

There are plenty of ways and means of drinking polluted water in the villages of Bangladesh

China Plans 28 Hydropower Stations Along Yellow River

The 1990s will be the first time that China will have so many large hydropower stations under construction simultaneously. And the government is short of funds. By A Special Correspondent

CHINA plans to build hydroelectric power stations on an unprecedented scale in the 1990s. It will be the first time that China will have so many large hydropower stations under construction simultaneously. Between 1991 and the year 2000, 28 large hydropower projects will be built on the Yellow River, the Yangtze and other major rivers. When completed, these stations will have a combined generating capacity of 53,000 Megawatts. China's hydroelectric power generating capacity is 36,000 MW, according to the Ministry of Energy. This is expected to increase to 50,000 MW in 1995 and 80,000 MW in year 2000.

By then, hydropower stations will account for one-third of the country's total power generating capacity, up from 26 per cent at present. China has the highest hydroelectric power potential in the world. In theory it can harness as much as 378,000 MW of electricity from its rivers. Yet only 9 per cent of this has been tapped, lower than the world average.

The next 10 years will be a key period for the development of China's hydropower industry, says Lu Youmei, Vice-Minister of Energy. "China's power industry will pave the way for the country's economic development in the coming 21st century."

Priority will be given to projects on the upper and middle Yellow River, the main course and tributaries of the Yangtze, the Hongshui (upper Pearl River) in the south and the Lancang river in the southwest.

The largest will be the Three Gorges Project (17,680 MW) on the main course of the middle Yangtze River. This is the biggest of all power projects constructed in China and will rank among the world's hydropower giants.

Currently, 65 hydropower projects (aggregate generating capacity: 16,000 MW) are being built throughout the country. For 1991-95, large hydropower projects with a total generating capacity of 20,000 MW are scheduled for construction. China needs that much power, and more. Its annual power output increased by 50 per cent to 618 billion kilowatt hours in 1990. This ranks the country fourth in the world in power output, next to the United States, the Soviet Union and Japan.

The country suffers from

frequent power shortages. Inadequate power supply has prevented many factories from operating at full capacity.

The shortage is the result of the fast growth in processing industries. While power output registered an annual growth rate of 8.4 per cent in the past five years, processing industries grew at an average annual rate of 13.3 per cent between 1986 and 1990.

China certainly has the technology and expertise to tap its hydropower resources. In mid-1989 it completed the Longyang Gorge station hydropower project after 13 years of construction.

The project is of a scale unprecedented in China. It is located in the Longyang Gorge of the Yellow River (the second longest after the Yangtze), on the Qinghai-Tibet Plateau, the "roof of the world."

Its high altitude (2,670 metres above sea level) posed many construction difficulties, including strong winds and low oxygen. The 178-metre dam is the highest on the Chinese mainland.

To build the dam, which can withstand earthquakes of 9 magnitude on the Richter scale, more than three million cubic metres of concrete were poured and 260,000 tons of steel used. If the concrete were built into a wall one metre wide and one metre tall, it would stretch straight from Madrid in Spain to Prague in Czechoslovakia.

The Longyang Gorge hydropower station used four turbogenerators, each with a generating capacity of 320,000 kilowatts — the largest of its kind so far in the country. The turbogenerators were designed and manufactured by the Dongfang (Orient) Electrical Machinery Plant in Deyang City, Sichuan province.

The Dongfang plant is now making five 400,000-KW turbogenerators in cooperation with the Harbin Electrical Machinery Plant in northeast China. The turbogenerators will be installed at the Lijia Gorge hydropower station, also on the upper Yellow River.

"China has obtained a wealth of experience over the past decades in designing and building hydropower projects, large, medium-sized and small, and in manufacturing the required equipment," says Vice-Minister Lu of Ministry of Energy. "At present, the problem is that the government is short of funds."

To solve the problem, Mr Lu says, China will raise funds

from both the central and local governments to bring them into the picture. For instance, the Ministry of Energy, the regional government of Guangxi, the provincial governments of Guangdong, Guizhou and Yunnan will join hands in 1991-95 to develop hydropower resources in the upper Pearl and Lancang rivers.

"At the same time," the vice-minister adds, "we'll continue to use loans and credits offered by international banking organisations and foreign governments to make up for our fund shortage and import more advanced technologies."

China is keen on hydropower energy because it pays off. Because of the Longyang Gorge hydropower station, construction of the Qinghai Aluminum Plant (the largest power-consuming enterprise in northwest China) was quickened. The plant's first-stage project — which will produce 100,000 tons of aluminium ingots annually — has been completed and put into production.

Meanwhile, the Longyang Gorge giant dam has created a reservoir with a storage capacity of 24.7 billion cubic metres of water, the largest so far in China. To fill the reservoir, the Yellow River at the Longyang Gorge stopped flowing for a whole year.

The reservoir now plays an important role in flood control. In 1990, it absorbed most of the region's largest flood in 40 years, sparing communities downstream.

It has also boosted irrigation. According to the Northwest China Processing and Designing Institute, the reservoir increased the area of irrigated farmlands and pastures by 1.2 million hectares. The government of Qinghai province where Longyang Gorge is located, has built a modern 5,000-hectare pasture on the northern bank of the reservoir.

Every year the reservoir supplies 4 billion cubic metres of water to cities downstream, including Lanzhou in Gansu province, Yinchuan in the Ningxia Hui Autonomous Region and Baotou in Inner Mongolia.

Since the Longyang Gorge station serves a water conservation role, it regulates water flow of the upper Yellow River and increases the power generating capacities of hydropower stations downstream — as much as one billion kilowatt hours more electricity a year. — Depthnews Asia

FIRE Service and Civil Defence in Bangladesh is the people's welfare and service oriented Government organisation. Most promptly and effectively this organ renders necessary succour to civilian population from the havoc of fire or conflagration, road, river or air accidents, natural disasters, wars or any other emergent situation of the like. It has its added attraction that it has a fleet of ambulance for quick transportation of patients.

Trained firemen remain alert on duty round the clock in their respective Fire Service and Civil Defence Stations throughout the country to respond to the fire-call or other emergent accident calls from the people. In time they turn out to the scene of incident and use to render remedial services though they are non-combatant in the sense of armed forces but they fight fire to save human lives and properties and boost their morale absolutely on humanitarian purposes. In one word "service" to the people is their only philosophy in all work.

The Department of Fire Service and Civil Defence is the operational organisation under the administrative control of the Ministry of Home Affairs.

Since 1982 Fire Service, Civil Defence of the Ministry of Home Affairs and the Rescue Service of the Roads and Highways Department under Ministry of Communication were amalgamated into one Department as Fire Service and Civil Defence. Broadly speaking, after amalgamation, the Department has its wider and multifarious functions. It has to motivate the people's awareness which is needed to check the fire hazards that engulf lives and properties of the people every year.

To bring about such awareness Fire Service and Civil Defence Week is observed in each year and demonstration and displays are often exhibited to educate the people.

The primary responsibilities of this Department are to fight fires, carry out rescue operation, render first aid to casualties, and arrange quick transportation of sick and injured persons to hospital, advise on fire prevention and fire protection measures for buildings, industrial premises and establishments owned by government autonomous bodies, and private enterprise.

A large Fire Service & Civil Defence Training complex has been set up by the government at Mirpur, Dhaka, in order to train service personnel, employees of Government Departments, Nationalised Institutions, autonomous bodies and members of the public

Bangladesh Fire Service And Civil Defence

M. Mizanur Rahman
Principal,
Fire Service & Civil Defence
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on fire-fighting, civil defence and self-protecting measures against training on different specialised subjects on Fire Service and Civil Defence every year. In-Service Training Courses of different technical subjects are also imparted to the service personnel and officers serving in Fire Service and Civil Defence Department. These are all but peacetime norms of this service.

However, Civil Defence aspects of both peace time and war time importance of this Department are also needed to be underscored here. During national crisis in 1965 and 1971, our people were heaved with breathless sighs of would-be hazards of air bombardments from hostile forces though such war-panic did not last long. Historically, to stand as a proud nation every citizen must have the experience from the foreign hostilities as well.

During British colonial ordeals and its 1939-45 World War — experience when heavy air bombardment and serious fires out of incendiary and high explosive bombs set ablaze properties and destroyed men and materials at random can not be obliterated from our mind. Civil Defence then was only the way out that people adopted to save themselves everywhere. At that time fire service and civil defence personnel's efficient discharge of duties saved the lives of a lot of people.

In the recent Gulf War Iraqis face heavy aerial bombardments and rockets of the Allied Forces surpassed all records of the past great wars. Now the survival of the Iraqis depends mostly upon how far they could adopt Civil Defence tactics to their ends. Fire Service & Civil Defence beside active defence services like Army, Navy and Airforce is the most important factor in respect of its peacetime preparedness against wartime hazards.

Modern war, now-a-days, is much more technological than early conventions. As a matter of fact without Fire Service & Civil Defence one cannot imagine to reduce the devastating

effects of enemy action to a minimum. Specially the aerial warfare has brought about a sense of such alertness among the civilian population since they got experienced in the 2nd World War. Since then rapid technological advancement in the worldwide military organisation made the people's awareness more acute than ever. By and large, every military organisation must have laser computerised but electronic hardwares to combat the formidable adversaries.

It ought to be understood that the enemy must have possessed the available technological skills or powerful capabilities to react promptly. There is no match to damaging effects of war on population or properties in case of technological warfare breaks out against any weaker nation by the stronger one. Not far from 1988 Israel's belligerent aggressions against its neighbouring Arab states made it evident that her technological capabilities only could wipe out her assumed enemy who were technically underdeveloped. So from peacetime we must feel it important that only the efficient and strong Civil Defence measures are to be considered essential for every individual of a nation towards preparedness for self-defence.

The general object of civil defence is to minimise the effects of enemy action. Hence the primary object of civil defence is to maintain in the population the will to win. To achieve this primary object, the functions of Civil Defence will be to reduce to a minimum — a) Casualty to population, b) Dislocation of services and c) Destruction of property, and as such the responsibilities of the Government of the People's Republic of Bangladesh are as follows:

- Deciding Civil Defence policy at war and peace.
- Ensuring the Civil Defence and alien policy schemes develop on uniform basis throughout the country.
- Guidance on training on the subjects related to the

Government policies.

- Organisation of Civil Defence services under various Ministries (Docks, Railways, Posts and Telegraphs, Civil Aviation etc. and all other institutions including Military installations).

- Ensuring that Civil Defence is organised in all nation-building institutions manned by both public and private sectors (in collaboration with the department of Fire Service & Civil Defence).

- Supply of equipment as necessary.

- General Co-ordination of all Civil Defence Schemes.

Preparation and Implementation of Civil Defence plans are the wartime extension of the normal peacetime functions. All outlying towns other than cities of the districts and upazilas, as per Government policy) are under the purview of Civil Defence organisation in Bangladesh.

Civil Defence measures are considered under the following heads:-

- Preventive and precautionary measures: These measures are taken before the development of air-attacks in order to minimise the enemy actions. These, however, include (i) Warning system, the object is to give early warning signals, as necessary, of the approach of enemy or unidentified aircrafts to the authorities concerned as well as the public. There is also an infrastructure warning communication through Government media in Bangladesh. This is mainly a coordination between the Government, Civil and Military authorities (ii) If necessary lighting restrictions and (iii) Camouflage will be considered to render important targets as inconspicuous as possible from air observation. (iv) The Evacuation and Dispersal policy as adopted by the Government as per plan should be absolutely methodical in time of need. Moreover the planned shifting of unessential persons from a vulnerable area to safer zone or place and sheltering the important installations, stores, machineries, delicate electronic equipment should be made as necessary in such a manner that the damage resulting from enemy action is minimised and normal functions of the public and private business go unabated. (v) Shelters and structural protection are equally important and as such adequate protection should be provided for the personnel as well as members of the public who may be caught unaware of in the open or away from their abodes. So basic principles of protection against enemy action should be brought home to the people through all possible means.

One cannot rule out the enemy action, anyway by air or otherwise.

Here the eternal vigilance necessary preventive and precautionary measures the following Civil Defence Services consisting of paid Government employees and civilian volunteers are being organised to minimise damaging effects of war against life and property of the people:-

- Control and communication service, (ii) Warden service, (iii) Fire Fighting Service, (iv) Casualty service, (v) Rescue service and Post-raid services (if necessary anti-gas service, bomb disposal service and combined depot service may be organised) to counteract the demoralising and devastating effects of air raids. However the following post-raid measures may be necessary:-

- Care and feeding of those rendered homeless as a result of air attack, (ii) salvage of private properties including personal possessions, (iii) repair to slightly damaged buildings, (iv) extensive demolitions and demolitions involving the use of explosives, (v) clearance of debris caused by air attacks and clearance of blocks, (vi) maintenance and repairs of essential services, (vii) disposal of unexploded bombs, (viii) arrangements for the collection and disposal of dead bodies, (ix) post-raid information services and (x) control of mass movement.

Now in Bangladesh Civil Defence is an amalgamated organisation with the Fire Service. It is a very big organisation having a multitude of paid Government employees and civilian volunteers is functioning smoothly for the benefit of the people in Bangladesh during peacetime. It is also capable of coping up with the functions as needed during war. Everybody will rise on the occasion as the esprit de corps against any aggression from outside.

US\$1 Billion Dam to Flood Part of Himalayan Reserve

It forms part of the largest trans-Himalayan Nature reserve. But a proposed hydroelectric dam will flood 50 hectares of a unique environment. By Jan Sharma

confluence. The project may require an extension of the access road in the Barun catchment.

The government, fearing prospects of power shortages this winter and cost escalation due to construction delays, is under pressure to go ahead with the 402-Megawatt power project.

The World Bank — the major source of financing, along with Western donors — says delay in starting the project would mean a cost escalation of at least US\$80 million a year. The power project's cost, initially estimated at US\$500 million, has already reached over US\$1 billion.

An expert panel has recommended to Prime Minister Girija Prasad Koirala that a major review of the power project be done before a decision on the Arun III hydroelectric project is made.

"There is no doubt that the Arun project is critical to Nepal's development," says Dr Tirtha Bahadur Shrestha, a botanist and coordinator of the task force that prepared a plan for the proposed US\$7.8 million Makalu-Barun National Park and Conservation Area.

"It is important for us that the (hydroelectric) project is delayed at least five years so that the proposed conservation measures are underway before the invasion of hordes of construction workers," he says.

Mr Shrestha says the full benefits of the hydroelectric project will be realised when conservation steps are combined with construction plans.

Conservationists fear that the arrival of thousands of workers as soon as construction starts will take a heavy toll on the pristine ecology.

Trekking and mountaineering activities have already increased since that area was opened to foreign tourists and climbing expeditions in 1951. They have influenced a great deal the lives of about 40,000 people living on the fringes of the valley.

"In some regions, overgrazing has led to a loss of vegetation, promoting the establishment and spread of weed and browse-tolerant shrubs," according to one study.

Monetary incentives have often encouraged people to hunt illegally, trap and sell

wildlife products. Black bear gall bladders used in traditional medicine, for example, sell for US\$330 apiece.

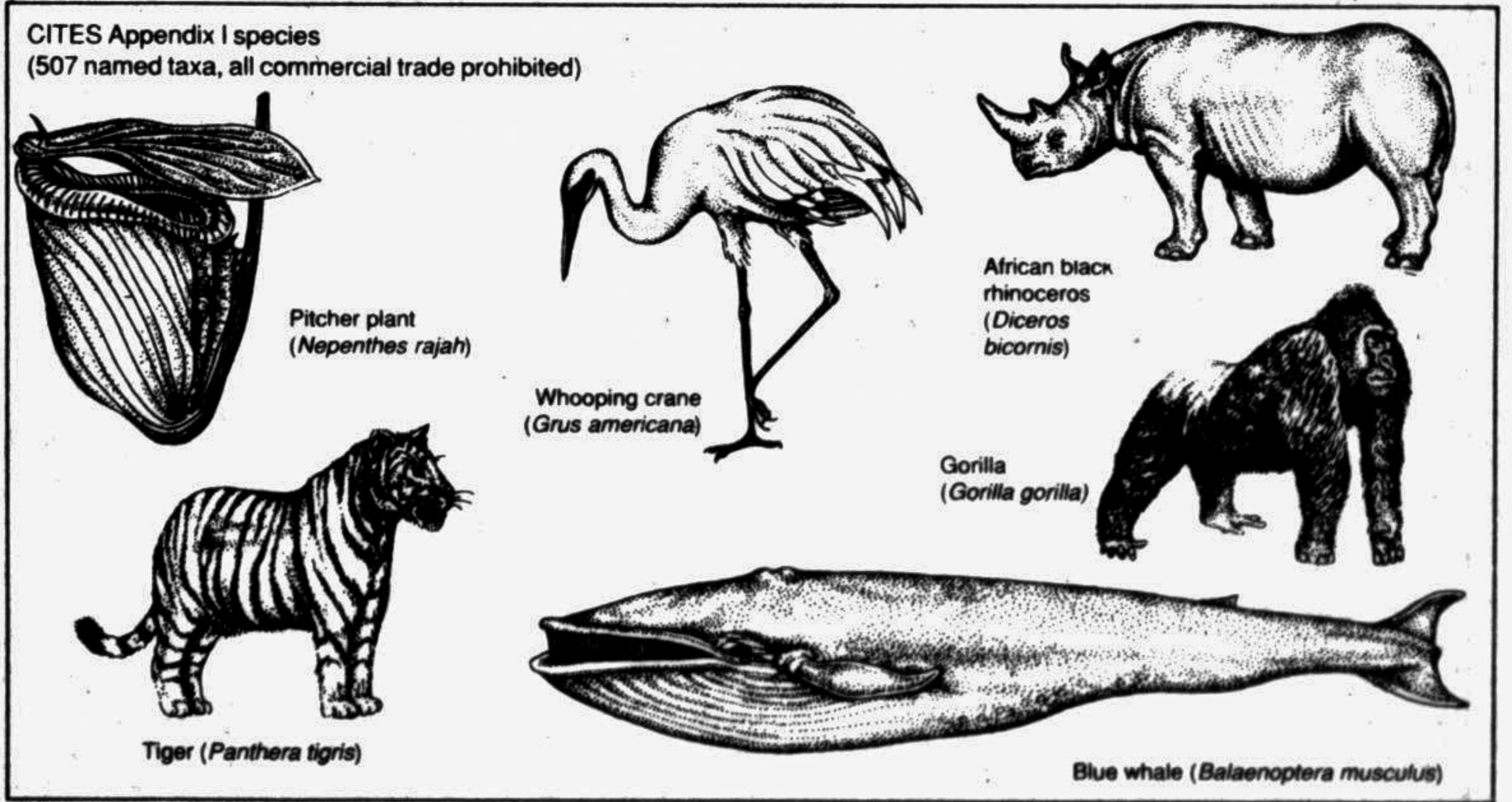
The conservation plan for the Makalu-Barun National Park was prepared after two years of intensive biological and socio-economic studies of the area. It has been submitted to the government and the Cabinet is expected to approve the plan.

The national park and conservation area will be managed by the Department of National Park and Wildlife Conservation in cooperation with the Woodlands Mountain Institute (which also helped set up the Tibet part of the Mt Everest reserve in 1989).

Nepali and Tibetan government officials have been talking on possible areas of cooperation in park and conservation area management, tourism development and research.

Most of the valleys of the Makalu-Barun area drain into the upper reaches of the Arun river, which originates in the adjoining Qomolangma preserve in Tibet. It is the last region in the greater Mt Everest ecosystem to come under protected management.

— Depthnews Asia.



CITES Appendix I species (507 named taxa, all commercial trade prohibited)

Pitcher plant (Nepenthes rajah)

Whooping crane (Grus americana)

African black rhinoceros (Diceros bicornis)

Gorilla (Gorilla gorilla)

Blue whale (Balaenoptera musculus)

Some of the endangered species