

Dams, Rivers and Lakes: “Dammed” Good Questions About “The Green New Deal”. Ten Problems

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Hydroelectric power from dams might be the thorniest question that proponents of the Green New Deal (GND) have to grapple with. Providing more energy than solar and wind combined, dams could well become the backup for energy if it proves impossible to get off of fossil fuels fast enough.

Rivers and lakes are an integral part of human existence, with virtually all major inland cities being located next to one of them. They provide water for drinking, bathing, food, and medicine. Their sustenance is not just for humans but for untold numbers of tiny organisms, insects, reptiles, amphibians, birds and mammals.

Rivers integrate plant and animal life forms and connect human communities to each other.

As capitalism grew, rivers transported huge quantities of lumber from clear cuts, oil from under the ground and coal ripped from mountains. Rivers have been used for trash disposal, as if carrying it somewhere else would make it vanish. Nor can rivers make industrial and agricultural poisons disappear but can only carry them until they create huge dead zones. Victors of battles have let rivers float human bodies to remind those living downstream of their military prowess.

The advent of electricity meant that those seeking to dominate nature found an extraordinary tool at their disposal – hydro-electric power from dams. There are [57,000 large dams in the world](#) and more could be on the way. Thus, it is important that GND advocates clarify whether they support building more dams or endorse a moratorium on their construction.

Dams were an integral part of economic expansion under Franklin Roosevelt’s original New Deal. Building new dams continued past FDR, providing about [a third of US electrical power](#) in the 1950s. That has declined in the twenty-first century, mainly because of expanded fossil fuel use. The greatest wave of global dam-building has been since World War II and [80% of their current](#) use is for hydro-power. Dams have [fragmented](#) over two-thirds of long rivers.



Protestors against the dam. The sign translates to “Beautiful pile of shit”. (CC BY 3.0 br)

One of the most infamous is [Brazil’s Belo Monte Dam](#) on the Xingu River. Planned in 1975, it would be the second largest dam system in Brazil and the fourth largest in the world; but opposition stalled it. After being revived, in May 2016 the first turbine went online; 16 main turbines were functioning in September 2019, and completion is scheduled for 2020.

Mongolia hopes to use dams as part of a strategy to move away from fossil fuels. It’s action plan is called the “Green Development Policy,” which seems to echo “Green New Deal” proposals of western countries. The Selenge River, a transnational body of water originating in Mongolia, contributes over half the water to Russia’s Lake Baikal which is so huge that it contains about “20% of the worlds unfrozen fresh water.” Area lakes are already shrinking due to water withdrawal and [Lital Khaikin writes](#) that “encroachment of heavy industry threatens the fragile balance of the Baikal and the river-systems that are connected to it.”

With many calling for expansion of large dams, it is necessary to consider what this would

mean for river life forms, people living next to or downstream from dams, economics of hydro-power, climate change and unforeseen dangers. Here are 10 potential problems with dams.

1. Dams destroy species and disrupt balances between species that make up ecosystems.

According to *International Rivers* “The number-one cause of species extinction is [habitat loss](#).” Due to the assault on rivers, freshwater ecosystems probably have the highest reduction in biodiversity, higher even than those on land.

The decline of a species often has ripple effects on other species. When salmon reproduction is interrupted on the lower Snake River Dams in the Pacific Northwest [orcas may starve](#) because so few reach the ocean. River dolphins of the Yangtze were the first human-caused extinction of dolphins, due to construction of [China’s Three Gorges Dam](#). Less well-known examples abound. The [Kihansi Spray Toad of Tanzania](#) became extinct in the wild because of the Kihansi Dam in the southern Udzungwa Mountains. The dam reduced the spray zone around the waterfall by 90%, dooming the toad.

Plants, are likewise threatened by dams. Rowan Jacobsen’s 2019 article describes how the [Falls-of-the-Ohio scurfpea](#), whose habitat was limited to a few Ohio River islets, became extinct in the 1920s due to dam construction. Another 2019 *Scientific American* article explains that [85% of bugs along the Colorado River](#) lays eggs along its banks. As water levels go up and down according to power needs, the insect eggs often get too dry to survive, upsetting the balance between species in the ecosystem. This is particularly unnerving because a 2017 paper in *PLOS ONE* documented a greater than [75% decline in flying insect mass](#) in Germany.

2. Dams drive people out of their homes.

Those of us who grew up watching American TV in the 1950s and 60s had a steady diet of troops driving Indians off the landscape of the country’s West. An even more effective tool of America’s ethnic cleansing was undermining the species on which Indians depended, such as buffalo and fish. Roosevelt’s New Deal promised that building dams would help lift people out of poverty.



Aerial view of Hoover Dam, Nevada-Arizona. (CC BY-SA 4.0)

Unfortunately, the Hoover Dam took [reservation land from Yuma Indians](#) during 1933-35. By the early 1940s, 22 dams were planned for North Dakota which required evacuating 20,000 people, including many Indians.

In [Mexico, building 4000 dams](#) from 1936 to 2006 involved the removal of 185,000 people. As Brazil built Belo Monte, the government claimed that only 16,000 people were displaced. But those affected indicated that a more realistic number was 40,000. As dams expanded, they pushed an estimated [80,000,000 out of their homes](#) globally.

3. Dams undermine indigenous cultures.

Cultural traditions are often closely connected to specific plants, animals, landmarks and bodies of water. When the New Deal's Grand Coulee Dam robbed land from Native Americans, it broke their connection to salmon. Little known in the western world are efforts by Mongolia to expand dam construction in its norther provinces on the Selenge River and its tributary Eg River. The proposed [Shuren Dam on the Selenge](#) would flood sacred *heregsuurs* (graveyards) and archaeological sites in neighboring areas. The Egiin Gol Dam on the Eg would cause extensive displacement which would include Mongolian herder communities whose link to (Omul whitefish) would be severed. Though opposition led to both projects' being canceled in 2017, what remains is Mongolia's hopes to attract foreign investment from multinational corporations seeking resource extraction and hydro-electricity to power mining operations. Similar projects are reaching their tentacles across the planet.

4. Dams affect far more people than they displace.

People do not have to be pushed out of their homes or watch the flooding of sacred places to be affected by dams. An estimated [400-800 million people](#) in the world who live downstream from dams lose access to clean water, are poisoned by industrial development, and watch resources such as fish shrink along with the quantity of water flowing through rivers. Especially those living in tropical areas can experience an increase in diseases such as [malaria, filariasis, yellow fever, dengue, and schistosomiasis](#).

5. Conflicts over dams result in the arrest and killing of earth protectors.

Since 2009, the massive growth of dams in Mexico led to the [arrest of over 250 and at least 8 deaths](#). *Global Witness* tabulated that “dams and other water resources” were the third leading industries (behind mining and agribusiness) to be associated with [deaths of environmentalists in 2018](#).

Dams have also been linked to imprisonment and/or killings in many countries, including Burma, China, Colombia, Ethiopia, Guatemala and Sudan. The greatest number of indigenous people massacred was when [440 were killed](#) “to make way for Guatemala’s Chixoy Dam in 1982.” Extreme civil rights violations will undoubtedly rise in proportion to efforts to expand hydro-electric power.

6. Dams can increase the likelihood of wars over water resources.

Any time a river runs through two or more countries, there is a potential conflict over dam-building. Shortly after Pakistan was created, on April 1, 1948 India began taking water from canals that went into Pakistan. A permanent solution was stalled until 1960 when Jawaharlal Nehru of India and Mohammad Ayub Khan of Pakistan signed the [Indus Water Treaty](#). But in 2017 India built the Kishanganga Dam in Kashmir and developed the Ratle hydro-power station in the Chenab River despite objections from Pakistan. With Narendra Modi’s siege of Kashmir, dams can only intensify hostilities.

Access to water is central to tensions in the Middle East. The Tigris-Euphrates basin, which includes Turkey, Syria, Iraq and western Iran, is rapidly losing water. [Conn Hallihan writes](#) “For Syria and Iraq, the problem is Turkey and Ankara’s mania for dam building. Since 1975, Turkish dams have reduced the flow of water to Syria by 40% — and to Iraq by 80%... Israel also takes 87% of the West Bank aquifers, leaving the Palestinians only 13%.” Water conflicts will get worse over time – by 2030, [4 out of every 10 people in the world](#) may not have access to water.

7. Dams contribute to climate change.

It would be a tragic irony if dams were used to combat climate change because they are a huge source of greenhouse gases (GHGs). Currently, rivers [remove about 200 million tons of CO2](#) from the atmosphere annually, both by carbon absorption and by carrying silt to the sea where it feeds plankton. Yet, dams interfere with rivers’ being a carbon sink and increase their functioning as a carbon source in multiple ways.

Building the giant [Hoover Dam](#) required 6.6 million tons of concrete. The larger [Grand Coulee Dam](#) required 24.3 million tons. Since enormous heat must be used to produce concrete, each ton manufactured [releases one ton of CO2 into the atmosphere](#). In addition, producing steel to reinforce the concrete and build other dam components requires

enormous heat, resulting in CO2 releases. Of the tens of thousands of large dams in the world, these two required creating 30.9 million tons of CO2 just for the concrete: building dams has taken a huge bite out of the carbon sequestered by rivers.

In addition to CO2 release during manufacture of building materials for dams, organic matter rots in their reservoirs and produces the potent GHG methane. Far from being a minor source of carbon, this methane is estimated to [“account for 4% of all human-made climate change](#), equivalent to the climate impact of aviation.”

8. Dams increase differences between rich and poor.

Approval for building dams often begins with investors’ going to politicians who act as a link between them and the population. Politicians promise that the project will bring wealth to all. By the time it becomes clear that this is not happening, the politician is out of office or distracting people with another big promise.

In 1933, construction of the [New Deal’s Hoover Dam](#) meant pushing the Yumas off their reservation land so that a boom in energy production could swell corporate profits in the US Southwest. As a sop for losing the reservation, Yumas received five acres apiece with assurance that they could grow more crops due to new irrigation systems. Meanwhile, land was “sold to whites in 40- to 100- acre parcels.”

Construction of the Belo Monte Dam reflects a common occurrence. Though thousands of Indians were displaced, the energy created did not benefit them, but [businesses such as aluminum smelters](#).

9. Dams cost much more than promised.

Many factors feed into making dams hyper-expensive. The most obvious is construction costs which amounts to [\\$2 trillion since 1950](#). A small country persuaded to use hydro-power as its major source of energy can find that the average cost overrun of 96% leaves it more indebted to and controlled by international lenders than it ever anticipated.

Dams lead to more dams. As investors and industrial manufacturers and mine owners reap riches from one dam, they have an incentive to construct more. This contributed to the US Colorado River’s being fragmented by at least 60 dams. Awareness that the Belo Monte Dam would make more upstream dams economically viable was a major source of opposition to it.

A third reason for dams’ being more expensive than promised is that maintenance is hardly, if ever, fully accounted for. Silt eventually interferes with the dam’s functioning. Turbines malfunction, cracks occur, design flaws appear and maintenance can be insufficient. For a combination of reasons, over [1000 dams have been removed in the US](#) and the price of removal is rarely mentioned in cost projections.

The fourth, and most costly source of expense overruns for dams, is when they break. This brings us to the last of 10 problems. When negotiating over price, the construction company is highly unlikely to admit its life expectancy.

10. Dams break.

Unlike the extinction they cause, dams are not forever. And with today’s standards for

privatized construction, they can be expected to last for shorter time periods than Roman coliseums. As [Worster wrote](#):

“Steel penstocks [structures that carry water from the forebay tunnel to the power house to run the turbines] and headgates must someday rust and collapse. Concrete, so permanent-seeming in its youth, must turn soft and crumble. Heavy banks of earth, thrown up to trap a flood, must eventually, under the most favorable circumstances, erode away.”

The New England Historical Society documented the first major disaster as the [Mill River Dam](#) collapse of 1874 which caused 139 deaths. The worst such disaster in the US happened only 15 years later when warnings regarding the [South Fork Dam near Johnstown, Pennsylvania](#) were followed by its collapse, which killed 2209.

Eric Fish penned the disturbing story of the 1975 [Banqiao Dam collapse](#), by far the most deadly the world has experienced to date. As part of the “Harness the Huai River” campaign, the dam was completed in 1952 in China’s Henan Province. By the 1970s, thousands of dams had been built across China. Scientific studies warned that projects could raise Henan’s water tables over safe levels. More warnings were issued that deforestation and mining could further increase the danger of building yet more dams in an earthquake-prone zone already fraught with landslides. Committed to rapid economic growth, the government ignored the warnings.

Cracks appeared almost as soon as the reservoir began filling up. With Soviet help, the structure was reinforced and it was called the “Iron Dam” to assure everyone of its safety. Nevertheless,

“... [on Aug 5, 1975](#), a typhoon collided with a cold front over Henan and dropped the area’s average yearly rainfall in less than 24 hours. The 106 cm of rain that fell that day dwarfed the 30 cm daily limit the dam’s designers had anticipated. Witnesses said that the area was littered with birds that had been pummeled to death by the intense rainfall.”

“In an effort to mitigate downstream floods that were already severe, Banqiao was ordered not to fully open its sluice gates early in the storm. Then communication lines were knocked out, leaving operators guessing as to how the situation outside was unfolding. By the time the gates were fully opened, it was too late. Water was rising faster than it could escape.”

A hydrologist had recommended building 12 sluice gates (which let water flow out at the base of a dam), but only 5 went into the final design and they were partially blocked by silt. Collapse of the Banqiao unleashed a 50 km/hour tidal wave down the river that knocked out 62 additional dams. Entire villages were swept away within minutes. One survivor recalled “I didn’t know where I was – just floating around in the water, screams and cries ringing in my ears. Suddenly, all the voices died down, leaving me in deadly silence.”

During the six hours that water poured out of the reservoir 26,000 lives were lost. Those living downstream soon envied the dead. The same torrent that flooded the reservoirs also washed out roads and knocked out rescue communication systems. When the rescue teams finally arrived, they found people standing on rooftops, holding onto trees or stranded on bits of dry land. They had kept themselves alive by eating tree leaves, animal carcasses

that floated by or scavenged food that was often rotten. Hunger was joined by disease and summer heat.

For every person who died after the initial dam collapse, five more died from disease or plague. The total estimated death count was 171,000.

Perhaps the greatest tragedy of the Banqiao is that the same dynamics for economic growth that laid its foundations continue to flourish. In 2011, [Zhang Jinxuan, director of the Nujiang National Development and Reform Commission](#), spoke of China's growth: "We must proceed. The resources here are too good. Not to develop is not an option." China has thousands of dams at risk of breach, either because they are wearing out due to age or they are newer with poor construction.

China is hardly the only country which refuses to learn from Banqiao. Scientists still make recommendations that are ignored, either from a corporate desire to make more profits or from a bureaucratic state desire to expand its power. In the US, [24 of every 25 US dams are privately owned](#), with financial incentives to minimize repairs. Across the globe, more and more industrial plants full of toxic chemicals are located next to rivers, increasing potential hazards of flooding. Decision makers refuse to understand that climate crisis means that weather events which cause dam disasters are becoming more frequent and more extreme. They continue to build multiple dams on the same river. They seek to assure their citizens that past disasters were due to design problems and that "Generation Next" dams will be safe.

After thousands of years of warnings from philosophers and religious prophets that humanity can live prosperously by having less grandiose desires, political leaders insist that happiness flows from a fountain of possessions, which, in the 21st century, is a fountain of energy. The more power that leaders have over other people, the more power they seek over nature. Instead of trying to work with nature to strengthen local communities, they cling to technocratic ideologies that "bigger and more complicated" is better. If a previous dam broke, they fail to see the problem as the dam's existence – they insist that if the next dam is bigger, with more concrete and more electrical parts, then the river can be controlled.

Though efforts to subdue rivers have long caused problems, modern capitalism has transformed this pathological view to cultural psychopathy. Psychopathy reflects a lack of guilt or shame over the damage that one causes. A corporation is a social entity which is unable to feel guilt or shame for undermining the survivability of humans and millions of other life forms.

After thousands of years of disrupting natural water flow, which has been exponentially accelerated during recent decades, it is past time for humanity to restore rivers and streams while maintaining a high quality of life. This is why ["500 organizations from 85 countries"](#) call on governments, financiers and other institutions to keep large hydro-power projects out of their initiatives to address climate change."

A critical question addresses what would happen if the goal of eliminating fossil fuels usage within 10 years cannot be accomplished with solar and wind power. It is becoming increasingly obvious that the massive growth of solar/wind technology cannot expand at such an enormous rate in this time period, and, if it were seriously attempted, it would cause [disastrous ecological and human health problems](#). Though every source that provides

data on sources of energy assigns different percentages to each sector, a reasonable estimate is that in 2018, [global energy was supplied](#) by 85% fossil fuels, 7% hydro-power, 4% nuclear power and 4% solar and wind power. Hydro-electric power from dams and nuclear power are obviously next in line for huge increases in sources of energy if solar/wind cannot replace fossil fuels rapidly enough.

There is another option; but GND plans are silent on it. That option is called “energy conservation.” It includes using vastly less energy by having compact communities that require less transportation, smaller home space that requires less heating and cooling, less production of energy-absorbing gadgets designed to fall apart or go out of style and a shorter work week via manufacturing fewer non-necessities.

GND enthusiasts need to say which road they advocate traveling. Should we build more dams and nuclear plants even if that means sacrificing biodiversity and human health? Or, would it better to abandon the dream of infinite economic growth? Are GND proponents willing to consider the possibility that life would be better for all species, including humans, if corporations and governments are not allowed to increase energy production? If so, we might even save a few aquatic ecosystems.

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