

# MITIGATING HYDROMETEOROLOGICAL HAZARD IMPACTS THROUGH IMPROVED TRANSBOUNDARY RIVER MANAGEMENT IN THE CILIWUNG RIVER BASIN



Website  
[www.resilientciliwung.com](http://www.resilientciliwung.com)

University of  
**HUDDERSFIELD**  
Inspiring global professionals

## ● Nature of the problem

- The Ciliwung River is one of thirteen rivers that flows into Indonesia's capital city Jakarta, where flooding occurs on an annual basis.
- The Ciliwung River is transboundary in that it passes through two provinces and four municipalities. Basin-wide management can be a challenge in transboundary basins, where coordination between different administrations can be difficult, and where approaches to flood management may not be joined up. This can pose a problem for the effective management of flooding in the basin.
- It is acknowledged that to successfully address the flood problem a more holistic and integrated approach to flood management is required.
- This study investigates how governance arrangements within the Ciliwung Basin can be improved to tackle the flood problem in Jakarta more effectively.



Residents being evacuated during severe flooding in Jakarta, 1<sup>st</sup> January 2020. This flood event as one of the most severe on record (SOPA Images Limited/Alamy Stock Photo).



The Ciliwung River as it approaches the centre of Jakarta, as viewed from Jatinegara District. The area is highly urbanised and the river itself has undergone significant structural management (REUTERS/Alamy Stock Photo)

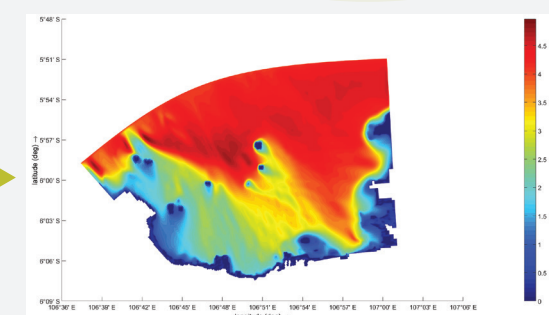
## ● How did the research address the problem?

- Coastal conditions in Jakarta Bay under various storm scenarios were modelled to understand the potential impacts of coastal flooding, both now, and under climate change.
- A hydrological model for the Ciliwung downstream was developed and used to evaluate urban flood risk.
- A conceptual framework for flood impact mitigation through transboundary river management was developed.
- Desk studies of transboundary river management in Indonesia, Europe and the UK were conducted to inform governance investigations.
- Interviews and focus group discussions were conducted with basin stakeholders to investigate current transboundary governance arrangements.
- Basin stakeholders have been engaged throughout the project to ensure that impactful solutions will be realised. A stakeholder dialogue event will be held to foster dialogue between actors and the final results will be presented to stakeholders for feedback.

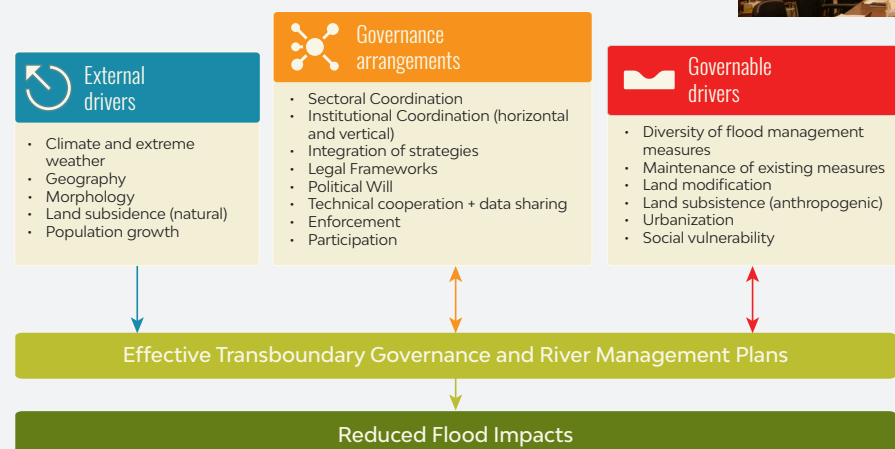


Focus group discussion held with basin stakeholders, September 2019

Example output from the coastal model showing significant wave heights in Jakarta Bay (Credit: Dr. William Bennett, Swansea University).



Map showing area of the river basin (blue), the two provinces (West Java dark grey) and DKI Jakarta (light grey) and the four municipalities that are crossed by the Ciliwung Basin.



The conceptual framework for flood impact mitigation through transboundary river management.



Research team visit to Mat Peci, a community group in the Ciliwung Basin, March 2019.

## ● Outcomes

The outputs and outcomes of the project include:

- An improved urban flood risk model for Jakarta and the downstream Ciliwung.
- A vision paper providing key findings and recommendations for improved transboundary river governance in the Ciliwung Basin.
- A briefing paper for flood mitigation in transboundary basins, applicable to other urban transboundary basins elsewhere.
- Through engagement the project will strengthen the knowledge and awareness of decision makers and foster greater dialogue between actors in the basin.
- The research will contribute to an improved understanding of how transboundary governance can be improved to mitigate flood impacts and will provide a model for the governance of urban transboundary basins elsewhere.

## ● Partners



### Project team

- Global Disaster Resilience Centre, University of Huddersfield, UK
- College of Engineering, Swansea University, UK
- Department of Regional and Urban Planning, Institute of Technology Bandung, Indonesia.
- School of Meteorology, Climatology and Geophysics (STMKG), Indonesia.

### Partners:

#### National level:

- BMKG (Indonesian Agency for Meteorology, Climatology and Geophysics)
- BNPB (National Disaster Management Agency)
- BAPPENAS (National Planning and Development Agency, Directorate of Irrigation and Water Infrastructure)

#### Provincial level:

- BBWS CC (Ciliwung and Cisadane River Watershed Authority)
- BPBD (Disaster Management Office of West Java Province)
- Dinas Tata Ruang dan Cipta Karya (Department of Building, Spatial Planning and Land Affairs, Jakarta Province).

## ● Contact information

Global Disaster Resilience Centre,  
School of Applied Sciences, University of Huddersfield

### Principal investigators

● Professor Richard Haigh  
[r.haigh@hud.ac.uk](mailto:r.haigh@hud.ac.uk)

● Professor Dilanthi Amaratunga  
[d.amaratunga@hud.ac.uk](mailto:d.amaratunga@hud.ac.uk)

### Researcher

● Georgina Clegg  
[g.clegg@hud.ac.uk](mailto:g.clegg@hud.ac.uk)

## Funded by

This work was supported by the Natural Environment Research Council (Project Reference: NE/S003282/1), the Economic & Social Research Council, Newton Fund and Ministry of Research and Technology / National Agency for Research and Innovation (RISTEK-BRIN).

