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Dammed Rivers, Damned Lives

THE CASE AGAINST LARGE DAMS

When Malisemelo Didian Tau first heard about plans to build a big water supply dam on her land in Lesotho, she resisted. But the dam builders convinced her that a few people would have to move away to save many people's lives. They promised Malisemelo and her community compensation, water supply, schools and new homes. But the promises have not been kept.

Says Malisemelo, “When we don’t get enough compensation for our lands, it is the death of our children and the death of coming generations because they will have nothing to help them survive in the future.”

This story would be compelling enough if it were only Malisemelo’s story. But it isn’t. Between 40 and 80 million people have been forced from their homes and lands to make way for dams. Most have been left further impoverished. Some of the world’s most diverse wildlife habitat and fertile farmland has been flooded beneath reservoirs. Entire river ecosystems have been destroyed.

Across the world, people are recognizing that the costs of large dams have been far too high. In the first comprehensive independent assessment of dams, the World Commission on Dams (WCD), established by the World Bank and the World

Conservation Union (IUCN), stated that while dams have made an important contribution to development, “in too many cases an unacceptable and often unnecessary price has been paid to secure those benefits.”

Although the rate of dam building has dropped to less than half of its peak in the early 1970s, hundreds of projects are under construction and many more are proposed. Dams continue to be promoted and funded in Southern countries by institutions like the China Exim Bank and the World Bank. China, India, Brazil, Turkey, Laos, Iran, Chile, Mexico and Ethiopia are all building or planning numerous dams, which would have severe impacts on rivers and people.

This paper summarizes the impacts of dams and outlines better solutions to meeting people’s water and energy needs.



SOCIAL IMPACTS

Millions of people have been forced to give up their homes and risk their food security and well-being for dams that are frequently poorly planned and unnecessary.

Those forced onto resettlement sites often do not have clean water to drink or enough food to eat. They languish there, stripped of their traditional livelihoods, land and natural resources – the social fabric that binds their communities together ripped apart. Alcoholism, depression, domestic violence and disease increase.

Compensation – if provided at all – is typically inadequate. Cash compensation is rarely enough to purchase comparable replacement land. When land-for-land compensation is provided, those displaced typically receive smaller amounts of poorer quality land. Unable to subsist on their new plots, farming families frequently end up living as migrant laborers or slum dwellers.



Millions of people around the world rely on freshwater fisheries for food and income.

to government estimates, 40 percent of all those who have been displaced by dams are *adivasis* or tribals, who represent less than six percent of the Indian population. The impact of dams upon indigenous peoples is especially harmful as most have already suffered centuries of exploitation and displacement.

Women are left worse off than men, as compensation is usually paid only to the male heads of households. Women typically depend more on common property resources, such as grazing lands and forests. When dams destroy these resources, compensation and replacement land are rarely provided.

MILLIONS MORE AFFECTED

Those displaced by reservoirs are only the most visible victims of large dams. Millions have lost land and homes to the canals, roads and other infrastructure associated with dams. Many more have lost access to clean water, fish, grazing land and other resources.

Changes in river flow have affected the lives of millions living downstream from dams. They suffer from declines in fisheries, poor water quality and disruption of the annual floods which once irrigated and fertilized their fields and recharged their wells.

ENVIRONMENTAL IMPACTS

Large dams have had profound and irreversible environmental impacts. Over a million square kilometers, or just under one percent the world's land surface, have been inundated by reservoirs worldwide. This includes some of the world's most diverse wildlife habitats and fertile farmlands.

Sixty percent of the world's major rivers have been fragmented by dams and diversions. Large dam and diversion schemes have stopped some of the world's major rivers, such as the Indus, the Nile and the Colorado, from reaching the sea. In the early 1900s, the Colorado River delta supported a rich array of egrets, jaguars and other wildlife. However, the heavily plumbed river now only reaches the delta in rare flood years and wildlife populations have plummeted. The number of indigenous people who once fished and farmed the delta has also declined.

Dams have reduced biodiversity. Dams and diversions are the main reason why one-third of the world's freshwater fish species are extinct, endangered or vulnerable. Many shellfish, amphibians, plant and bird species that depend on freshwater habitats are also extinct or at risk.

“We have lost fisheries and our vegetable gardens along the riverbanks. We live in fear and all the time we worry that water from the dam will flood our lands. Sometimes we almost drown. We want our natural river returned to us.”

- Ethnic Tampoun woman living in Cambodia who has suffered downstream impacts from Vietnam's Yali Falls Dam.

People who resist are regularly subjected to violence and intimidation. In China, people have been jailed and beaten for protesting against poor resettlement conditions for the Three Gorges Dam, which has displaced 1.3 million people. One of the worst human rights atrocities associated with dams happened in Guatemala in the 1980s. More than 440 Maya Achi indigenous people, mainly women and children, were murdered by paramilitaries because they refused to leave their ancestral lands for the World Bank-funded Chixoy Dam. Survivors of the massacre are still fighting for reparations for their suffering.

INDIGENOUS PEOPLE AND WOMEN SUFFER MOST

Indigenous people and other ethnic minorities have suffered disproportionately from the impacts of dams. In India, according

Impacts of Dams



DOWNSTREAM IMPACTS

disrupted water and sediment flow reduces biodiversity; communities suffer from poor water quality, lower crop production and decreased fish populations

DAM

blocks fish migration; disrupts water and sediment flow; aging structures pose safety hazards

ROTTING VEGETATION

releases greenhouse gases contributing to global warming; degrades water quality

RESERVOIR

displaces communities; floods and fragments ecosystems; increases water-borne diseases; triggers earthquakes

FAILED MITIGATION

Proponents of dams argue that the environmental impacts of dams can be mitigated. Past experience, however, shows that mitigation efforts have largely failed. It is often too expensive, too difficult or simply impossible to recreate the characteristics of wild rivers and the web of life they support. Since 1996, the US government has spent about \$430 million annually to mitigate the impacts of dams on fisheries in the Columbia River basin. Despite this enormous expense, most of the wild salmon stocks in the region are either extinct or on the brink.

A growing number of older dams are being decommissioned, mostly in Northern countries, because the social and environmental benefits of removing them outweigh the costs of maintaining them and the limited benefits they produce. In the US, nearly 200 dams were removed in the 1990s, many for environmental reasons.

ELUSIVE BENEFITS OF DAMS

More than 50,000 large dams (higher than 15 meters) have been built around the world to generate electricity, supply water, control floods and facilitate navigation. During the 20th century, an estimated \$2 trillion was spent on dams.

While dams have provided considerable benefits, they have often failed to meet expectations. Hydropower dams often do

not produce as much power as expected. Irrigation projects do not irrigate as much land or generate as many economic benefits as promised. Water supply dams regularly fail to supply as much water as predicted. While flood control dams have stopped smaller floods, they have also increased the vulnerability of communities to damages from larger floods. Considering the huge amounts of money spent on dams, there is clearly a need for better monitoring of their technical, financial and economic performance.

ARE THERE ALTERNATIVES?

Viable alternatives to dams do exist, and are frequently more sustainable and cheaper. The most important alternative is to improve the efficiency of existing water supply and energy systems. This may involve reducing leaks in water pipes, retrofitting power plants and irrigation systems with modern equipment or reducing losses in power transmission lines. Another simple and economical option is to reduce the demand for water and energy. This can include recycling, shifting to less water-intensive crops and encouraging the use of more efficient electrical appliances. These options can diminish the need for new or existing sources of supply.

When efforts to conserve resources and improve the efficiency of existing power plants are not enough to meet growing demand, renewable energy supply options should be considered. Renewable options include efficient and sustainable

Common Myths About Large Dams

“HYDROPOWER IS CHEAP!”

Hydroelectricity can be cheap to produce – once the dams are built. But dams are hugely expensive to build and their costs are usually far higher than estimated. The World Commission on Dams found that on average dams end up costing 56 per cent more to build than predicted.

Dam designers typically overestimate how much power their projects will produce. Climate change is expected to increase the frequency and severity of droughts, reducing hydropower production. When these factors are considered, hydropower is frequently a very costly form of power generation.

“HYDROPOWER IS CLEAN!”

Hydropower dams cannot be considered a clean source of electricity because of their serious social and environmental impacts.

In addition, reservoirs emit greenhouse gases due to the rotting of flooded

vegetation and soils, aquatic plants and organic matter flowing in from upstream. Emissions of carbon dioxide and methane are particularly high from reservoirs in the lowland tropics. In some cases, reservoirs may have a greater impact on global warming than similar-sized thermal power stations.

“DAMS EFFECTIVELY CONTROL FLOODS!”

Dams can stop regular annual floods but often fail to hold back exceptionally large floods. Because dams provide a false sense of security, they can lead to increased development of floodplains. When a large flood occurs, damages are frequently far greater than they would have been without the dam. Between 1960 and 1985, the US government spent \$38 billion on flood control, mostly on dams. Yet average annual flood damage continued to increase – more than doubling.

Dams can cause serious floods when reservoir operators make sudden releases during extreme storms or, in the worst cases, when dams break. Climate change is expected to increase the severity of floods, with serious implications for dam safety.

“IRRIGATION DAMS REDUCE HUNGER!”

The benefits of large dam-and-canal irrigation schemes have been overstated. These schemes are invariably mismanaged and waste huge amounts of water. They frequently destroy huge tracts of formerly fertile lands through salinization and waterlogging. The construction of reservoirs and canals itself consumes large amounts of fertile land. Irrigation schemes are typically used to produce crops for agribusiness and export rather than for local consumption, as only large producers can afford to pay for the water.

biomass, wind, solar, geothermal, and eventually ocean energy sources and fuel cells. Wind power is one of the fastest growing renewable energy options. The cost of wind power in good locations is now comparable to or cheaper than that of conventional sources. Some estimate that 10 percent of the world's electricity could be supplied by wind power by the year 2020. Solar energy technologies are coming down in price and have huge long-term potential.

Small-scale decentralized options have the biggest potential for supplying water and power to rural communities. Rainwater harvesting and micro-hydro dams are easier to implement, cost less and have lower environmental impacts than large-scale infrastructure. The construction of small dams to impound rainwater in India's desert state of Rajasthan has recharged groundwater supplies and increased food security and incomes for hundreds of thousands of farming families.

END OF THE BIG DAM ERA?

Over the last 20 years, a growing international movement has emerged to challenge destructive dams, promote sustainable and equitable alternatives and secure reparations for dam-affected people. This movement has forced the indefinite postponement or cancellation of numerous projects around the world.

Despite what critics say, most activists are not opposed to all big dams. What they are opposed to is current development planning processes that promote dams that benefit a few at the expense of the human rights, livelihoods and dignity of the poor. Many believe that if planners adopted the recommendations of the World Commission on Dams, destructive dams would not be built.

JOIN US!

Join International Rivers today and become part of the global movement to protect rivers and rights. Sign up at internationalrivers.org/support