

New film explores trade-offs between food and hydropower in Cambodia

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A new, short film titled *Hydropower Impacts and Alternatives* was released in Cambodia this month, focusing on the potentially harmful effects and unintended consequences of the ongoing and future development of 42 dams in Cambodia's 3-S basin within the Greater Mekong River system. Recognizing the importance of hydropower to Cambodia's economic development, but also warning about threats to fisheries and food security for the country's people, the scientific community is using the film and the data within it to recommend a moratorium on the planned dams in the 3-S basin until a more thorough

impact assessment can be made and tradeoffs or consequences can be determined.

Produced by Conservation International (CI), this film was developed thanks to new data provided by the University of Canterbury in New Zealand. The filmmaker Allan Michaud has produced various documentaries on Cambodia's wildlife and conservation issues. The film highlights the role of the Sekong, Srepok, and Sesan (3-S) Rivers as the three most critical tributaries feeding into the Lower Mekong River. Collectively, they provide major routes for migrating fish and essential water and sediment flows to the downstream floodplains including those that nourish the Tonle Sap Lake, one of the most productive inland fisheries on the planet. The film also investigates the rapid hydropower development, and examines how this is altering the way the 3-S rivers deliver their ecosystem services to the people of this region.

The 15-minute film premiered at a recent screening event in Phnom Penh, before a large audience that included decision makers, representatives from various government ministries, local thought leaders, non-governmental organizations, and scientists, focusing discussions on the opportunities for sustainable hydropower and energy development within the 3-S basin.

One of the film's expert commentators, Dr. Tracy Farrell, of Conservation International's Greater Mekong program said of it, "This film clearly and visually articulates the critical importance of this river system for its energy provision potential, as well as the fish migration, sediment and water flows that nourish critical ecosystems and feed Cambodia's people."

Impacts on Food Security

The greatest concern highlighted within the film is the effect that future

dams will have on Cambodia's [food security](#). It notes that recent studies have predicted that the dams will wipe out a significant portion of fish migration into the Tonle Sap, and block 90% of sediment flows, important for delivering nutrients to the Tonle Sap and maintaining fertile soils for agriculture. This could directly and negatively impact the health, livelihoods, and food security of over 55,000 villagers from 16 ethnic minority groups in Cambodia's Ratanakiri and Stung Treng provinces, and millions of people further downstream that depend on the freshwater system's abundant fish populations and agriculture.

These findings are based on the research of Drs. Cochrane and Arias from the University of Canterbury, New Zealand, and Thanapon Piman, special advisor to the Mekong River Commission, who provided most of the data featured in the film. Most of their findings were published in November's issue of the *Journal of Water Resources Planning and Management*, in an article titled "Assessment of Flow Changes from Hydropower Development and Operations in Sre Kong, Se San and Sre Pok Rivers of the Mekong Basin."

Dr. Farrell added that Cochrane's, Arias' and Piman's research, "has highlighted the uniqueness and importance of 3-S rivers, and the potential serious negative effects the current plan could have. It has enabled us to tell a very compelling visual and verbal story based in scientific fact about eco-hydrology, transport of sediments, fisheries, and considerations for hydropower and alternative energy planning across the 3-S basin. We sincerely hope this information will empower and influence decision makers to consider alternatives that will have less impact on the ecosystem services on which millions depend."

Sustainable energy solutions

Bunra Seng, Director of Conservation International's Greater Mekong program in Cambodia made it clear that the organization does not

patently discourage the use of hydropower as part of the solution for Cambodia's development. Rather, he emphasized that it be informed by scientific and community impact assessments and data, to determine possible tradeoffs or alternatives.

"Most of Cambodia's people still lack reliable access to electricity (some 75-80%), and less than 10% of Cambodia's total installed capacity has been developed. Hydropower is a clean energy option, from a green house gas emissions standpoint, which is an important direction for Cambodia's energy development trajectory, as currently more than 80% of the Mekong region still relies on the use of green house gas emitting fossil fuels for energy."

The film highlights possible revisions to the planned dams which include: alternate placements further upstream and away from downstream fisheries; alternate placement of dams and reservoir operations to minimize disruption or change of natural flows, and the design of sediment release mechanisms to allow for greater passage of sediment and nutrients. Other options could include the design, testing and monitoring of different types of fish passages around dams, to ensure their continued ability to travel up or down stream.

Mr. Seng pointed out that the benefits of sustainable hydropower planning and development are not just ecological, but also economical. "Sedimentation issues reduce efficiencies in energy production, so careful consideration of the trade-off involved here must be made. This involves the damage incurred to the vital natural capital, which sustains the people of the wider region, to create the large reservoir needed for the 3-S river dams, against the true value to Cambodia's economy of the energy produced by these dams in the long-term.

Dr. Farrell added, "Conservation International is very enthusiastic about the opportunity to open a dialogue about hydropower and alternative

energy planning opportunities, that can allow for necessary growth and development, while ensuring food and water security and climate change resilience for Cambodia and its people."

More information: Piman, T., Cochrane, T., Arias, M., Green, A. and Dat, N. (2013) "Assessment of flow changes from hydropower development and operations in Sekong, Sesan and Srepok Rivers of the Mekong Basin. Journal of Water Resources Planning and Management." [dx.doi.org/10.1061/\(ASCE\)WR.1943-5452.0000286](https://doi.org/10.1061/(ASCE)WR.1943-5452.0000286)

Provided by Conservation International

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