

WATER AND VULNERABILITY IN FRAGILE SOCIETIES (WATVUL)

Consortium Leader: Anja Nygren,

Sub-project Leader: Matti Kummu,

Reaserchers: Alexander Horton, Mira Käkönen, Anu Lounela,

International partners:

Miguel Díaz, Sokchhay Heng, Edith Kauffer, Dora Ramos, Hugo Rodríguez, Pujo Semedi, Try Thuon



Environmental disasters have become more devastating in the midst of climate change. The loss of human life and economic assets due to coastal and inland flooding represent two major climate-related risks in the global South. While these adversities are often understood as natural disasters, we argue that **radically new approaches are needed to explore water-related disasters, and people's vulnerability to them, as complex environmental-social processes.** This is of outmost importance as the way these adversities, and people's vulnerability to them, are approached influence how response efforts are implemented.

This project will create novel ways to link biophysical and sociopolitical processes in water vulnerabilities in: 1) Mekong River basin in Cambodia; 2) Kalimantan in Indonesia; and 3) Grijalva River basin in Mexico. The project examines how socially differentiated vulnerabilities are embedded in multi-scale resource politics. Simultaneously, hydrological models and hydroclimatic analyses of the cascading effects of climate change, resource extraction and water management explore the sensitivity of local hydrological regimes to anthropogenic change. Ethnographic research will enable a thorough understanding of how people experience environmental-social changes.

The data consist of: 1) social data, including qualitative interview and participant observation data gathered through ethnographic research; and 2) quantitative hydro-climatic, land cover and soil-type data collected from spatial datasets. Our transdisciplinary research will enable path-breaking integration of sociopolitical analyses of water governance and human vulnerability with hydrological models and water assessments, an. in this way provide academically and policy-relevant insights

into sustainable water governance, in line with the Agenda 2030 Sustainable Development Goals.

This Consortium project is led by Anja Nygren, Professor in Development Studies, University of Helsinki, Finland, with a subproject A: *Water, governance and the politics of vulnerabilization.* The Subproject B: *Assessing the future changes in fragile floodplains,* is led by Matti Kummu, Assistant Professor of Water and Development at Aalto University, Finland. The research is based on close cooperation with researchers at the Royal University of Phnom Penh and the Cambodian Institute for Technology (ITC) in Cambodia; the University of Gadjah Mada in Indonesia, and Centro de Investigaciones y Estudios Superiores en Antropología Social (CIECAS) and Colegio de la Frontera Sur (ECOSUR) in Mexico.

MAIN PUBLICATIONS

- Nygren A & Wayessa G 2018. At the intersections of multiple marginalizations: Displacements and environmental justice in Mexico and Ethiopia. *Environmental Sociology* 4(1): 148-161.
- Nygren A 2018. Inequality and interconnectivity: Urban spaces of justice in Mexico. *Geoforum* 89: 145-154. <http://dx.doi.org/10.1016/j.geoforum.2017.06.015>
- Käkönen, M. and Thuon, T. 2018. Overlapping zones of exclusion: carbon markets, corporate hydropower enclaves and timber extraction in Cambodia, *The Journal of Peasant Studies*, DOI: 10.1080/03066150.2018.1474875
- Liu J, Yang H, Gosling S N, Kummu M, Flörke M, Pfister S, Hanasaki N, et al. 2017. Water scarcity assessments in the past, present, and future. *Earth's Future* 5: 545-559. Doi: 10.1002/2016EF000518
- Räsänen T A, Someth P, Lauri H, Koponen J, Sarkkula J and Kummu M. 2017. Observed river discharge changes due to hydropower operations in the Upper Mekong Basin. *Journal of Hydrology* 545: 28-41. Doi: 10.1016/j.jhydrol.2016.12.023
- Lounela A, 2017. Continuity and Change in Central Kalimantan: Climate Change, Monetization of Nature, and its Bearing on Value Orientations. In: C. Arenz et al. (eds.) *Continuity under Change in Dayak societies.* Springer VS.

