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Introduction to the special issue on rethinking participatory processes: the case of landslide risk in Nocera Inferiore

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1 Introduction

This Special Issue documents one of the first public participatory processes to address landslide risk in Europe, together with the contributing scientific risk analyses and decision tools. The three-year participatory process was novel in that it engaged citizens and experts in the co-production of landslide risk mitigation options for Nocera Inferiore in southern Italy. *The main difference in this case, compared with other analytic–deliberative processes, was its explicit elicitation and structuring of multiple stakeholder worldviews (or perspectives) on the nature of the problem and its solution, building on the theory of plural rationality.* The role of experts also departed from conventional practice. As described in this interdisciplinary issue, the expert support, which included quantitative risk analysis and cost–benefit analysis, took account of plural stakeholder perspectives in the design of policy options. A final feature was the process itself. Instead of working toward a consensus, requiring agreement on the problem and its “best” solution, the process was designed to forge a compromise, recognizing that there are multiple problem frames and “best” solutions. In the end, the process yielded compromise recommendations, most prominently featuring an early warning system combined with natural engineering measures.

In departing from more traditional landslide decision practices, the authors confronted difficult challenges: supporting the process with probability-based landslide risk estimates given data restrictions and large uncertainties; communicating risk to stakeholders and providing them cost–benefit and other decision support tools; eliciting public and stakeholder views and preferences and designing participatory tools that could form the basis for

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a brokered compromise; and, finally, understanding the complex institutional and political landscape of landslide policy making in Italy. These challenges were tackled by an interdisciplinary team of scientists, who worked together to design and support a unique and successful participatory process in Nocera Inferiore. As such, this volume should be of interest to geotechnical engineers and scientists, policy analysts and practitioners in providing tools for the design of stakeholder participation for managing landslides and other hazards throughout the world. The research was supported by the European Community's Seventh Framework Programme through the grant to the SafeLand Project (<http://www.safeland-fp7.eu/Introduction.html>).

2 Background

As early as 1966, the US National Research Council recommended an analytic–deliberative process that combines stakeholder dialog and expert analysis for the purpose of enhancing the science–policy interface in risk management (Stern and Fineberg 1996). In 1992, the Rio Declaration (UNCED 1996) called for stakeholder participation in environmental issues, a recommendation that was subsequently followed by the Hyogo Framework for Action 2005–2015 (UNISDR 2005) and most recently by the European Union Floods and Water Directives (2000/60/EC; 2007/60/EC).

In response, decision support tools and policy analyses have proliferated, in the literature and in practice, with important applications to stakeholder-led policy processes (Renn 2008; Rowe and Frewer 2004; Webler et al. 2001; Linnerooth-Bayer et al. 2006). The application of methods and tools to support participatory processes is, however, not straightforward. Unlike single decision-maker procedures, multi-actor settings are not as well suited for multi-criteria and other types of decision aids. As we show in this volume, *stakeholders often have multiple frames of “what the problem is” and “how it can be solved”, and these differences are manifest in strongly opposing worldviews and interests.* Particularly with contentious and complex policy issues, or those characterized by a contested policy terrain, this leads to disagreements on the usability of expert evidence and analyses (Thompson et al. 1998; Ney 2009; Verweij et al. 2006).

However, this does not mean that analysts cannot provide useable knowledge to participatory processes. The authors in this issue demonstrate how traditional analyses can be adapted to a multi-stakeholder setting by tailoring them to reflect the different and contending worldviews and values of the stakeholders, which, in turn, are elicited by extensive interviews, focus groups and questionnaires with residents. The novelty of our approach is that experts assist the stakeholder deliberations with tailored policy options that correspond with the plural views and frames of the landslide problem and mitigation measures. *Consensus*, if defined as reaching a common agreement on the “best” solution, is replaced by *compromise*, which recognizes that, while there is no one best solution, a “clumsy” way forward is possible. The authors show how analytical tools can be designed and used to promote policy compromise.

The setting for the analytical participatory process is Nocera Inferiore in southern Italy, which lies at the foot of the landslide-prone Mount Albino. The community experienced a landslide in 2005 causing three deaths and extensive property damage. Three years later a risk mitigation investment project, prepared by outside experts, was rejected by the Municipal Council with support from many citizens and local associations. This sort of expert-led policy “solution” typifies most public investment projects aimed at reducing

landslide risk, and its failure in Nocera Inferiore signals the need for more inclusive and transparent landslide policy processes.

The participatory process in Nocera Inferiore (2012–2014) involved 18 residents, and the wider community through a dedicated Web site and an online forum for discussion. Experts from the University of Salerno, and elsewhere, accompanied the three-year process, interacting with the citizens and preparing analyses that not only involved complicated technical issues, but also reflected the multiple perspectives on the landslide policy problem. The process was carried out with support from the European Union integrated project, *Living with landslide risk in Europe: assessment, effects of global change, and risk management strategies* (SafeLand). To our knowledge, this is the first documented public participation procedure for landslide risk management in Europe. It led to concrete recommendations to the authorities for mitigating the risks in Nocera Inferiore, and perhaps more importantly, to active engagement of the community in risk management.

3 The contributions

Landslide policy in Europe, and elsewhere, has traditionally been the domain of experts working in tandem with public authorities and, as such, has been framed as a technical and economic rather than a social and political issue. In their paper titled *The co-production of risk from a natural hazards perspective: science and policy interaction for landslide risk management in Italy*, Anna Scolobig and Mark Pelling focus on the need to bridge the gap between technical solutions and the sociopolitical contexts in which these are produced, to better understand and create more effective risk management regimes. They examine several examples of science–policy co-production in the history of Italian landslide risk management, such as the water–soil integrated approach, landslide risk and vulnerability assessment and their implementation. The results make clear that the insulation of science from the institutional context within which knowledge is produced and used often hinders the implementation of desirable policies and undermines the effectiveness of interventions.

This was the case in Nocera Inferiore, where decisions about landslide risk mitigation entered a “contested terrain”, where worldviews and interests competed for influence in managing the risk, moving from the technical/economic to the social realm. As stakeholder interactions showed, those determined to make safety a first priority (e.g., with concreted structural measures) competed with those who saw the careful stewardship of the mountain as taking precedence (e.g., with natural engineering measures), and other voices were determined to make safety a matter of personal choice (e.g., with warning systems and insurance).

As with many other contested risk policy terrains, notably controversies over genetically modified organisms or nuclear power plants, it is essential to design a policy decision process that is considered both competent and fair by the stakeholders. In other words, risk governance becomes key for social acceptance. In her paper titled *Stakeholder perspectives on barriers to landslide risk governance*, Anna Scolobig explores the challenges for landslide risk governance in Nocera Inferiore and throughout Italy. The research is based on a documentary analysis, 43 semi-structured interviews and a questionnaire submitted to 373 residents. The results revealed important challenges to effective landslide risk governance, including the fragmented and changing landscape of responsible authorities, political instability, conflict between public and private property rights, the extent and scope of illegal building, and the residents’ lack of knowledge about risk assessment and

emergency planning. An important step in addressing these challenges was taken in Nocera Inferiore, where citizens actively engaged with experts in discussing all aspects of landslide risk and its management in their community.

The public opposition to and eventual rejection of a risk mitigation investment project prepared by outside experts—the contested policy terrain—was the starting point of the paper titled *Compromise not consensus: a participatory process for landslide risk mitigation* by Anna Scolobig, JoAnne Linnerooth-Bayer and Michael Thompson. The authors report on the design and implementation of a stakeholder process to reconcile the competing stakeholder views. The deliberative process engaged citizens and experts in the co-production of landslide risk mitigation options during a series of meetings with selected residents and parallel activities open to the public. The process concluded with concrete recommendations for allocating a €7 million budget to mitigate the risks. Rather than eliciting preferences using decision analytical methods, this process built on research (interviews and public questionnaire) demonstrating a limited number of socially constructed perspectives of the problem and its solution, which proved effective in structuring participants' views and arriving at a compromise recommendation on measures for reducing landslide risk. As emphasized by the authors, the distinction between compromise and consensus (the latter requiring participants to change their views) proved crucial for reaching a joint policy recommendation.

As input to this process, experts (entering into a new role) interactively developed mitigation options that complied to the plural perspectives elicited in the preprocess research. In so doing, experts and stakeholders worked together to co-produce useable knowledge, a process which is radically different from the traditional role of experts providing policy makers with technical solutions for protecting communities and infrastructures from landslide. This innovative, interactive role of experts is described in the paper titled *Expert engagement in participatory processes: translating stakeholder discourses into policy options* by JoAnne Linnerooth-Bayer, Anna Scolobig, Settimio Ferlisi, Leonardo Cascini and Michael Thompson. The expert engagement began with the elicitation of three distinctly different discourses reflecting the heterogeneous views of the community: “safety first” with emphasis on a mix of active and passive structural measures; “careful stewardship of the mountain” requiring (mainly) natural measures like a belt of trees to actively stop the landslide, and “rational choice” with emphasis on the opportunity costs of all measures and the need for informed individual choice, for instance, in the construction of homes. Experts creatively produced three technical options that reflected these distinct views and at the same time complied with Italian law requiring a high degree of safety in public landslide investments. The measures ranged from structural storage basins that passively block the path of the landslide, rills and forestation that actively prevent landslides, and warning systems that reduce the consequences. The options were discussed and refined by participants and experts in the deliberative process (participants were divided into like-minded groups to refine their specific policy paths) until they adequately reflected the “contested terrain.” This served as the basis for negotiating a compromise. The provision of multiple co-produced policy options enhanced stakeholder deliberation by respecting legitimate differences in values and worldviews.

Behind the scenes, researchers in the SafeLand project were examining the risks to Nocera Inferiore and policies for reducing them. To begin, the mitigation measures depended on a thorough investigation of the Mount Albino slopes and the risks of slides. In their paper, *Quantitative risk analysis for hyperconcentrated flows in Nocera Inferiore*, Leonardo Cascini, Settimio Ferlisi and G. De Chiara apply state-of-the-art methodology to carry out a quantitative risk analysis for landslides threatening the community. The

methodological approach included two main steps: hazard analysis—based on historical incident data and a digital terrain model that incorporated input data from in situ investigations and laboratory tests—and consequence analysis—based on data on exposed persons and their vulnerability. This was the first QRA application to hyper-concentrated flows in Italy, and it became the technical basis for generating mitigation options for deliberation in the Nocera Inferiore public participatory process.

During the course of deliberations, it became clear that the €7 million budget was insufficient to fully mitigate the risks on the Mount Albino slopes; therefore, prioritizing the protection measures taking into account their benefits in terms of reducing risk to life and property and their costs was unavoidable. Cost–benefit analysis was most appreciated by those participants identifying with the narrative on rational choice; still, most participants requested information on the costs and benefits of the three policy options. This was provided by Harikrishna Narasimhan, Settimio Ferlisi, Leonardo Cascini, Giovanna De Chiara and Michael Faber in their paper titled *A cost–benefit analysis of mitigation options for optimal management of risks posed by flow-like phenomena*. Since the risk to life was foremost on the participants’ concerns, and because the analysis showed that the benefits from public safety dominated those from reduced property damage (indeed, taking account only of property losses, none of the three options demonstrated a positive benefit–cost ratio), the analysis focused largely on developing an approach for quantifying the societal value of reducing the statistical risk to individuals from rainfall-induced flow-like phenomena including hyper-concentrated flows, debris flows and landslides on the Mount Albino slopes: what the authors refer to as life safety risk assessment. This methodology formed the basis for a quantitative cost–benefit analysis carried out for each of three mitigation options. The results highlight the significance of public safety compared with the economic benefits provided by the risk mitigation options. Whereas the “safety first” mitigation package demonstrates a slightly higher benefit–cost ratio, when an effective warning system is taken into account, the ratios showed little differentiation.

4 The lessons from Nocera Inferiore

Many lessons emerged from this three-year process, not least the largely unexploited potential to democratize landslide risk management, which was shown by the enthusiasm and dedication of the selected participants and the whole community. While the technicalities of charting a path for risk reduction measures, such as probabilistic risk analysis and the assessment of the efficacy of such technical interventions as decanting basins, erosion control rims and other technologies, can be viewed as limiting the terrain for public involvement, the process demonstrated the opposite. The citizens, aided by a multidisciplinary team of researchers, were capable and willing to work through technical documents and interact with experts in discussing the intricacies of the policy options.

Another lesson that is emphasized in this volume is the importance of respecting diverse views of the landslide problem and its solution. The message throughout the process was the necessity to hear all the voices in the debate rather than converging on a “best” solution from an economic, technical or social perspective. As this and other previous participatory processes have shown, it is possible to achieve a compromise without dismissing any of the citizen voices. As the creative engagement of experts in Nocera Inferiore proved, it is also possible to engage multiple types of expertise in support of the

heterogeneous public concerns in order to co-produce risk mitigation options that are based on “non-expert” discourses and perspectives.

The possibility for engaging the public outside the necessarily limited participation in the process was another lesson from Nocera Inferiore. Among several online and off-line outreach activities, a Web site posting the questions to be considered at each closed participatory meeting, where all residents could send their responses, proved valuable in informing and legitimizing the process.

The fieldwork in Nocera Inferiore also shows how our best chances for innovation, in research and policy, reside in integration and collaboration. Without the support and dedication of the residents of Nocera Inferiore, this research would not have been possible. Special thanks go to the technical municipal officers and environmental councilor, 43 stakeholders who devoted their precious time to the interviews and focus groups, 18 residents engaged in the participatory process, volunteers of the seven local associations that provided help to collect the questionnaires, and 373 survey respondents.

Finally, while the citizens reached an expert-informed set of recommended mitigation measures for the Mount Albino slopes, they have not to date (2015) been implemented. This implementation is in progress, and it shows that public participation is not a panacea for the public authorities to implement actions to reduce landslide risk; yet, the citizens of Nocera Inferiore continue to actively engage in this process, and in so doing, they are changing the way risks are managed and governed in their community. The authors in this volume hope that the experience of Nocera Inferiore can inform and enable further engagements of citizens and experts in the range of risk management policy issues emerging on political agendas across the world.

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