dolphin recently discovered in Laos is much respected by the local people who believe the animals are reincarnated humans. But the dolphins are in danger of disappearing because they get accidentally entangled in fishermen's nets. And cutting the nets to free them involves buying new ones the fishermen cannot afford. Gemini News Service reports on a fund to help pay for the nets.



the 1960's to 300 million cubic metres. The sea's surface has contracted from 66,458 sq km in the 1960s to around 35,000 sq km and its depth has fallen from 66 metres to 37 during the same period. Local environmental authorities say the Aral is losing some 30 million cubic metres of water yearly due to evaporation. Water that used to replenish this loss has been

und 50,000 tonnes each year to the centre during the Second World War, has shut down causing widespread unemployment and large scale migration away from the Aral Sea. "Every family was involved in the fishing industry around the Aral," said Abdirahmonov. "The sea was food for the population. Now there is no water, no food, no work. Many people

protest the Aral's slow death was suppressed by the communist authorities in the capital, Tashkent. Public unawareness about the reasons for the crisis in Karakalpakstan has been slow to develop. Alleged negligence of the region, populated by Turkic peoples including Karakalpak, Uzbeks, and Kazaks, was a major grievance leveled at the old communist government during

Personalities take Priority Over Pollution in the Philippines

ALTHOUGH Manila is one of the world's most polluted capitals, urban improvements are not an issue in the run-up to 1992 local and national elections. Elections here tend to be about personalities rather than politics. In any case, candidates raising environmental issues risk having financial campaign support withdrawn by the big businessmen whose firms are responsible for part of the pollution. Money is also a problem for the government. The Department of Environment and Natural Resources (DENR), recently initiated a "rivers revival programme" with the unfeasible aim of halving pollution by 1992. It has an equally ambitious programme to limit air pollution. Two years ago, it started a search for the nation's 12 worst industrial polluters, many of which are expected to be found in Metro-Manila. But Dr Delfin Ganapin, director of the department's environmental management bureau estimates that it will cost US \$610 million to rehabilitate the city's environment, money unlike to be found in the country's current economic plight symbolised by its US \$29 billion foreign debt. Dr Ganapin's estimate may prove too low. About half Manila's seven million people live in slums, and almost 90% lack adequate toilet and sanitation facilities. Canals, streams and rivers run thick with human and industrial effluent containing bacteria, heavy metals, oils and pesticide residues. Manila Bay has become home to a plankton growth known as "red tide" which makes fish unfit for human consumption, and life difficult for the thousands of small fisherman in the Bay. The city's seven open rubbish dumps are nearing capacity. Since only six out of 59 hospitals have efficient incinerators uncollected street rubbish includes untreated hospital waste. Almost 500,000 vehicles contribute to the pall of smog that hangs over the metropolis. The causes will be hard to tackle: Dr Ganapin attributes Manila's severe air and water pollution to rapid land development, high population growth and income disparity — not issues with which politicians find it easy to grapple. /PANOS

Death by fishing net

Increasing stress.

Name: Irrawaddy dolphin (*Orcella brevirostris*). As its Latin name implies, a small-beaked kind of whale. (*Orcella* = little white; *brevis* = short; *rostrum* = beak.)

Length: up to 2.75m

Colour: grey, dark blue

Distribution: from Bay of Bengal to northern Australia and from Indonesia to Laos. Known to inhabit region's major rivers, such as Ganges (India), Irrawaddy (Burma), Mekong (Vietnam, Cambodia and Laos), and Mahakam (Borneo) rivers, but also shallow coastal areas

Killed in the Mekong 2718

and is considered a taboo by many villagers. People in Hang Korn and Hang Sadam, the villages closest to the deep-water pool where the dolphins can be seen all year round, indicated that the fishermen often have a chance to save the lives of the entangled dolphins. This, however, entails damaging the nets when cutting the animals loose — something the poor fishermen are reluctant to do since this would put their livelihood at risk. The nets cost \$20 each and Earth Island Institute is setting up a fund to compensate fishermen who cut them to let dolphins escape alive. The project, supported by The Asian Foundation and The

decline is most likely caused by widespread use of unsustainable fishing practises in Cambodia, and by increased siltation in the river system. This has cut fish production in Tonle Sap, the great Cambodian lake that is a breeding ground for many of the fish species found throughout the lower Mekong basin. Fishing with explosives, although outlawed in Laos and Cambodia, is badly damaging fish stocks. Baird says: "Every day Cambodian fishermen paddle up the river in groups, the lead boat throws a bomb in the river, and the boats that follow scoop up the dead fish that float to the surface."

of no recognised economic value in spite of their tourism potential. Military explosives are already readily available in Cambodia. Baird fears that as peace comes to Cambodia even more bombs will be, too. He says: "The survival of fish, dolphins and people is no doubt linked." Earth Island Institute, supported by the Lao government, is now making the Irrawaddy dolphins in southern Laos a symbol and a rallying point for conservation of an extremely sensitive riverine eco-system — the Mekong river. — Gemini News

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