

Improving the effectiveness of impact-based weather warnings in South East Asia: An investigation of impact perceptions

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- Impact-based forecasting (IBF) is a challenge: different hazards and impacts are qualitatively distinct.
- How can one easily or straightforwardly integrate such information?
- How do people compare the impact of danger to human life with that of damage to property, for example?

Research Questions

1. Which components best explain impact perceptions?
2. What are the differences in perceptions of each impact?
3. How do forecasters and users perceive the risk of impacts?

Method

Participants

- **Forecasters** from meteorological organisations in Indonesia (BMKG), the Philippines (PAGASA) and Malaysia (Met Malaysia).
- **Stakeholders** such as disaster managers, those from civil protection agencies and emergency services, to be identified in collaboration with in-country partners.

Questionnaire

- Based on the psychometric paradigm (Fischhoff et al., 1978; Fox-Glassman & Weber, 2016; Slovic, 1987).
- Nine impact categories with examples, presented in the context of one hazard, selected by in-country partners.
- Rate on a series of 10 characteristics, identified from current impact tables (e.g., duration/scale) and previous research focusing on hazard impacts (e.g., Axelrod et al., 1999; Fernandez et al., 2018; McDaniels et al., 1995, 1997). Plus additional 'overall risk perception' rating.

Planned Analyses

Principal Components Analysis (PCA) – conducted twice, once for each participant group's ratings.

Multiple Regression – examine which characteristics predict overall impact perceptions, and whether these systematically differ by participant group.

Green: No severe hydrometeorological hazard expected

Yellow: Be aware

Orange: Be prepared

Red: Take action

Likelihood	High	Green	Yellow	Orange	Red
	Medium	Green	Yellow	Orange	Orange
	Low	Green	Green	Yellow	Orange
	Very Low	Green	Green	Yellow	Yellow
		Minimal	Minor	Significant	Severe
		Impact			

Example item:

Physical/psychological harm or ill health (e.g., danger to life – fast flowing streams/deep water; widespread incidents of communicable diseases) from heavy rainfall

How destructive is this impact?
(No destructive effects to Complete destruction)

Please rate the duration of this impact
(Short term to Long term)

How worried are you when you think about this impact?
(Not worried at all to Extremely worried)

How many people will be affected by this impact?
(Very few people to Great number of people)

Please rate the scope of this impact in terms of the size of the area affected
(Small isolated effects to Widespread effects [countrywide])

How seriously do you think this impact may harm human health?
(Not seriously at all to Extremely seriously)

How likely is it that this impact will harm human health?
(Not likely at all to Extremely likely)

To what degree are people able to control the effects of this impact, for instance by taking mitigative action?
(Not at all able to Completely able)

To what degree can this impact be predicted?
(Not at all predictable to Very predictable)

How immediate is this impact, in terms of how soon its effects may be experienced.
(Experienced immediately – Experienced far in the future)

Implications

- Greater understanding of interpretations of impacts and decision processes behind IBF.
- Develop guidance for effective communication between forecasters and stakeholders.

References

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