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# Climate change adaptation compromised, Mekong Delta faces manmade disaster

By **Viet Anh** November 14, 2021 | 11:30 am GMT+7



A crane moves sand from a ship on the Mekong river in Hau Giang Province in Vietnam, December 19, 2018. Photo by Reuters



Anthropogenic drivers in the Mekong Delta will limit opportunities to adapt to climate change even as it dominates threats to the region in coming years, a new report warns.

The Mekong Delta has long historical experience of dealing with water- and climate-related factors which can threaten agricultural production and livelihoods.

However, the increasing impacts of climate change and anthropogenic activities challenge the sustainability of existing approaches, and call for new adaptation and mitigation measures, according to the "Climate Change in Vietnam: Impacts and Adaptation" report which sought to assess the socio-economic impacts of climate change in Vietnam by 2050.

Vietnam's Mekong Delta is the third largest delta on earth, and currently home to 17 million people, whose livelihoods depend mainly on agricultural and aquacultural production. The region supplies more than half of Vietnam's rice production, 90 percent of which is exported, and is thus crucial for both national and international food security.

The report said the delta is already under pressure, which leaves local people with a limited window of opportunity for adaptation.

"The Mekong Delta is subject to various drivers of change, of which anthropogenic drivers, namely hydropower dams, sand mining and groundwater extractions, pose the greatest threats in this first half of the century," Etienne Espagne, a senior economist with the French Development Agency (AFD) who led the study, said at a press briefing this week.

First among the major challenges facing the delta is the pressure on water resources from rapid urbanization and intensified food production. For example, within the aquaculture sector, demand for quality fresh/brackish water has significantly increased in the past decades. Groundwater extraction has been growing rapidly, with a five-fold increase over the last 20 years. Current extracted volume is 2.5 million m<sup>3</sup> per day, with an annual increase of 4 percent.

Groundwater over-extraction is the main driver of land subsidence in the delta (as high as 5 cm a year in some places), which is not currently compensated by new sediment deposits. As a result, the delta is experiencing rapid elevation loss.



In the coming decades, the relative sea level rise will predominantly be determined by the amount of subsidence, which for a large part depends on groundwater extraction. Should the rate of extraction remain at present-day levels, the average cumulative subsidence could be over 80 cm by 2100, which, combined with global sea level rise and lack of sedimentation on the floodplains, would cause the majority of the delta to fall below sea level, the report forecasts.

Total sediment transported by the Mekong River was estimated at nearly 160 million tonnes per year, but recent estimates show a 40-90 percent reduction in fluvial sediment supply to the Mekong Delta due to sediment trapping by upstream dams. This presents the second major challenge.

In addition, current sand mining within the delta is estimated at 40–50 million tonnes per year, which, when added to sand mining in Cambodia and Laos, is likely to represent over 100 percent of the remaining total fluvial sediment supply.

The most important impact of sediment starvation is the high erosion rates of riverbed levels (10–15 cm/year) in the delta, which have triggered tidal amplification in the range of nearly two cm per year.

Anthropogenic riverbed level incision will remain the main driver of salinization of the region and, depending on future rates of sand mining, could increase the extension of land impacted by saline water intrusions by an additional 25 percent by 2050, according to the report.

The increase in saline water intrusion during the dry season observed over the last decades is also strongly driven by the declining freshwater supply from the Tonle Sap Lake, which is itself caused predominantly by mainstream hydropower development.

### **Additional uncertainty**

The research team, including Vietnamese experts, stress that the delta is strongly influenced by the water governance of the whole Mekong basin, or lack thereof.



They say climate change adds a layer of uncertainty to the already complex water management problems. The current regional structure of governance and management for transboundary resources in the Mekong region is made up of a web of organizations, including different partners inside and outside the region.

"This scattered institutional architecture still needs to be fully aligned with the mitigation and adaptation objectives of the Paris Agreement, while acknowledging the full scope of local anthropogenic environmental dynamics," the report says.

It notes that the current rate of global sea level rise is nearly 3.3 mm per year, and is projected to accelerate during the 21st century. Depending on the climate scenario, the total projected rise ranges from 43 cm to 84 cm by the end of the century, but large uncertainties remain and higher values cannot be ruled out.

The Mekong Delta has an extremely low-lying delta plain, with an average elevation of approximately 80 cm, the report said, estimating that nearly 30 percent of the region could find itself at elevations below sea level with a relative sea level rise of 50 cm.

The Basin Development Strategy 2021–2030 of the Mekong River Commission recently called for "proactive regional planning". Such planning could play an integrative role, via joint mitigation investment projects and adaptation measures between different countries, actors, and sectors under the general principle that water is a basic need and right of every Mekong inhabitant. This would potentially transform Mekong water into a common pool resource.

Espagne chose to remain optimistic amid a bleak scenario, saying the good news was that humans could take actions to limit negative impacts in the Mekong Delta. The Vietnamese government is aware of the situation and has been issuing legal frameworks for responses, he noted.

"The matter now is how to bring them into reality."



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When they dredge canals in HCMC or the Saigon River, remember to bring those mud to the Mekong Delta to fill up areas vulnerable to subsidence and sea-level flooding.



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