

# Hydropower Development in China: A Golden Opportunity for Global Leadership

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China currently leads the world in rapid urbanization with more than 620 million people driving an economic growth rate in excess of 9 percent. The rapid growth of China's interior and its policy to renew/upgrade its energy production infrastructure provide ample opportunity to eradicate poverty while still making a substantial contribution to reduce climate change. However, to be successful China must develop a mix of renewable energy options that are truly green and sustainable in the long run. Large hydropower projects like Three Gorges dam are not good options to provide sustainable energy infrastructure for China or any other nation.

Some groups in China promise that hydropower will provide clean energy and alleviate climate change by averting fossil fuel use, but to pit rivers against fossil fuels is clearly a lose-lose proposition. The truth is that dams change the natural hydraulic function of rivers by destroying the natural flow regime and the result is a cascade of negative environmental impacts. The sudden seizure and storage of massive volumes of flowing water and sediments increases water quality degradation while decreasing fish populations and other valuable biodiversity at a time when global water and food supplies are already under immense pressure from increased demand.

Contrary to common belief, controlling flow regimes with dams does not provide a long-term solution to flooding or drought. Dams contribute to changes in regional hydrological cycles that combine with the more extreme patterns of weather associated with climate change, resulting in irregular episodes of flooding, drought, and mudslides. Still, advocates of large hydroelectric dam projects continue to perpetuate the myth of producing cheap, clean, renewable energy with little or no environmental and social costs. Experience indicates that the opposite is true. Dam projects around the globe have led to the loss of livelihoods of indigenous villagers, destruction of the fisheries that are an essential part of their culture and diets, and increased waterborne disease. Schistosomiasis, a waterborne disease in the Yangtze River watershed can increase following river impoundments, a fact chronicled in a poem written by Mao Tse-Tung published in the New York Times in 1971.

Why is it important for China to develop non-hydro options for energy? Because hydropower projects in China are both numerous and massive in scale. The Three Gorges Dam on the Yangtze impounds the longest river in Asia and the Xiaowan Dam on the Mekong rises an unbelievable 292 meters with a reservoir storage capacity equal to all Southeast Asian reservoirs combined. And the cascade of eight dams being built on the Lancang River will drastically change the Mekong River's natural flood-drought cycle and block the transport of sediment, affecting ecosystems and the livelihoods of millions living downstream in Burma, Thailand, Laos, Cambodia and Vietnam. Impacts to water levels and fisheries have already been recorded along the Thai-Lao border and downstream in Vietnam.

China is poised to take the lead and set an example in intelligent planning to provide sustainable and renewable energy options in support of its rapid economic and social development. But, the plan must be comprehensive and mimic good models like Strategic

Environmental Assessment (SEA); a process of appraisal through which both environmental protection and sustainable development are considered, and Integrated Water Resources Management (IWRM) an approach that combines and harmonizes key economic, social, and environmental factors in a planning and management framework.

To safeguard its rivers and their invaluable ecosystem services, China should insure that dam projects be selected using a basin-wide assessment of the river ecosystem with provisions to avoid significant impacts on threatened and endangered species. Before a decision is taken to build a new dam, outstanding social and environmental issues from existing dams should be addressed, and the benefits from existing projects should be maximized. Dam projects must provide for the release of environmental flows to help maintain healthy and productive downstream ecosystems. Dam projects should consider European Union and other effective global Environmental Impact Assessment (EIA) standards, and follow guidelines suggested by established expert groups like the World Commission on Dams (WCD) and International Rivers (IR) in Berkeley California, USA. These groups strongly recommend that cumulative environmental impacts of hydroelectric projects at any scale must be allotted high priority in the planning process.

China should also take full advantage of the fact that global technology is close to the tipping point where energy from solar will be competitive with fossil fuels and hydropower as well. A 2008 report from an Academy of Engineering panel in the USA predicts that we can reach solar grid parity in five years. Moving away from hydropower and towards renewable energy from a mix of decentralized options including solar, wind, and geothermal is China's best option for long-term sustainable development.

Finally, hydropower is only one source of energy for China and the world. The cheapest, cleanest and fastest solution is to invest in using energy more efficiently. Developing countries, which will account for 80% of global energy demand growth up to 2020, could cut their demand by more than half using existing technologies to improve energy efficiency, according to McKinsey Global Institute. "This would leave energy consumption some 22% lower than it would otherwise have been – an abatement equivalent to the entire energy consumption of China today," the institute states.

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**Received** February 01, 2011; **Accepted** February 04, 2011; **Published** February 07, 2011

**Citation:** Lanza GR (2011) Hydropower Development in China: A Golden Opportunity for Global Leadership. J Earth Sci Climat Change 1:101e. doi:10.4172/2157-7617.1000101e

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