



On the rise: construction of a dam as part of the giant Three Gorges project on China's Yangtze River.

LARGE DAMS—THE END OF AN ERA?

► Peter Coles

Growing debate about the rights and wrongs of large-scale dam construction focuses on the very meaning of development

At the last count, there were around 40,000 large dams on the world's rivers, according to the International Commission on Large Dams (ICOLD).¹ Most of them were built in the last 35 years. A further 1,600 are under construction in over 40 countries. But is the era of building very large dams coming to an end? Pressure groups of displaced rural communities

1. ICOLD, founded in 1928, seeks to advance the art and science of dams. It has some 6,000 individual members and National Committees in 80 countries. ICOLD defines a large dam as one that is over 15 metres high.

► British journalist specializing in scientific and environmental issues

and ecology organizations have already disrupted dam building in the United States and India.

This coming August the independent World Commission on Dams (WCD), set up in 1998 by the World Bank and IUCN (the World Conservation Union) to look at the long term developmental effectiveness of dams, will publish its conclusions after two years of fact-finding. Preliminary reports to the Commission, whose 12 commissioners span most groups of stakeholders, are already suggesting that the development benefits may not be all they promised. And that the people who gain least from dams are those already at the

bottom of the socio-economic pile.

"Dams are both a technology option and a development choice," said South African Minister of Education and WCD Chair Professor Kader Asmal last December. By focusing on dams as a reflection of societal needs, he said, WCD is inevitably confronting the very meaning of "development". "We are tackling the question of how knowledge, interests, and values determine the context within which dams are either chosen or rejected as the preferred option, and how such decisions can best be negotiated between competing interests." Part of WCD's remit is to find out what these interests are. They might, for

example, include the needs of industry and urban residents versus agriculture and rural populations, or, more cynically, the dam industry versus those interested in intermediate technology or traditional solutions to development challenges.

For ICOLD, the links between dam building and development are obvious. Two prerequisites for the development of a nation are energy and water, says one ICOLD paper. But since these resources are most scarce precisely where demand is rising most rapidly, dams have become almost synonymous with development. So, while dam building in developed countries has slowed to a trickle in the last decade, major constructions are underway in industrializing countries, like China's massive Three Gorges project and India's Narmada Valley Development project (see article below). Over half of all large dams (more than 22,000) are in China, while India has become the third largest dam constructor in the world, with over 3,000 large dams.

Smoothing the flood-and-drought cycle

Although dams produce power without contributing to the greenhouse effect—about 20 per cent of world electricity and seven per cent of all energy, according to ICOLD—their primary purpose is water control. Reservoirs can provide drinking water, while smoothing out the “boom and bust” cycles of flooding and drought brought about by monsoons. They do this by storing excess water in reservoirs during the rainy season and releasing it in times of scarcity. But by far the greatest use of dams is to supply irrigation water for agriculture. In developing countries, according to the United Nations Environment Programme (UNEP), irrigation accounts for over 75 per cent of water consumption. In some countries, the figure is over 90 per cent.

At present, according to ICOLD, one third of all food produced already comes from irrigated land. And the organization sees irrigation as the only way to meet the future increase in demand, expecting 80 per cent of food production to come from irrigated land by 2025.

But the case for irrigation is far from clear-cut. According to the International Rivers Network (IRN), a non-governmental organization, irrigation canals cause eutrophication². Meanwhile, the crops produced are often for export and do not feed the sectors of the population that are expanding most rapidly—the poor. And

ironically, these are the very people who lose their homes, farms and livelihoods when river valleys are flooded by dams.

Even before a dam has produced a single watt of power, or litre of irrigation water, tens of thousands of people may need to be evacuated from the river valleys to make way for the reservoir. World-wide, the flooded valleys that accompany large dams have forced at least 30 million people to abandon their homes since the 1930s, according to IRN. In the past, governments have seen the human cost of displacement as an inevitable “side effect” of development. Now these displaced people are fighting to be heard.

“Past experiences,” says one report to the Commission, “show that typical resettlement programmes are: often prepared late in the project cycle; under financed; devised using insufficient understanding of people's social, cultural, economic, psychological conditions and environment in which they were located; implemented with a very short time frame, with limited objective of restoring previous income levels, and too often terminated even before all displaced people were resettled and rehabilitated.” One question that WCD will be trying to answer in its final report is whether the loss of an ancient rural lifestyle is the inevitable price a nation has to pay to achieve security for the majority.

Some of those opposed to large-scale dam construction, like IRN, see the deve-

lopment that dams supposedly promote as spurious in any case, even for the largely urban communities who benefit. In its publicity for *Silent Rivers*, a book by Patrick McCully that IRN co-published, the NGO says that “massive dams are much more than simply machines to generate electricity and store water. They are concrete, rock and earth expressions of the dominant ideology of the technological age: icons of economic development and scientific progress to match nuclear bombs and motor cars.”

Other critics suggest that the dam industry simply turned to developing countries because the market in developed countries had almost dried up. In the past, loans from the World Bank and international aid programmes indirectly kept the multi-billion dollar industry afloat, while scoring lucrative trade and technology transfer deals for the lending nations. But now, under mounting opposition from pressure groups, the U.S. and many European governments have declined to become involved in projects like the Three Gorges and Narmada dams.

With power still mainly in the hands of the dam builders, the coming WCD report might at least provide guidelines on how to include the dispossessed among those who benefit, while minimizing the extent of irreversible damage. ■

A BARRAGE OF PROTEST

► Peter Coles and Lyla Bavadam
The tide may be turning against the giant Narmada dam project in India

Vadaj is a desolate place about 40 km from the historic city of Baroda in India's Gujarat state. During the summer months the baked earth cracks in the heat. When the monsoon comes, villagers perch on the furniture like chickens to avoid the rising waters. After the floods have subsided, the waterlogged clay soil is impenetrable, trapping cattle and people alike. For the past four years, the tin shacks of Vadaj have been

home for dozens of families forced to leave their ancestral village to make way for the giant reservoir of the controversial Sardar Sarovar dam on the Narmada river.

These “oustees” could even count themselves lucky. According to a report by Narmada Bachao Andolan (NBA), a pressure group fighting the Narmada project, when the Bargi dam was finished in 1990, over 1,000 km upstream in Madhya Pradesh, the 114,000 people from 162 villages in the path of the floodwaters were simply jettisoned with nowhere to go. The government, says ►

► Bombay correspondent
of the Indian bi-monthly *Frontline*

2. Eutrophication is a phenomenon occurring in stagnant water, whereby vegetation proliferates and the water's oxygen content is reduced.



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In August 1999, protesters campaigning against the building of a dam on the Narmada River in India were ready to drown themselves in the rapidly rising monsoon waters.

▶ NBA, offered no resettlement land and only minimal cash compensation. Many of these villagers, says the report, now have menial jobs in the slums of Jabalpur, the main city in the region.

The plight of the Vadaj oustees could be shared by over 300,000 others as construction moves slowly ahead on the 30 large dams, 150 medium and 3,000 smaller dams in a vast project that will transform the Narmada into a staircase of reservoirs and turbines. For the past 15 years, the backlash of opposition from NBA, a coalition of local people's movements

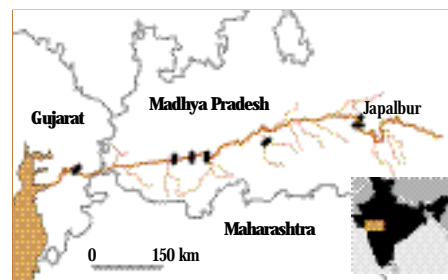
opposed to the different dams, has been challenging the view of development that these dams promote. NBA argues that the beneficiaries of the project will be city dwellers, not the rural communities forced to leave their homes in the flooded valley.

Over 80 per cent of India's rural households have no electricity—and little hope of ever being connected to the electricity grid—according to Arundhati Roy, the acclaimed Indian author who has recently championed NBA's struggle. She says the increased food that the dams' irrigation canals may produce will be destined for export, doing little to feed

the nation's poor. In 1995, she says, some 30 million tons of unsold grain were stockpiled in state granaries, while 350 million Indians still live below the poverty line. What is more, most of the people affected by the Narmada project, says NBA, are tribal communities, fishing villages and Dalits (the so-called "oppressed" lower stratum of the Hindu caste system), who already benefit least from India's prosperity.

The notion of dam building as a prime technology solution to development is not new. Back in the 1940s, just after Independence, Prime Minister Jawaharlal Nehru saw dams as "the Temples of Modern India". The Narmada Valley Development Project was to be a showcase for this vision. Although this particular project stayed on the drawing board for over 30 years, mostly because of disputes over water rights between the three states—Madhya Pradesh, Maharashtra and Gujarat—through which the Narmada flows, India went on to build some 3,600 dams.

Coupled to the Green Revolution of the 1960s, these dams provided massive irrigation systems that have underpinned a



Source: International Rivers Network

fourfold increase in food production. And similar prospects are being heralded for the Narmada dams. According to official figures, the Sardar Sarovar dam, the last and largest of the dams before the river reaches the Arabian Sea, will provide water for 20-30 million people all year round, especially in the arid areas of Kutch, Saurashtra and the state of Rajasthan. At the same time, the 138.6-metre multi-purpose dam is scheduled to produce 1,450 MW of hydroelectric power, while its reservoir should smooth out the yearly seesaw of floods and droughts, protecting some 400,000 people.

World Bank withdrawal

NBA contests just about all the official statistics on the future benefits of the project. It also questions the very principle of the dams from the point of view of development. Led by Medha Patkar, a sociologist originally from Bombay, NBA argues that the benefits will never justify the irreversible loss of forest, fisheries, farmland, culture and livelihood for the hundreds of

THE REALITIES OF RESETTLEMENT

In some cases resettlement has meant the fragmentation of village communities, because neighbours are given land in different sites. Meanwhile, over 5,000 oustees from villages in Gujarat are being rehoused in settlements alongside others from Maharashtra and Madhya Pradesh. People from three different states, each with their own languages and dialects, culinary habits and dress, are thrown together.

Resettled people may also have to face hostility from their host communities. New lands can be barren rocky ground or waterlogged, saline stretches where farming is impossible. Fishing communities find themselves far from the river on which their livelihood has depended for centuries. Often, these resettled people try to return to their original homes, even if all that remains is a muddy hilltop.

Uncertainty is another dimension of resettlement. Entire generations grow up not knowing what the ultimate fate of their village will be. As NBA activist Shripad Dharmadhikari explains,

"when it is announced that an area will face submergence, all development work comes to a halt. So if a school is being built or roads are being constructed it is all stopped. The actual submergence may remain on paper but the work stops." In the village of Kakarana Behena, a Bhilala tribesman said the electric supply to his village was cut when its status as a submergence village became known. Power supply was stopped a year ago but the waters are still below Kakarana.

There are also social ramifications. Sulgaon is a village in the prosperous and fertile Nimad region that will be submerged when the Maheshwar dam in Madhya Pradesh is constructed. Lakshman Patidar says it is becoming increasingly difficult to find brides for eligible boys. "Who will want to send their daughters to a home that will soon be under water?" he asks. And, like other Nimadi farmers, Patidar values his land above all else. Since boys invariably join their fathers on the farm they get little formal education. This will make it even harder to adapt to their loss of livelihood and culture. ■

thousands of displaced people. Some 30 million people depend directly or indirectly on the 1,312-km-long river and its valley, with its fertile farmland, historic temples and pilgrimage routes.

In 1986, a year after the World Bank lent \$450 million to construct Sardar Sarovar, NBA commissioned a series of impact assessment studies that, it claims, exposed crucial flaws in the official cost-benefit analyses for the entire project. But at the heart of NBA's campaign is the apparent lack of resettlement provision for oustees. With mounting international support, NBA was able to force a review of the Narmada project. In 1991 the World Bank commissioned an independent inquiry, whose report essentially endorsed the NBA claims, saying that there had been "no proper appraisal" of the project's impact. Two years later, in an unprecedented about-turn, the World Bank withdrew from the scheme.

In 1994, India's Supreme Court upheld a case presented by NBA, freezing all construction on the Narmada dams until the state governments carried out adequate impact assessments. NBA insists that there must be no displacement if there are no realistic plans for resettlement. With the exception of Sardar Sarovar, none of the dam projects had any resettlement plans, says the organization. NBA is adamant that

it is not opposed to the development that the dams promise. It is also looking for a compromise solution, calling for the final height of the dams to be reduced. The lower the final height, the fewer people will be forced to move to make way for the reservoirs and the less land will be lost.

Rally in the valley

Although it now seems unlikely that NBA's actions will stop the dams, the organization has brought the issue of resettlement to the fore. In 1998 the Madhya Pradesh government set up a task force to look at resettlement possibilities. It found that not only was there no land in Madhya Pradesh to house oustees but that the land promised by Gujarat either did not exist, or was of too poor quality. Madhya Pradesh has now called for a new evaluation. The state of Gujarat, however, has dug in its heels. Not only did it refuse to allow the independent World Commission on Dams, set up by the World Bank (see page 10), to visit the Sardar Sarovar site, it also challenged the Supreme Court's earlier ruling. In February 1999, after a four-year moratorium, the Supreme Court reversed its earlier decision, allowing construction to begin again at Sardar Sarovar, adding a further 5 metres to the 80 metres already built.

NBA has now reinforced its struggle,

organizing a series of passive sit-ins and hunger strikes. At the end of July last year Arundhati Roy organized a "Rally in the Valley", marching with 400 other public figures and supporters from village to village in the affected area. An estimated 10,000 oustees joined the rally in the fertile Nimad region of Madhya Pradesh, where the local farmers will lose their land if construction goes ahead. And when the monsoon rains began in August 1999, Medha Patkar and other NBA members took up positions in the village of Domkhedi, refusing to move as the flood waters rose up to their shoulders. Police in boats finally removed them. At the end of last year, Arundhati Roy published a closely-documented essay entitled "The Greater Common Good" in *Outlook* magazine, criticizing the Narmada Valley project both in principle and in its application.

As the mud flies between NBA and supporters of the project, the withdrawal of the World Bank could have unpredictable effects in the longer term. With most international aid programmes now unwilling to be associated with the dams, the developers are looking for private sector funding. This could be much harder to influence than an institution such as the World Bank, which has a "worthy" image to protect. ■

In Khoteswar, a temple still used in 1998 has since been submerged, a direct consequence of the Sardar Sarovar dam.



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