

Climate change not the main cause for increase in flood risk in flood prone areas

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Flooding in Bangkok, 2011. Credit: SasilssolutionsShutterstock.com

Worldwide economic losses from river flooding could increase 20-fold by the end of the 21st century if no further actions on flood risk reduction are taken. Over 70% of this increase can be attributed to

economic growth in flood prone areas.

The study was published today by a Dutch research team in *Nature Climate Change*, and gives an overview of river flood risk all over the world until the end of the 21st century.

Dr. Hessel Winsemius (Deltares): 'Our conclusions show that besides keeping global warming well below 2 degrees Celsius target, as negotiated during the COP21 meeting to reduce adverse effects of climate change, a lot of future risk can be prevented by spatial planning and flood resilient building in the rapidly growing economies in flood-prone regions.'

How economic growth affects flood risk

River flood risk is on the one hand caused by flood events, occurring with a certain frequency and severity; and on the other by the exposure of people and economy to these events. Whilst the frequency and severity of flood events is impacted by climate change, the exposed people and economy may grow as well, resulting in more assets and economic production located in harm's way. The Dutch research team specifically paid attention to the fact that economic growth not only causes increase in risk, it also results in a better ability to cope with these events. Therefore, the researchers investigated in particular where economic growth is disproportionally large in flood prone areas and how this affects risk, relative to a country's Gross Domestic Product.

Dr. Philip Ward (Free University Amsterdam): 'The study shows that we need to continue developing innovative strategies to reduce risk, not only focusing on climate change, but focusing on all drivers of risk.'

Large increase of flood risk in South-East Asia (factor six)

The patterns are different for individual world regions. Earlier studies already showed that climate change scenarios show a clear and robust signal that South East Asia will face a large increase in risk due to climate change. This new research shows that climate change impacts are dwarfed by the effects of economic growth in flood-prone regions, and that these two drivers may compound to an increase in economic risk of a factor six in South-East Asia.

This is after correction for the economic growth in the area. In many African countries, when accounting for differences in growth between flood prone and non-flood prone areas, climate change is the main driver of risk increases. In many European basins and in North and South America, impacts of economic growth and [climate change](#) compound to relatively small changes in river flood risk.

The Dutch research team was also responsible for the tool 'Aqueduct Global Flood Analyzer'. In this tool, made in collaboration with the World Resources Institute, global river [flood risk](#) (until 2030) was made visible for the general public. Aqueduct is presently being extended with risk analysis for coastal flooding, and analysis of the feasibility and effectiveness of risk reducing measures.

More information: Hessel C. Winsemius et al. Global drivers of future river flood risk, *Nature Climate Change* (2015). [DOI: 10.1038/nclimate2893](#)

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