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Best Practice Guidance for Flood Risk Communication

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1. Introduction

This final report distils some best practice recommendations for risk communication from the research conducted as part of the KULTURisk project. The report begins by identifying four general cross-cutting recommendations emerging from the research before turning to make some more specific recommendations about risk communication in the particular domains of early warning, looked at as part of WP2 and 5, and flood risk mapping, which was a focus for WPs 3-5.

2. Clarifying the aims of risk communication

As highlighted in D5.1, risk communication can serve a number of different purposes, underwritten by a number of different and in many ways competing models of 'good' risk communication. It is important for risk communicators to be clear about what they hope to achieve by communicating about risk, because these aims have important implications for the audiences they need to engage with, the messages that should be communicated, and the best methods and media for doing so. For example, if the aim is to ensure the democratic legitimacy for some risk management policy, this will require a different kind of risk communication strategy, involving different participants, channels, and exchanges, than one whose aim is merely to collect new facts from one group to inform the risk assessment being undertaken by somebody else.

3. Risk communication and appetites for uncertainty

KULTURisk research explored the effectiveness of different ways of visualizing uncertainties in the specific contexts of probabilistic early warnings (D5.3) and flood risk mapping (D5.4). In both domains of risk communication it highlighted the potential for different reduced form visualizations, such as traffic light models or cartographic shading, to increase the attention paid by recipients to uncertainty information.

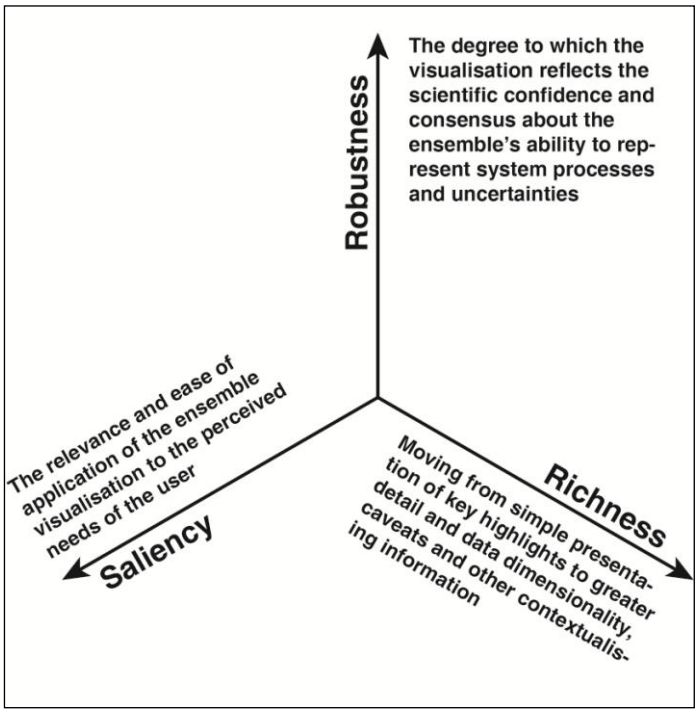
At the same time, KULTURisk case studies also highlighted the crucial importance of user appetites in determining whether and how such uncertainty information is actually used to inform risk management. Communicating technical uncertainty information to users also has the political effect of shifting in the institutional liability for decisions taken in the face of uncertainty, from the risk communicator onto the message recipient, and this transfer of institutional liability was not always welcomed. Concerns about the communication of uncertainty information were greatest in Napoleonic code countries with highly legalistic standards of public safety where risk managers tended to feel a strong professional responsibility to provide an iron-clad deterministic promises of security, rather than some probabilistic estimates of the likelihood of error.

Rather than necessarily improving decision-making, KULTURisk research highlighted that the communication of uncertainty information can sometimes make it worse, particularly in institutional environments where failure is not tolerated and so blame management becomes a major driver of risk management decision making. In any event, the first order scientific uncertainties about whether or not a flood will occur comprise only part of the wider 'decision' uncertainties faced by those charged with flood risk management. They must also consider questions such as how the warnings they issue will subsequently be interpreted and what will happen if they are wrong. By making those first order scientific uncertainties more explicit, risk communication can sometimes

complicate the second order decision uncertainties they are supposed to clarify. These findings about the wider institutional politics of communicating risk information underscore the need highlighted above for clarity about the aims of risk communication, so that risk communication improves, rather than complicates risk management.

4. Acknowledging trade-offs in design of risk communication

Risk communication can be understood as involving three distinct properties: richness (amount of information communicated), robustness (the fidelity of the EP and the degree to which this is communicated), and saliency (interpretability and usefulness of the communication to a particular user). These may be viewed as a 3-dimensional space in which the location of any given communication method depends on both design choices made and the limitations of the underlying risk information being communicated.



These three dimensions of communication are interlinked and often in tension. As research outlined in D5.3 and D5.4 showed very clearly, some users may demand increases in informational richness (e.g. a full probability distribution rather than a range) that impact the ability of others to understand or use the information. Likewise concerns with robustness (e.g. limitations and ambiguities of the EP) might require reduced informational richness, given that highly contested or incomplete predictions should not be communicated with unwarranted precision. Such alterations in richness, in turn, also affect perceptions of saliency, potentially decreasing it for users who want access to particular predictions, or increasing it for those who prefer simple, unambiguous results.

These tensions in the design properties of risk communication point to the potential value of participation to clarify user understanding of and preferences for risk communication designs.

5. The problems and prospects of participation

KULTURisk research highlighted both the problems and the prospects of participation, which was put in practice in a number of different ways in different KULTURisk case studies. Theoretically, D5.1 showed the difficulties that can arise from programmatic requirements of the Floods Directive for participation without fully specifying the reasons for doing so. If the aim of participation is to crowd-source new facts, then it follows that participation should be restricted to those with appropriate information to deliver, whereas if the purpose is build trust or secure the democratic warrant and legitimacy risk maps or the management plans they are to inform then participation must be

organized in some different ways to serve those different purposes, which require dialogue with different groups about different things.

Several KULTURisk case studies demonstrated the potential value, at the design phase, of participation by prospective users to help risk communicators optimize the design of early warnings and risk maps. KULTURisk findings about the value of participation in building public trust were more ambiguous. Whereas in the Sihl case study, participatory engagement seems to have succeeded in building public trust, in Carlisle engaging with citizen groups to explore with them the uncertainty of flood risk maps seems to have increased their mistrust in flood management authorities. While these differing outcomes may reflect differences in the design of the participatory exercise or national differences in levels of public trust in authority, it is clear from the KULTURisk project that participation is not a magic bullet, and that engaging with public is not, by itself, enough to foster a culture of risk prevention.

6. Best practices in early warning communication

Beyond those general lessons, which apply to all aspects of risk communication, the KULTURisk project also identified some specific best practice recommendations for the realm of early warnings. In particular it highlighted the potential value of traffic light models, such as those used in France and the UK, for increasing the perceived saliency of severe weather warnings.

KULTURisk research also highlighted the enormous value of the UK's Public Weather Service advisors, who add value to the official severe weather and flood warnings by providing additional, highly trusted and easy to understand information about the timing, location, character and impacts on particular local services of impending weather events. In addition to their direct contributions to the deliberations of emergency responders the involvement of PWS advisors in LRF planning, exercising, and other activities was also seen as critical to building up the personal relationships crucial to effective operation in actual emergencies. Other member states should consider following the lead of the UK Met Office in employing dedicated weather advisors to serve as 'knowledge brokers' helping to communicate hydrometeorological risk information to the emergency response community

7. Best practice in flood risk mapping

In the domain of flood risk mapping, KULTURisk research highlighted the importance of ensuring the flood maps are tailored to their particular purposes. In several KULTURisk case studies, flood mapping is not closely coupled to land use regulation, spatial planning, or the prioritization of flood defence investment. For risk maps to serve their purpose of encouraging risk prevention, it is important that mapping is tied to standard setting and policy implementation. For communicating with the public, as well as informing land use regulation, it is important to communicate the residual risk of flood defence failures to combat the 'levee effect' whereby residents are lulled into a false sense of security, encouraged more intensive and less resilient uses of vulnerable flood plains are encouraged, leading, ultimately, to much higher losses in the event those defences are overtopped or otherwise fail.