

A Gender-sensitive Analysis of Natural Disasters - The Case of St. Lorenzen in Austria

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ABSTRACT

In this paper, we present a gender-sensitive analysis of a natural disaster from a planning perspective, illustrated by a debris flow in Styria, Austria, in 2012. The introduced findings were based on twenty semi-structured interviews with the residents considering the cycle of integrated risk management. The gender-sensitive research design identified various aspects that can enhance or decrease the capacity and vulnerability on the individual level. The gender-sensitive analysis showed that the vulnerabilities and capacities of people vary during the different phases of the risk cycle (prevention, coping, recovery). The ability to cope with natural hazards and risks varies highly, and this variability can only be revealed and be understood differentiated by a gender+ approach. At the same time, socio-economic factors and age of the community members have to be taken into account. Further research is needed to analyse and integrate gender+ specific needs and capacities in the field of disaster risk management effectively.

KEYWORDS

gender-specific approaches; natural hazard; capacities; Disaster Risk Management; vulnerability

INTRODUCTION

Social vulnerability can be defined as “the characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard” (Wisner et al., 2004, p. 11). These social aspects are paramount for understanding different behaviour in dealing with natural hazards and include the socio-economic status of a given community and their members, as well as age structure, and - often neglected - aspects of gender. Surveys in the context of development cooperation (Bradshaw, 2015; JERA & eS4W, 2012; UNISDR et al., 2009) and recent research (e.g. Bacanovic, 2015; Chávez Rodríguez, 2013; Damyanovic et al., 2014; LeMasson, 2013) demonstrate that the consequences of natural disasters are not gender-neutral and need to be considered to reduce vulnerability effectively.

In the context of natural hazards in alpine regions, the gender+ approach has so far only been applied in the research project GIAclim (Damyanovic et al., 2014) and in a Master's thesis (Weber, 2015). Both analyses dealt with the major debris flow of 2012 in St. Lorenzen/ Austria. They indicate further discussions and research questions for a deeper understanding

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of gender+ aspects in the disaster risk management in a European context. Damyanovic et al. (2014) and Weber (2015) designed their research as a case study. That entails that they provide insight into people's experience with natural hazards and challenges in daily life from a particular area. However, case studies allow for collecting and investigating "contemporary phenomena in depth with real-life context" (Yin, 2009, p. 240) and contribute to the cumulative development of knowledge.

The main research question of this paper is:

How does the social context, including aspects of gender+ (gender, age, socio-economic status) influence the individual behaviour of people within the cycle of integrated risk management?

The authors embarked on answering this research question through a case study on the debris flow in July 2012 in St. Lorenzen in Paltental (district Trieben, provincial state of Styria in Austria), a village of ca. 300 permanent residents. St. Lorenzen is situated on an alluvial fan that was formed by the river Lorenzerbach. The Lorenzerbach is defined as a bedload carrying torrent. The actual hazard zone map (adopted in 2009) indicates that most of the residential zones of St. Lorenzen are situated in hazard-prone areas, which were also flooded during this event (see Figure 1). Intense precipitation events between June and August 2012 triggered the debris flow in St. Lorenzen. Numerous buildings were destroyed. The debris flow, was rated as an extreme event due to its magnitude and high amount and level of debris.

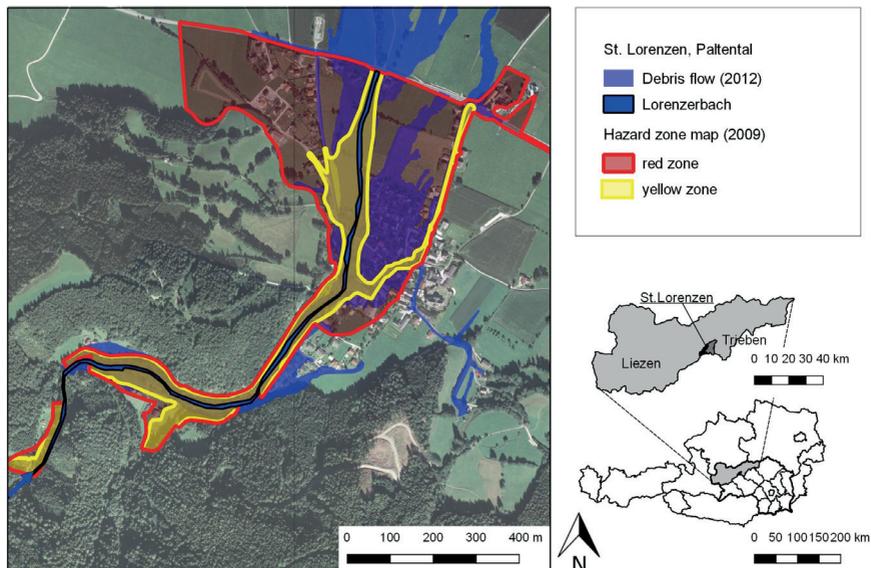


Figure 1: Location of the case study, the hazard zone map of 2009 and the debris flow 2012, source: BEV (2014), Weber (2015).

THEORETICAL FRAMEWORK

GENDER+ AND VULNERABILITY

The equation $\text{Disaster Risk} = \text{Hazard} \times \text{Vulnerability}$ underlines the duality of a natural (or human-induced) phenomenon and the concept of vulnerability (LeMasson, 2013). This structural view, which is regarded as a dominant view in vulnerability research (Hufschmidt, 2011), reflects the social, economic, cultural, and political context people live in and their everyday living conditions, which are embedded in socially constructed modes of living (Fordham, 1999). A gender-specific conception of “risk” includes the assumption that “gender-based differences and inequalities have a strong negative or positive effect on the vulnerability and capacities of people exposed to hazards” (UNISDR et al., 2009). Consequently, the research design of this case study is based on the premise that specific sets of inequalities (class, race/ethnicity, sexual orientation and gender) need to be addressed to highlight the differentiated character and dynamics of inequalities, as indicated in Verloo (2006). The concept of intersectionality aims to reveal how gender-inequalities are connected to other structural inequalities. These structural inequalities have an impact on livelihoods of people and affect their everyday lives and capacities to cope with natural hazards. A livelihood consists of different bundles of resources or assets (both material and social resources) that are needed to support everyday lives. This perspective suggests that households with a larger bundle of assets will be more resilient to a hazard than a relatively asset-less household (FAO, 2008). In the context of livelihoods, gender+ is understood as a structural category which effects the everyday life situation and the power-relations between women and men (Hofmeister et al., 2013). In this research it is used as an analytic tool to understand the gender dimension in the risk perception of natural hazards.

METHODOLOGICAL APPROACH TO THE CASE STUDY

The diversity of methods applied in this case study reflects this concept of vulnerability and the interdisciplinary approach that has become standard in studies on disaster (e.g. Mercer et al., 2010). A set of methods was used to evaluate coping capacities and vulnerabilities of affected community members, following the aim to propose the implementation of gender+ in planning strategies. The research design consisted of spatial surveys, semi-structured interviews and document analyses.

The method of semi-structured interviews was chosen in order to allow new ideas and individual points of view to be brought up during the interview as a result of what the interviewee says. The interview guideline (Damyanovic et al., 2014; Weber, 2015) was structured along the cycle of integrated risk management (BABS, 2013). This framework is used frequently in hazard and risk assessments to describe an ideal sequence of phases in dealing with natural hazards. The interview guideline included questions concerning knowledge and information about emergency provisions and prevention before, and after the hazard event. The affected community members were asked how they experienced the event and how they prepared for intervention. In addition, they were asked how they communicated after the debris flow and

organised reconstruction work in terms of the assignment of roles between women and men. The interviewees were contacted mainly through door-to-door requests or word-of-mouth recommendations (snowball sampling). To ensure anonymity, the interviewees were grouped according to their age in ten annual steps (30-39 years; here 30+). The sample of 20 residents (men 60%: 3x 30+, 1x 40+, 3x 50+, 4x 60+, 1x 80+; women 40%: 1x 30+, 3x 50+, 3x 60+, 1x 70+) (Weber, 2015) was selected with the aim of high variability concerning socio-economic characteristics and severity of losses due to the debris flow, respectively location in the hazard zone. The interviews (duration: 1 to 2 hours average) were analysed chronologically along the cycle of integrated risk management using qualitative content analysis (Mayring, 2007).

FINDINGS OF THE CASE STUDY

The findings of the case study are structured along the risk cycle: preparedness, response, recovery.

PHASE OF PREPAREDNESS

St. Lorenzen and its surroundings have been affected by hazard events in the past. Before the debris flow occurred in 2012, five interviewees (25%) had own experiences in coping with hazard events, gained within their paid and voluntary work (3 men 2x 30+, 60+) and own experience (2 women 50+, 70+). For men, this experience within work offers them basic knowledge of how to respond during emergencies, rescue and evacuation. Furthermore, close ties to the local fire brigade offered them advantages in getting information at first hand (during the entire risk cycle).

Almost all interviewees know the existence of the hazard zone plan which is provided by the Austrian Service for Torrent and Avalanche Control, a federal institution of the Federal Republic of Austria. More in-depth knowledge of the specific location and type of hazard zones was available concerning their own property. But still, four interviewees (20%) (3 men 30+, 40+, 60+; woman 60+) were not aware that their property was located in a hazard zone before the purchase of land or moving into the house, although a hazard zone plan existed since 1978.

There is no specific knowledge of an emergency plan for St. Lorenzen. Two persons (10%, 2 men 30+, 40+) mentioned that they know about risk management in general, like the planning of an evacuation and organisations responsible, as they are active members of the local fire brigade.

PHASE OF RESPONSE

Women initiated individual preparations for themselves and other family members, like sleeping in the upper floor, packing of belongings and documents needed in case of evacuation measurements in advance (3 women 30+, 50+, 60+). During the phase of response, women (4 women 2x 30+, 60+, 70+) were responsible for preparing the evacuation (coordinating children and family, assembling goods). Undertaking preparations for intervention,

men were exposed to risky situations. Men (belonging to every age group) reported of clearing the channel from woody debris and stones to enable the runoff or installing protection measures on private property. These results show similarities to e.g. Pfister (2009) where a gender-specific division of tasks was observed too.

The elderly (70+, 80+) were vulnerable at the phase of evacuation, because they were dependent on external help (local fire brigade and Red Cross) due to constricted agility and mobility. These results confirm similar findings of Birkmann et al. (2012) and Bacanovic (2015). More than half of the interviewed women (63%) described the evacuation in detail, as it affected them emotionally (similar to findings of Paech, 2013). One woman (50+) described the risky self-evacuation as traumatising.

Similar to the phase of prevention, men (all age groups) and one woman (50+) were exposed to hazardous situations, as they went out to maintain protective measures (similar as in Bacanovic, 2015) or to help family members living in the neighbourhood. This high exposure lasted, because 20% of the interviewed men (30+, 2x 50+, 60+) refused to follow evacuation orders and stayed in the destroyed area to guard their devastated homes and care for the animals.

Women (5 out of 8 - 63%) were seeking information at the evacuation centre, whereas men were told to be actively communicating (8 out of 12 – 66%) with the rescue service (similar to Bacanovic, 2015) and the local fire brigade.

PHASE OF RECOVERY

In this study, the elderly (60+, 70+, 80+) had minor problems financing reconstruction measures. Still, some households had to use most of their savings (men 50+, 80+), severance indemnity (man 50+), or even take out a loan (man, woman 50+) to finance building materials in advance. Financial support was organised for most of the persons affected. Not every interviewee could deal with the end of the application deadline. Elderly women (70+) and men (80+) needed help to fill in the applications. One young family (30+) was confronted with other vicissitudes of lives that slowed down their decision whether to stay in St. Lorenzen or not and applying for financial support, leading to lack of financial support. Answering questions about the division of labour during the phase of recovery, 25% (3 men 2x 30+, 80+; women 50+, 60+) mentioned a stereotypical division of labour (similar to Chávez Rodríguez, 2013) where men did physical and women did care and subsistence work (IRP et al., 2010).

Women followed up paid work sooner than men (with one exception, man 30+ – who felt the need to earn money) (similar findings in JERA & eS4W, 2012). Either they took a few days off (woman 60+), couldn't get any unpaid leave (50+) or worked in own business (60+). This increased pressure added to the wearing situation of recovery, e.g. for a woman (50+) who was traumatised, suffered from insomnia, but had to go to work. On the contrast, men applied for leave of absence (either paid or unpaid) from their occupation to help with reconstruction works.

PHASE OF PREPAREDNESS (AFTER THE HAZARD EVENT)

Women (5 out of 8-63%) said they were concerned about possible risks, although edificial preventive structures had been built soon after the debris flow occurred. Whereas men (8 out of 12-66%) said they felt save. Only women (3 out of 8: 30+, 50+, 80+) are prepared for (eventually) recurring events, e.g. emergency package of belongings in the upper floor. Private protective measures include reinforced concrete walls to protect the property of the inundated area from future damages, expressing security needs. There were no gender-specific differences found concerning the degree or realization of protective measurements, which was rather determined by legal allowances.

DISCUSSION

The results highlight that a gender+-sensitive approach leads to a more differentiated and detailed knowledge about risk perception, coping capacities and vulnerability. First of all the results of the interviews show that women and men, according to their age and socio-economic situation have different abilities to cope with and deal with natural hazards. Along the phases of the cycle of integrated risk management (see Figure 2). The findings indicate that the characteristics of local social relations, relationships with emergency services, and the type of housing and age profile of residents are playing an important role in terms of the capacities (Walker et al., 2006, p. 778). The findings highlight the need for a gender- and group-specific approach in the analysis of risk perception (Fleischhauer et al., 2012) as the survey revealed that men and women, young and old behaved and reacted differently according to their role and responsibilities in the family and community. It also revealed group- and gender-specific capacities that should be taken into account in DRR.

Some studies (JERA & eS4W, 2012; Paech, 2013; Bacanovic, 2015) deal with gender-specific aspects of natural hazards within industrialised countries, but especially in the Alpine regions empirical studies are rare (Weber 2015). The gender-specific approach as discussed and applied in the planning disciplines and in sustainability science since the 1970ties (Hofmeister et al., 2013) can be taken as an example for integrating gender as an analytic category in DRR. Furthermore, gender understood as epistemological category contributes to a critical discussion of (feminist) methodologies and methods in sciences, engineering sciences and planning sciences (e.g. Fox Keller, 1986; Althoff et al., 2001; Hofmeister et al., 2013).

CONCLUSION

In the conclusion, we summarize aspects of a gender-sensitive approach in DRR that need to be developed further, especially in the context of Alpine regions.

To support people's livelihoods and strengthen their capacities through a gender-sensitive planning processes and natural hazards management, the entire risk cycle has to be taken into account. The integration of more comprehensive gender-sensitive surveys and sex and gender disaggregated data (see also in JERA & eS4W, 2012) would be necessary to gain deeper knowledge about gender-specific needs. However, the results of this case study indicate possible hinges for a gender-sensitive DRR and management of natural hazards:

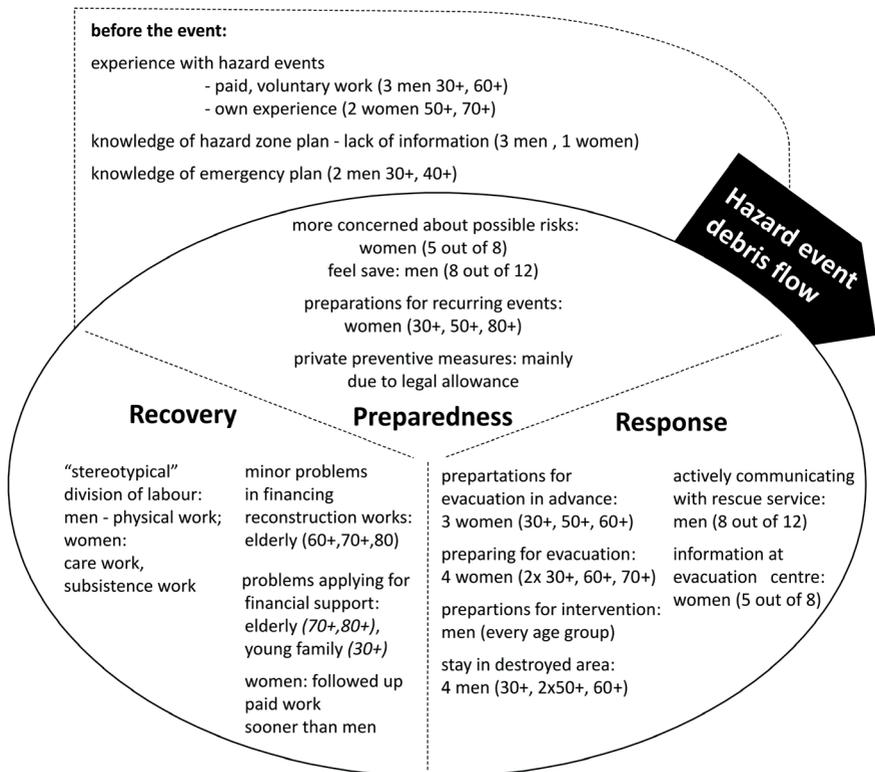


Figure 2: Findings from the semi-structured interviews, organised along the phases of the risk cycle.

The members of the community have local knowledge, their specific experience and competences with regard to hazards, which are of great value for an efficient and fair DRR. Gender+ aspects need to be considered in all phases and at all scales of planning and communication processes concerning natural hazards (Damyanovic et al., 2014; Fuchs et al., forthcoming). The findings of this paper highlight starting points for supporting coping capacities. First of all, gender-specific data (on a local level) should be integrated in emergency plans in order to identify high priority areas in case of emergency (Weber, 2015). The identified lack of information about emergency provisions and prevention measures (hazard map included), should be tackled, using gender-specific information materials and participation on all levels and in all phases (Fleischhauer et al., 2012). As women do not have as much experience with emergency situations as man, due to rare participation in the local fire brigade, increased participation of women in trainings should be encouraged (also suggested in Bacanovic, 2015).

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