

Sarawak Can Invest in or Give Away Its Future
We don't need to sacrifice our rivers to save our climate

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In October, the Intergovernmental Panel on Climate Change released a report outlining strategies the world can pursue to keep global warming below 1.5 degrees Celsius and maintain healthy economies and ecosystems. But unless we are smart about how we implement that blueprint, it could cause irreparable damage to the world's great rivers. This may sound like a luxury for the richest nations, but it is key to building prosperity in Malaysia and Sarawak.

The panel's report urges a rapid transition to low-carbon, renewable sources of electricity. That call to action could trigger expanded investment in hydropower, which is currently the world's main source for that kind of energy (70 percent as of 2017). But if that development follows the pattern of earlier dam-building, it could accelerate an alarming loss of rivers and their resources, including of the fish that feed hundreds of millions of people.

The Sarawak state government and the Malaysian federal government have proven their visionary foresight in acknowledging the environmental and social importance of rivers by cancelling the Baram Dam and the Telom Dam. This indicates that Malaysia is looking for different ways of meeting the growing energy demand without sacrificing their rivers. Future energy requirements can easily, *and more cheaply*, come from other projects. Arguments to build large dams are actually an effort to steal from current and future Malaysians.

Yet still there are claims that Sarawak and Malaysia can only prosper by building large dams. Must we sacrifice our rivers to save our climate? Even just a few years ago, that trade-off seemed unavoidable. With wind and solar power limited by their cost and variability, global hydropower was projected to nearly double by 2050. Massive dams were under construction or planned for many of the world's great rivers, including the Yangtze, Mekong, and most tributaries of the Amazon. Some governments used climate and renewable energy objectives to justify these projects, even as scientists quantified their impacts and affected communities and indigenous and environmental groups protested.

But we do not need to sacrifice rivers for zero-carbon energy. In the last two years, solar energy has rapidly become more economically viable due to technological improvements and to economies of scale in production and deployment. Whereas solar energy used to cost 20 cents or more per kilowatt-hour, new projects in Chile, Mexico, and Saudi Arabia have come in at one-tenth that cost.

In order for these technologies to offer reliable, round-the-clock electricity generation, there needs to be a way to store power when the the sun is shining and then deploy it when the wind dies down or the sun sets. Fortunately, the costs for storage technologies are plummeting as well, with the cost of lithium ion batteries, capable of grid-scale storage, [dropping](#) by about 90 percent over the past few years. New technologies are emerging as well. For example, a Chilean solar power plant that uses molten salt as storage recently [offered](#) to provide 24-hour baseload electricity at less than 5 cents per kWh. That is comparable to or cheaper than most hydropower and fossil fuel options. [Tesla](#) and [Google X](#), meanwhile, are pursuing "moonshot" solutions for storage technologies.

Also tipping the scales toward wind and solar is that hydropower dams have among the worst performance in [terms of delays and cost overruns](#), in part due to the conflict and controversy

surrounding them. Whereas some dams take a decade to complete, wind and solar power can be delivered through rapid, smaller-scale, and lower-risk projects that tend to engender far less conflict. An even cheaper option is to invest in energy efficiency and a smarter and more reliable grid.

Governments are taking note. Thailand earlier this year signaled that it would [delay](#) signing a power purchase agreement for Pak Beng, a 912-megawatt hydropower dam that Laos is planning for the Mekong. In announcing the delay, the country stated that it needed to revisit its energy strategy since other renewable sources, including wind and solar, were becoming increasingly viable. Thailand was slated to buy 90 percent of the dam's electricity, so its change of plans could spell the end of the project. In Guyana, meanwhile, rising cost estimates and delays for the Amaila Falls hydropower project led the government and financiers to [transfer](#) funding intended for the dam toward a 100-megawatt solar project.

The rapidly evolving renewable energy landscape doesn't mean an end to hydropower, but rather a shift in its role. Hydropower reservoirs are currently the dominant form of energy storage for grids, and although other forms of storage are improving, some dams will continue to provide critical storage services in the near future. Upgraded older dams and strategically planned new projects, [carefully located](#) to minimize environmental and social disruption, can emphasize energy storage to facilitate adding large [increments of wind](#) and solar into a grid.

Although it is now possible to build affordable, low-carbon wind and solar systems, they still face constraints, including political and social preferences for large infrastructure projects. Pak Beng may have been paused, but other dam projects on the Mekong and on other key rivers are moving forward.

It would be a great tragedy if the renewable revolution arrived just a few years too late to save the world's great rivers and the communities that depend on them. Market reforms and new financial mechanisms can accelerate the adoption of more sustainable energy systems, as can innovative science. For example, my [Renewable and Appropriate Energy Laboratory](#) at the University of California, Berkeley recently developed and is using an energy planning model for Laos. We found that investments in solar panels (backed up by existing hydropower) could meet that nation's objectives for selling electricity to neighbors—with greater returns and lower risks than the planned dams that threaten the Mekong's fish harvests and the viability of its delta.

These are the topics that I'm looking forward to discussing at the upcoming [Clean Energy Collaboration](#) in Kuching on March 15th and 16th, where government, civil society, community representatives, and businesses will come together to discuss a renewable energy pathways for Sarawak and Malaysia. There's no need to continue accepting tragic trade-offs between healthy rivers and low-cost, reliable, and renewable electricity. The renewable revolution provides an opportunity to have both. Governments, funders, developers, and scientists should seize it.

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