ASSESSING AND MANAGING FLOOD RISK:

A Shared Knowledge Agenda – UK and Malaysia

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Knowledge Agenda

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A lack of shared understanding of the current flood risk framework slows progress in its management.

Effective flood risk management relies upon a shared understanding of flood risk components and what is and is not acceptable. It enables a more strategic and systematic management of flood risk at different levels, from high (national and policy-related) to a more detailed level (scheme appraisal) of assessment.

A shared understanding of the scientific approaches and the current state-of-the art also enables a more comprehensive analysis of flood risk, including consideration of external drivers of change (e.g., climate change).

Recommendations

The establishment of a framework of flood risk assessment containing a hierarchy of objectives that reflect multiple decision levels.

Flood risk is managed at multiple levels – from the national scale to individual households. Frequent knowledge exchange that translates into practices and guidelines formation in Malaysia would help to establish a shared understanding of flood risk and the actions needed to manage it (at different levels.

A shared understanding helps to bring more solid decisions and helps to improve ways in which flood can be managed.

Examples

- In the UK, 'Climate Change Act 2008' requires the Government to publish a Climate Change Risk Assessment (CCRA) every five years that provides assessment of current and future flood risks.

- The third UK Climate Change Risk Assessment (CCRA3) was published in 2022 This includes projections of future flood risk using the recognized framework of flood risk assessment developed in 2020.

Challenges

A lack of clarity and confidence around supporting data makes sharing and reuse difficult.

The value of locally managed data, such as hydrological and surveyed flood damages, could be enhanced through the use of transparent scientific information (e.g., rainfall data quality check, rating curve parameters, model fit performance). Such information could result in a greater number of scientific studies related to the data (e.g., prediction, design floods, etc.), and would benefit both operational and strategic decisions related to flood hazard, risk and adaptation.

Recommendations

A shared system to manage key data for flood risk assessment and a standardised application process for inputting required scientific information and metadata.

Maintain and, where necessary enhance, quality control and open access to standards, methods, and guidelines to provide better-support for decision-making in flood risk management.

Examples

- The knowledge gained in the present (FIAS) project concerning improved understanding of river survey data and its use will be shared with the local authority.
- Similarly flood impact and damage information obtained from the local surveys undertaken by the FIAS project team can be used to enhance the reliability of flood damage model representation and estimation.
- In the UK, the National River Flow Archive (NRFA), provides the UK's official record of river flow data: https://nrfa.ceh.ac.uk/

Challenges "

Limited public funds require an optimal investment allocation to reduce flood risk and protect the Malaysian people.

A fixed return period that relies upon a protection standard has been loosely categorised and may not be the most cost-beneficial solution for the nation.

Recommendations

Share understanding of expected annual damage in flood risk assessments and include cost-benefit analysis in decision support tools.

A shared understanding of a flood risk framework and associated expected annual damages are the cornerstone to cost-benefit analysis. However impacts on ecosystems and issues of justice and fairness are also key considerations.

Strategic plans and economic investments to manage floods need to take welfare impacts into consideration.

Examples

- For flood risk interventions at both local and national scales, investment decisions need to consider both the benefits that the nation will gain AND the economic cost of flood alleviation measures.

- This includes Expected Annual Damage but also issues of social vulnerability (such as the Neighbourhoods Flood Vulnerability Index (NFVI) used in the UK, Sayers et al., 2017) to ensure planned actions reduce risk for the most vulnerable.

Challenges

The current national approach to strategically manage floods only loosely includes vulnerability-based social justice principles.

Efforts to reduce flood risk and investment allocations tend to focus on structural pursuits and neglect the social dimensions.

There is a need for greater understanding of the impact of flood damage on different socio-economic groups to better-support people during flood events.

Recommendations

Openly adopt a strategic flood management approach that accounts for societal impacts in investment planning and decision making.

Explicit consideration of human impacts and socio-economic backgrounds will uphold social justice principles. An integrated database of information, tailored to the needs of protecting social justice could help assist investment decisions.

Examples

- From site-specific and building-level flood damage surveys conducted in the FIAS study, it was found that people with less income are more exposed and vulnerable to floods, and they experience the highest total aggregated economic damage.
- In the UK, the NFVI is used to understand the hotspots of social disadvantage and asses the systemic disadvantage in the national flood risk profile.

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