

Publizierbarer Endbericht

Gilt für Studien aus der Programmlinie Forschung

A) Projektdaten

Allgemeines zum Projekt	
Kurztitel:	CCCapMig
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Allgemeines zum Projekt	
(inkl. Bundesland):	P2: Bundesanstalt für Agrarwirtschaft und Bergbauernfragen (BAB), Vienna
Schlagwörter:	Disaster risk reduction, risk communication, natural hazards, people with migration background
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B) Projektübersicht

1 Kurzfassung

Durch die Auswirkungen des Klimawandels ist im alpinen Raum mit einer Verschiebung der saisonalen Niederschlagsverteilung sowie der Zunahme von klimabedingten Extremereignissen zu rechnen (Gobiet et al. 2014; Blöschl et al. 2017; APCC 2014). Vor diesem Hintergrund gilt es, den Schutz der Bevölkerung vor Naturgefahren an diese neuen Herausforderungen anzupassen. Die Schadensanfälligkeit der exponierten Bevölkerung hängt stark von ihrer Verletzlichkeit (Vulnerabilität) sowie ihrer Widerstandsfähigkeit (Resilienz) gegenüber eintretenden Ereignissen ab (IPCC 2012). Dabei haben beispielsweise verschiedene Charakteristika von Bevölkerungsgruppen – wie Geschlecht, Alter, sozio-demographischem Hintergrund, Herkunft, Bildung – Einfluss auf unterschiedliche Anpassungskapazitäten an den Klimawandel und den Umgang mit Naturgefahren.

Das ACRP Projekt CCCapMig „Climate change and capacity building for people with migration background in Austria“ widmet sich einer bestimmten Zielgruppe und erforscht die Risikowahrnehmung und das Wissen von Menschen mit Migrationshintergrund¹ über den Klimawandel und Extremwetterereignisse in Österreich. Es wird davon ausgegangen, dass zielgruppenadäquate Risikokommunikation und -information notwendig ist, um das Risikobewusstsein und die Aktivitäten zur Eigenvorsorge zu stärken (Wachinger et al. 2013). Unter anderem, da im Sinne eines umfassenden integralen Risikomanagements der privaten Eigenvorsorge und dem Objektschutz ein wichtiger Stellenwert zugeschrieben wird (FOCP 2014). Ziel des Projektes CCCapMig war es demnach, zielgruppen-orientierte Maßnahmen und Empfehlungen für Personen mit Migrationshintergrund sowie für neu Zugezogene zu entwickeln.

Im Rahmen der Katastrophenvorsorge (Disaster Risk Reduction, DRR) bewerten Menschen Informationen unterschiedlich und ergreifen Maßnahmen zu verschiedenen Themen (UNISDR 2017). Es ist allgemein anerkannt, dass Menschen, die bereits auf die eine oder andere Art und Weise sozial benachteiligt sind z.B. über weniger finanzielle Mittel verfügen, gegenüber Naturgefahren und deren negative Folgen besonders gefährdet sind (Tapsell et al. 2010). Einige Schlüsselaspekte sozialer Faktoren können die Variabilität von Auswirkungen durch Naturgefahren erklären (soziale Vulnerabilität) (Cutter et al. 2003; Flanagan et al. 2011; Rufat et al. 2015). Diese Faktoren sind unter anderem der sozioökonomische Status (Einkommen, Wohlstand, Beruf und Bildung) und demographische Faktoren (Alter, Geschlecht, Ethnizität, Familienstruktur und Sprachkompetenz). Auch Menschen mit Migrationshintergrund wird eine

¹ Im vorliegenden Projekt zählen zu Menschen mit Migrationshintergrund jene, deren beider Elternteile außerhalb Österreichs geboren wurden und inkludieren sowohl jene Personen aus der ersten und zweiten Generation.

spezifische Verletzlichkeit gegenüber den Folgen von Naturgefahren zugeschrieben (Wisner et al. 2004). Die Argumentation erfolgt in der Regel entlang einer defizit-orientierten Perspektive. Menschen mit Migrationshintergrund gelten als stärker armutsgefährdet (BMASK 2013; APCC 2014) und haben schwächere Finanzkapazitäten, was zu geringer Anpassungsfähigkeit und fehlendem Kapital für Investitionen in Anpassungsmaßnahmen führen kann (Prettenthaler et al. 2008). Das Risikobewusstsein für Klimawandel und Naturgefahren wird im Vergleich zu anderen nicht-natürlichen "Alltagsbedrohungen" und täglichen wirtschaftlichen, sozialen, politischen und ökologischen Belastungen als gering eingeschätzt (Działek et al. 2013). Aus Studien anderer europäischer Länder ist bekannt, dass sprachliche Probleme das Verständnis für wichtige Informationen in Notsituationen (Martens et al. 2009) behindern können und die Teilnahme von Personen an Beteiligungs- und Aushandlungsprozessen aus sozioökonomischen Gruppen mit niedrigerem Bildungsniveau, die gleichsam zu den am stärksten von Überschwemmungen bedrohten Bevölkerungsgruppen gehören (Burningham et al. 2008; Twigger-Ross et al. 2014), erschweren. Allerdings ist es erst das Zusammenspiel mehrerer Faktoren, das zu erhöhter Vulnerabilität beiträgt (Rufat et al. 2015; Damyanovic et al. 2014).

Im Rahmen des Projekts "CCCapMig" wurden die Risikowahrnehmung, die Bewältigungskapazitäten und den Stand der Vorsorge von Menschen mit Migrationshintergrund im Kontext von Naturgefahren, insbesondere in Hinblick auf die Auswirkungen bei Hochwasser und Starkregenereignissen, erforscht. Diese Studie zielte darauf ab, die zu Grunde liegenden Herausforderungen und Kapazitäten von Menschen mit Migrationshintergrund in Österreich vor, während und nach dem Eintreten eines Naturgefahren-Ereignisses zu untersuchen. Zwei Fallstudienregionen in Österreich wurden ausgewählt, in denen eine hohe Exposition gegenüber Naturgefahren, historische Hochwasserereignisse und eine lange Tradition der Arbeitsmigration zusammenfallen: das Triestingtal in Niederösterreich und die Region Steyr-Kirchdorf in Oberösterreich. Das Projekt folgte einem interdisziplinären Ansatz, der sozial- und raumwissenschaftliche Methoden kombinierte. Kurze Fragebögen und semi-strukturierte Interviews mit BewohnerInnen in Gefahren- und Risikozonen, detaillierte Familienbefragungen und Fokusgruppendifkussionen (mit ExpertInnen) wurden mit einer landschafts- und freiraumplanerischen Analyse der gebauten Umwelt und Maßnahmen zur Eigenvorsorge gegenüber Naturgefahren kombiniert. Darüber hinaus wurden ExpertInneninterviews mit AkteurInnen des Katastrophenrisikomanagements (Gemeinde, Feuerwehr, Katastrophenschutz) und mit Organisationen und Vereinen, die vorwiegend mit Menschen mit Migrationshintergrund arbeiten, durchgeführt. Ergänzt wurde die Forschung durch eine Analyse aktueller Mechanismen zur Risikokommunikation, z. B. Kommunikation zum Restrisiko auf Webseiten, Veranstaltungen, und einer Zusammenschau aktueller Rechtsinstrumente, z. B. Gefahren- und Risikokarten, Flächenwidmungsplan, Bauordnungen, sowie einer Analyse soziodemografischer Daten zur sozialen

Vulnerabilität (Cutter et al. 2003; Flanagan et al. 2011). Der theoretische Rahmen für das Forschungsdesign wurde zu Beginn des Projekts entwickelt und kombinierte die Protection-Motivation Theory nach Grothmann und Reusswig (2006) mit dem Sustainable Livelihoods Framework for Disaster Risk Management (FAO 2008).

Die Analyse der empirischen Erhebungen zeigte die Vielfalt innerhalb der Gruppe von Menschen mit Migrationshintergrund und dass Ethnizität oft nicht der vorherrschende Faktor ist, der die Vulnerabilität bestimmt. Alter, Geschlecht, Bildungsstand, wirtschaftliche Kapazitäten und Sozialkapital spielten eine wichtige Rolle bei der Fähigkeit, sich von früheren Ereignissen zu erholen und sich auch auf zukünftige Ereignisse vorzubereiten. Fehlende Sprachkenntnisse oder deren Mangel stellten nicht in allen Phasen des integralen Risikokreislaufes (FOCP 2014) ein Hindernis dar, jedoch wurde in den Interviews Beispiele genannt, in denen in der akuten Phase eines Ereignisses oft Familienmitglieder oder NachbarInnen wichtige Inhalte übersetzen mussten. Hingegen erschwerten in der Präventionsphase, nach Angabe der ExpertInnen, geringe Deutschkenntnisse das Verständnis für Anpassungsmaßnahmen an privaten Haushalten. Auch die Teilnahme an kommunalen Entscheidungsprozessen und die Mitarbeit in Organisationen im Zusammenhang mit der Katastrophenvorsorge ist, nach Erhebung der Interviews, eher gering bei Menschen mit Migrationshintergrund.

Darüber hinaus wurde die Wiederholung eines ähnlich verheerenden Ereignisses wie dem „Jahrhunderthochwasser 2002“ in Österreich, als eher unwahrscheinlich angesehen und die Risiken durch Naturgefahren im Vergleich mit anderen alltäglichen Risiken als niedrig eingestuft. Hier wurden große Unterschiede innerhalb den Untersuchungsgebiete beobachtet, die vor allem auf den Grad der Betroffenheit der befragten Bevölkerung sowie den Bau von öffentlichen Schutzmaßnahmen zurückzuführen waren. Je höher die Schäden im eigenen privaten Bereich waren, desto höher war das Risikobewusstsein, der Bau von öffentlichen Schutzmaßnahmen bewirkte einen Anstieg im Sicherheitsgefühl. Das Forschungsprojekt zeigte eine vergleichbare geringe Risikowahrnehmung und Motivation zur Umsetzung von privaten Anpassungsmaßnahmen bei ÖsterreicherInnen und Menschen mit Migrationshintergrund.

Aus Interviews und der Straßenbefragung mit den BewohnerInnen ging hervor, dass die wichtigsten Informationsquellen für Präventionsmaßnahmen für beide Gruppen – ÖsterreicherInnen und Menschen mit Migrationshintergrund – die Gemeinden und Feuerwehren sind. Die Untersuchung zeigte jedoch, dass es keinen einzelnen idealen Kanal für die Risikokommunikation gibt, sondern dass eine Vielzahl von Ansätzen, die die Vielfalt innerhalb dieser Zielgruppe widerspiegeln, erforderlich ist, um über Risiken sowie Eigenvorsorge zu informieren. Die Forschungsergebnisse bildeten die Grundlage für die Entwicklung von Empfehlungen für maßgeschneiderte Risikokommunikation für die Stakeholder im DRR und die Zielgruppe der Menschen mit Migrationshintergrund und Zugezogene (Stickler et al. 2019).

2 Executive Summary

Due to the effects of climate change, a shift in the seasonal patterns of precipitation and an expected increase in climate-related extreme events in the Alpine region (Gobiet et al. 2014; Blöschl et al. 2017; APCC 2014), it is necessary to adjust the protection of the population against natural hazards to these new challenges. The susceptibility of the exposed population to damage strongly depends on its vulnerability and resilience to events (IPCC 2012). Different population groups – for example, defined by gender, age, socio-demographic background, origin or education – have different adaptive capacities to climate change.

Therefore, the ACRP project CCCapMig "Climate change and capacity building for people with a migration background² in Austria" was dedicated to a specific target group and investigated the risk perception and knowledge of people with a migration background about climate change and extreme weather events in Austria. Also taking into account, that in accordance with comprehensive integral risk management, private protective measures are of vital importance (FOCP 2014). It is assumed that risk communication and information appropriate to the target group is necessary in order to strengthen risk awareness and personal protective measures (Wachinger et al. 2013). The aim of the CCCapMig project was therefore to develop target group-oriented measures and recommendations for persons with a migration background as well as for newcomers.

Within the framework of disaster risk reduction, people evaluate information differently and take measures on various topics (UNISDR 2017). It is generally recognised that people who are already socially disadvantaged in one way or another, e.g. with less financial resources, are particularly vulnerable to natural hazards and their negative consequences (Tapsell et al. 2010). Some key aspects of social factors can explain the variability of negative impacts from natural hazards, also known as social vulnerability (Cutter et al. 2003; Flanagan et al. 2011; Rufat et al. 2015). These factors include socioeconomic status (income, wealth, work and education) and demographic factors (age, gender, ethnicity, family structure and language skills). People with a migration background are also considered to be specifically vulnerable to the consequences of natural hazards (Wisner et al. 2004). The argumentation is usually following a deficit-oriented perspective. People with a migration background are considered to be more at risk of poverty (APCC 2014; BMASK 2013) and, therefore, have weaker financial capacities, which can lead to low adaptability and a lack of capital to invest in adaptation measures (Prettenthaler et al. 2008). The risk awareness for climate change and natural hazards is assumed to be rather low compared to other non-natural "everyday threats" and daily economic, social, political and ecological burdens (Działek et al. 2013). Linguistic problems hinder the understanding of important information in emergency situations (Martens et

² People with a migration background are persons with both parents foreign-born, including first and second generation.

al. 2009) and impede the participation of persons in participation and negotiation processes from socio-economic groups with lower levels of education, which are also among the population groups most threatened by flooding (Burningham et al. 2008; Twigger-Ross et al. 2014). However, it is the interaction of several factors that contributes to increased vulnerability (Rufat et al. 2015; Damyanovic et al. 2014).

The project "CCCapMig" analysed risk perception, coping capacities and the status of preparation of people with a migration background in the context of natural hazards, in particular with regard to the effects of floods and heavy rainfall events. The aim of this study was to examine the underlying challenges and capacities of people with a migration background in Austria before, during and after the occurrence of a natural hazard event. Two case study regions in Austria were selected where high exposure to natural hazards, historical flood events and a long tradition of labour migration coincide: Triestingtal, Lower Austria and the region Steyr-Kirchdorf, Upper Austria. The project followed an interdisciplinary approach combining social and spatial science methods. Short questionnaires and semi-structured interviews with residents in hazard and risk zones, detailed family surveys and focus group discussions (with experts) were combined with an analysis of open spaces, the built environment and measures for individual protection measures against natural hazards. In addition, expert interviews were conducted with actors in disaster risk management (municipality, fire brigade, civil protection) and with organisations and associations working primarily with people with a migration background. The research was complemented by an analysis of current risk communication mechanisms, e.g. communication on residual risk on websites, events, and a synopsis of current legal instruments, e.g. hazard and risk maps, zoning plans, building codes, as well as an analysis of sociodemographic data on social vulnerability according to Cutter et al. (2003) and Flanagan et al. (2011). The theoretical framework for the research design was developed at the beginning of the project and combines the Protection-Motivation Theory according to Grothmann and Reusswig (2006) with the Sustainable Livelihoods Framework for Disaster Risk Management (FAO 2008).

The analysis of the data showed the diversity within the group of people with a migration background and that ethnicity is often not the prevailing factor determining vulnerability. Age, gender, level of education, economic capacity and social capital played an important role in the ability to recover from past events and prepare for future events. Lack of language proficiency or lack of language skills were not an obstacle in all phases of the integral risk cycle (FOCP 2014), but in the acute phase of an event, family members or neighbours often had to translate important content. In the prevention phase, however, according to the experts, poor knowledge of German made it difficult to understand the need for adaptation measures in private households. According to the interviews, participation in municipal decision-making processes and participation in

organisations in connection with disaster prevention is also rather low among people with a migration background.

In addition, the recurrence of a similar event, like the hundred-year flood event in 2002 in Austria, was regarded as rather unlikely and risks from natural hazards were classified as low in comparison with other everyday risks. Here, large differences were observed within the study areas, mainly due to the extent to which the respondents were affected and the construction of public protection measures. The higher the damage in one's own private sphere, the higher the risk awareness; the construction of public protection measures, on the other hand, leads to an increase in the feeling of security and decrease of protection-motivation. The research project showed a comparable low risk perception and motivation to implement private adaptation measures among Austrians and people with a migration background. According to the results of the interviews and the street survey with the residents, the most important sources of information for prevention measures for both groups (Austrians and people with a migration background) were the municipalities and fire brigades. However, the study also showed that there is no single ideal channel for risk communication, but that a variety of approaches reflecting the diversity within this target group are needed to inform about risks and private structural protection measures. The research results provided the basis for the development of recommendations for tailor-made risk communication strategies for stakeholders in disaster risk reduction and the target group itself (Stickler et al. 2019).

3 Background and objectives

Changes in climatic conditions worldwide and in Alpine regions (IPCC 2014; APCC 2014) are triggering changes of temperatures and the seasonal precipitation cycle, global radiation and humidity, closely related to impacts like natural hazards and floods (Gobiet et al. 2014). These anticipated changes only add to societal and demographic changes as well as the changes in land use and spatial patterns, which added to an increase of hazard exposure (e.g. for Austria Fuchs et al. 2015). Nevertheless, it has been acknowledged that the progression of (social) vulnerability according to natural hazards is a combination of underlying factors (Wisner et al. 2012) involving socioeconomic (income, profession, education) and demographic factors (age, gender, ethnicity, family structure, language proficiency) (Cutter et al. 2003). Usually, these individual factors do not occur alone, in fact, the combination of several factors causes that individual persons or groups of persons are more vulnerable than others, or conversely have better possibilities to adapt to certain conditions. Different groups of people – defined e.g. by their gender, age, socio-demographic background, education, occupation and spatial circumstances – have different capacities in dealing with climate change and its impacts (Balas et al. 2011; Prettenthaler et al. 2008; McCallum et al. 2013; Terry 2009; Ibarrarán et al. 2009; Damyanovic et al. 2014). Ethnicity can explain variations in the impact of natural disasters (Peacock and Girard 2012; Wisner et al. 2004; Rufat et al. 2015) and climate change. Research on the vulnerability and capacity of people with a migration background in the context of climate change and natural hazard is scarce in Europe. This research gap is also acknowledged by the Austrian Panel of Climate Change (APCC 2014, p. 659). Therefore, the objectives of CCCapMig were to close the research gap on this topic and to develop target-group oriented measures and recommendations for reducing the vulnerability and enhancing the capacity of people with migration background to adapt to climate change and strengthen DRR in the context of natural hazards on individual and community level.

The project aimed at strengthening the adaptive capacity of people with a migration background in Austria in terms of climate change impacts (in particular water-related natural hazards) and generate scientific knowledge on this topic.

The project's objectives were:

- **Objective 1:** To generate scientific knowledge on migrant group's vulnerability and capacity in terms of climate change impacts like natural disasters, risk perception, adaptive capacities and strategies.
- **Objective 2:** To reduce vulnerability, strengthen capacities and self-provision through linking the everyday needs and requirements, knowledge and experience of people with a migration background with existing and new strategies and resources.

- **Objective 3:** To identify suitable communication channels and participation strategies in climate change adaptation and disaster risk reduction for people with migration background.
- **Objective 4:** To raise awareness among and transfer knowledge between stakeholders, key persons, NGOs and people with migration background.
- **Objective 5:** To elaborate target-group oriented guidelines and recommendations on a local, provincial and national level for the responsible departments as well as for NGOs and volunteer groups and households.

4 Project content and results

The project was structured along the following work packages (Figure 1). In the first step, the theoretical framework was elaborated (WP1). This theoretical approach was developed collaboratively at the beginning of the research in order to a) develop further and test existing concepts, b) to fine-tune the proposed method setting, c) to foster a common understanding of theories and methods within the interdisciplinary research team. The framework further determined the case study preparatory work and desk research (WP2) and the methodological approach for the fieldwork (WP3). Results from WP2 and WP3 entered into the analysis and the development of recommendations (WP4). Table 1 shows detailed aims and objectives per work package.

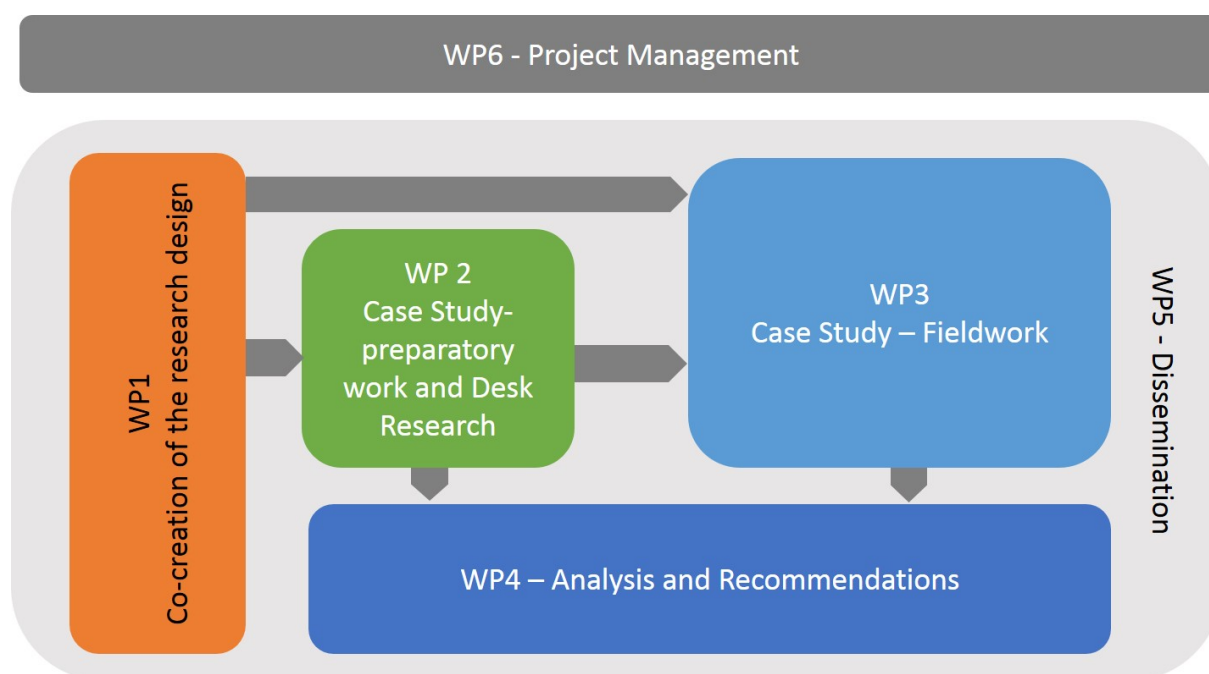


Figure 1: Work packages in CCCapMig

Table 1: Detailed aims and objectives, work-package-based (WP)

WP1: Co-creation of the research design

- Collaborative fine-tuning of the methods and participatory approach with the project team and the stakeholders outlined in the project proposal
- Collaborative revision and amending of the in the proposal outlined state of the art, theory and methodology within the interdisciplinary team and possibly new team members
- Experts' workshops for input, feedback and evaluation of the project design, research process, method setting and knowledge transfer on methodology

WP2: Case study – Preparatory work and desktop research

- To summarize scientific knowledge on the demography, migration, and natural hazards of the case study areas and to provide a survey on spatial, environmental and economic characteristics of the respective areas
- To describe and analyse current risk communication strategies and assess the level of information and dissemination channels on a local, federal and national level
- To prepare the in-depth analysis of the relevant stakeholders and key persons on the community and regional level through an institutional analysis of group-specific network patterns
- To describe and analyse the current management of natural hazard in the case study regions
- To conduct expert interviews with local and regional stakeholders in DRR and emergency response (initially planned: 8-10 in total; finally conducted: 33)

WP3: Case study – Field work

- Gaining insight into living conditions and risk perception as well as capacities of migrant groups in the case study areas employing a (high resolution) micro-perspective. Including local people's perception of vulnerability and taking into account local coping capacities and practices.
- Short questionnaires, to be filled in together with respondents in street surveys (167 in total)
- Semi-structured interviews with people with a migration background (23 in total)
- A detailed survey of families with a migration background, living in different building types (detached house, terraced housed, residential blocks, etc.) describing and analysing the capacities of the built environment, the open spaces and everyday life activities (2 in total)
- Focus group discussions: 2 mixed focus groups in each case study region with both inhabitants and stakeholders)
- Documentation and electronic capture of interview data and surveys

WP4: Analysis and recommendations

- Analysis and interpretation of the interview data and survey
- To raise awareness among and transfer knowledge between stakeholders, key persons, NGOs and people with migrant background affected by natural hazards.
- To elaborate target-group oriented guidelines and recommendations on a local, provincial and national level as well as for NGOs and volunteer groups.
- To initiate international knowledge-transfer and draw upon international experience in this field
- To provide input for the further development of the Austrian Strategy for Adaptation to Climate Change

Table 1 (continued): Detailed aims and objectives, work-package-based (WP)

WP5: Dissemination

- To guarantee the visibility of the project and its results via tailored dissemination as well as the translation of the results for various audiences.
 - Besides specific and focused journal articles, which will also be presented at national and international conferences, peer-reviewed publications will compile all relevant project results for the science and policy community.
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WP6: Project management

- The aim of this work package is to guarantee a smooth project procedure in the areas of communication, time controlling, financial controlling, and quality control.
 - Efficient and pro-active management of the project to provide a fundament for successful cooperation between the project team members as well as the stakeholders
 - Liaison between project team members and ACRP
 - Self-evaluation of the project
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Work package 1 – Co-creation of the research design

WP 1 aimed at a collaborative fine-tuning of the methodology, building a theoretical framework for the project and defining the term “people with a migration background”³ to be referred to throughout the project. For the theoretical framework, the team relied on the “Sustainable Livelihoods framework” (SL framework), adapted for disaster risk management (FAO 2008), combining “Protection-Motivation Theory” (PMT) (Grothmann and Reusswig 2006; Poussin et al. 2014) to gain insights into individual flood damage mitigation behaviour and spatial and planning theories and its accompanying practice of an evidence-based approach (Damyanovic and Fuchs 2013; Ginzburg and Hauber 1988; Damyanovic 2016). The SL framework identifies reasons why some households are more vulnerable to natural hazards than others. Households’ capacities are being influenced by livelihood assets (social, physical, financial, human and natural impacts), the vulnerability context and the institutional context. The latter can either enable or disable vulnerabilities by institutions, laws and policies. The main factors of PMT, with its origins in health-related psychology after Rogers (1975, 1983) and its application in flood-related contexts (Grothmann and Reusswig 2006; Poussin et al. 2014; Bamberg et al. 2017) are threat appraisal and coping appraisal to explain individual protection-motivation. Additional aspects which influence the motivation to adapt to a certain threat, based on empirical research in the context of flooding, are threat experience, non-protective responses and the reliance on public flood protection.

The framework was used to structure the research process and helped to analyse and verify results from spatial to social research and vice-versa. It covered the

³ People with a migration background are persons with both parents foreign-born, including first and second generation.

main topics addressed in this research project. Furthermore, it was used to develop the questionnaire and interview guidelines for WP3 and to structure the analysis of the results. For the analysis, individual attitudes, e.g. risk perception, and results from expert interviews and focus groups were tested against the real biophysical situation in the case study locations, derived from an evidence-based landscape planning approach, e.g. mapping, which follows the approach of reading and understanding landscapes as an expression of the socio-economic circumstances (Hard 1995; Hülbusch 1991).

Work package 2 – Case study – Preparatory work and desktop research

An analysis of statistical data on demography, economy and migration in the case study areas regarding criteria that influence social vulnerability has been conducted. In addition, spatial and environmental data, in particular, hazard zones were intersected with socio-demographic data on the level of constituency units to identify the most suitable locations for the surveys. The research team also consulted local stakeholders and key persons in the field of DRR on spatial development and migration issues to determine the final research design. The case study municipalities were selected mainly along with the following criteria:

- The percentage of people with migration background/inhabitants is above or around the Austrian average.
- Rural municipalities or mid-size towns with residential areas within hazard zones, infrastructure and or accessibility potentially threatened by natural hazards.
- Existing documentation of natural hazard events in the past.
- Already existing basic information on migration and integration in the case study area.

The two case study regions (Figure 2) are located in alpine (alpine forelands) and mainly rural areas. Both regions are characterized by high precipitation during the summer months, which is the major cause of floods. All municipalities are vulnerable to flooding and have residential areas within the hazard zones and a long tradition of flood protection and the implementation of structural measures. Other natural hazard processes like landslides, debris flows, rock falls and avalanches affect especially the upper catchment areas. After a thorough screening and first contact with the municipalities and regions, the following municipalities were selected.

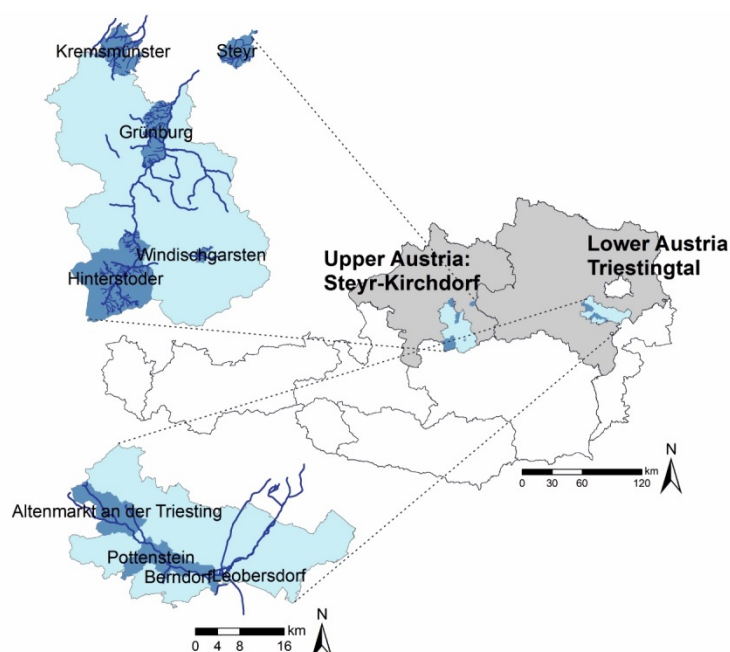


Figure 2: Location of case study areas in Upper and Lower Austria;
Basemap: data.gv.at, 2016; own figure.

Statistical data on demography, economy and migration

In particular, information on factors of the social vulnerability index (Flanagan et al. 2011) was reported for the two case study areas, although the application of the index was not carried out. Data analysis in principle aimed at the lowest geographical level available, but due to significant availability constraints had to be carried out at different administrative levels. Information was sought for constituency units, municipality unit and the district level, in case information at lower levels was not accessible or methodologically could not be calculated. In particular, data restrictions occurred due to the differentiation and additional categories, i.e. civic status or ethnic background (with sub-divisions for groups of countries of origin), differentiation by sex, by age groups and for different dates (to cover time periods). From the list of relevant indicators, according to the social vulnerability index, most demographic data were collected and analysed.

In the two case study areas the **share of people with foreign origin** (defined by the country of birth being different from Austria) is **high compared to other rural regions**, reaching 18.6% in the study area Steyr Kirchdorf and 19.6% in Triestingtal which is similar to the Austrian average of 18.3% (including Vienna), but significantly higher than the average for rural regions of about 10%. However, there are large **differences among the selected municipalities** ranging from 29% of the non-Austrian born population in Hirtenberg (Triestingtal) to 8% in Molln (Steyr Kirchdorf). While the available data analysis did not allow to conclude on detailed aspects of deprivation or particular challenges in accessing services and support structures, there were some signals

to increased problematic situations which indicate that people not born in Austria are of higher risk, as for example:

- **Unemployment rate:** It is assumed that **economically weaker persons (or person groups) suffer significantly more from disasters than people who are economically well off.** Accordingly, the lack of income is regarded as a useful 'proxy' indicator, pointing to problem situations of persons that have fewer capacities to reduce vulnerability and prepare costly measures against impending disasters or risk prevention strategies. Additionally, after disaster occurrence, this group tends to have fewer resources for recovery measures (Cutter et al. 2003). **In both study areas, the unemployment rate of persons with foreign origin (another country of birth than Austria; hereinafter termed 'migrants' or 'non-Austrian country of birth') is significantly higher than the ones for Austrians.** This situation is comparable to the total Austrian unemployment rate of migrants (13.6% for male migrants and 14.6% for female migrants compared to the share of 6.3% and 6.2% of Austrians by birth). However, the difference in the unemployment rate between Austrians and migrants by birth is slightly less pronounced in the study areas, which insinuates **somehow more balanced access for migrants to the regional labour markets than in whole Austria.** However, such an interpretation would have to be backed by further in-depth analysis of the specific situation of labour markets in the two case study areas. Personal movements of migrants at a shorter time delay and towards different target areas might impact on the results in the individual case study areas. **Female migrants' unemployment rate is higher in the study area Steyr-Kirchdorf generated by generally high levels of unemployment in the City of Steyr** (dominating the results of this study area) and a particularly high female unemployment level in the municipalities of Grünburg, Hinterstoder and Kremsmünster.
- **Educational attainment:** From the data analysis of this indicator it becomes clear that the group of people with migration background is characterized by a very high share of people with (at best) compulsory school level as highest educational level. The respective gap towards the situation of Austrian citizens (by the origin of birth) is exceptionally high (double share of persons with max. compulsory school level). Almost half of the migrant population is in this group of lowest educational attainment in the two case study areas.
- With regard to **housing conditions**, both study areas show a significant difference between migrants and Austrians concerning the numbers of apartments the buildings contain. In these regions, statistics show that, for migrants, there are significantly higher shares of multi-flat housing, crowded housing and higher attendance in institutional facilities. Additionally, **weak economic capacity** which is mirrored in poorer housing conditions can hinder expensive prevention measures and capacity for recovery.

Nonetheless, levels of high poverty risk population are not accessible for all interesting indicators at the detailed local level of the case study areas, but an indication of high incidence of unemployment for male and female migrant population as well as housing conditions (significantly higher shares of multi-flat housing, crowded housing, higher attendance in institutional facilities) points into the same direction. Still, some indicators, point into another direction:

- **Age and household composition:** On the basis of the age distribution in the case study areas no enhanced vulnerability can be derived according to the specific age structure of migrants in the case study areas. On the contrary, the migrant population tends to be in the best adult age for responsive behaviour and strategy development with regard to dealing with the impact of natural hazards.
- A similar positive assessment can be done on the indicator **“share of lone parents”** where the migrant population has a much lower incidence (about 10% less) of being a lone parent than Austrians.

The two case study areas are examples of regions that have experienced migration for a long time. In this regard, they constitute characteristic examples of a specific type of non-urban municipalities, heavily influenced by industrial development and labour migration. All the more, aspects of social integration and valorisation of personal skills and potential are of high priority (Machold et al. 2013). This seems essential both with a view of personal development and life quality development and with regard to risk prevention and risk management strategies.

Natural hazards and risks in the case study regions

Current natural hazards and risk situation in the case study areas were analyzed to provide the basis for the intersection of the information on natural hazards with the socio-demographic data to find the most suitable locations for the surveys (street survey, interview, family survey and mapping). To understand the natural hazard situation in the case study areas, the following maps and historical information were collected, analyzed and summarized: The hazard maps of the Austrian Service for Torrent and Avalanche Control (WLV) and the Federal Water Engineering Administration (BWV) to identify built environment and settlement structures in flood hazard zones. In Austria, two different institutions are devoted to preparing hazard zone maps for water-related natural hazards. Depending on the catchment characteristics, e.g. steepness, process type and river type, either the WLV or the BWV are responsible. Hazard zone maps are expert opinions that need to be implemented into local land-use planning legislation in order to be legally effective. According to the European Floods Directive, Austria had to announce APSFR, areas with potential significant flood risk, and prepare, in addition to flood hazard maps, management plans. In this project, these new instruments are also considered, as the case study areas were identified as APSFR areas. The whole Triestingtal and some municipalities in

the region Steyr Kirchdorf (Steyr, Windischgarsten, Hinterstoder) are listed as areas with potential significant flood risk (APSFR). Therefore, flood risk maps are available according to the European Flood Directive 2007/50/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risk (European Commission 2007).

Historical information on the occurrence of previous natural hazard events was obtained within a topic research in local, regional and national newspapers, the event documentation of the WLW (Figure 3), reports by local emergency and civil protection organizations, municipalities and water associations. Aerial photo and land registry were used to identify buildings and settlement types in hazard zones (maximum area extension HQ 300). Based on this information, maps were generated to select the most suitable locations for the fieldwork, the landscape planning stroll and the mapping of the built environment and private structural protection measures.

While recent flood events that happened in the selected case study regions had a negative impact on damaging buildings and infrastructure (economic risk), there were no fatalities within the last events (human risk). According to CRED EM-DAT the mortality due to floods is quite low (~7% - in comparison: ~77 % related to extreme temperature), but about ~60% of economic issues are related to floods. Therefore, the focus of analysis lies on economic risk (resulting from damages on buildings and infrastructure). Nonetheless, when it comes to threat appraisal, human risk will be an issue, mainly in locations where flooding of fast onset and velocity and a lack of appropriate early warning exists.

Natural hazard events in the case study region catchments under the competence of the Torrent and Avalanche Control

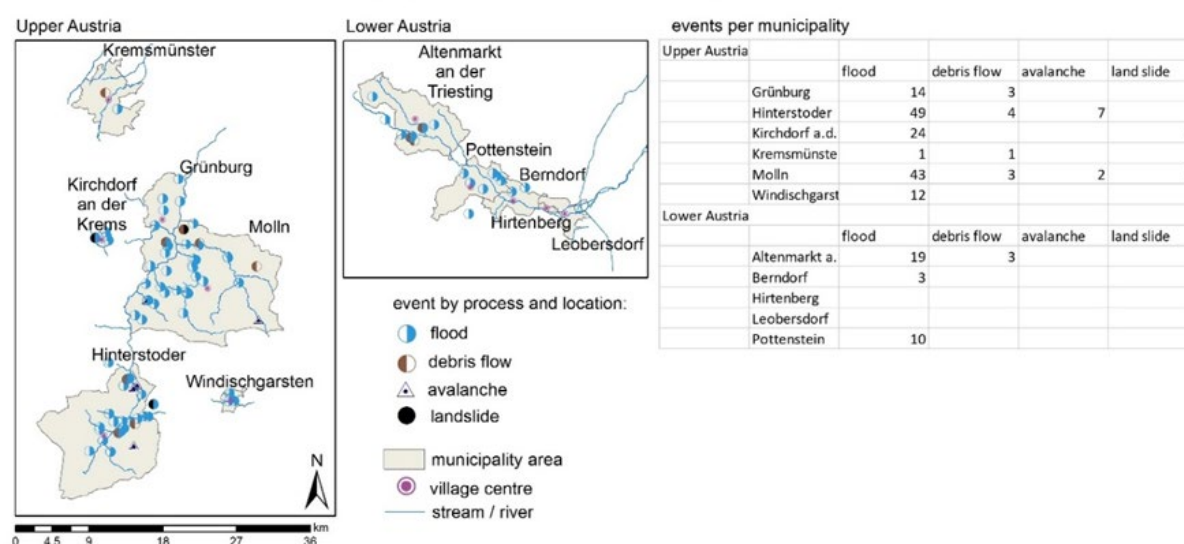


Figure 3: Documented natural hazard events (WLW) in the case study regions of the CCCapMig project [Molln and Kirchdorf not included in the fieldwork]; Data: WLK Ereignisdatenbank, 07/2016; basemap: data.gv.at; own figure.

Exposure and historical flood events in case study regions

For the two case study regions, the average annual observed rainfall ranges between 600 - 800 mm in the Triestingtal and between 900 - 1400 mm in the region of Steyr-Kirchdorf. All selected municipalities are vulnerable to flooding, hold residential areas within hazard zones and experienced a long tradition of flood protection and the implementation of (public) structural protection measures. Besides that, other natural hazard processes like landslides, debris flows, rock falls and avalanches affect especially the upper catchment areas.

The Triestingtal, with its main river Triesting, is located in Lower Austria. Since 1882 seven major flood events happened. In addition, there were a number of small scale events in the upper catchment area documented by the WLV. In general, the region has a long tradition of implementing public structural flood protection measures whereas, after recent flood events, the focus has shifted from local linear measures to new flood risk management strategies (Thaler et al. 2016). The inter-municipal flood protection concept of the "Water Association Triestingtal" (Wasserverband Triestingtal) combines upstream and downstream riparian municipalities in the catchment area with the aim to build several retention basins, some have already been put into place. Local chronicles, online articles, information from local stakeholders and data of event documentation were used as data sources to collect information about past events and their impacts on the settlement. Figure 4 shows a timeline of major historical flood events at the Triesting since 1940. Between 1750 and 1910, ten flood events happened in the Triesting Valley and are documented in the chronicles of Berndorf.

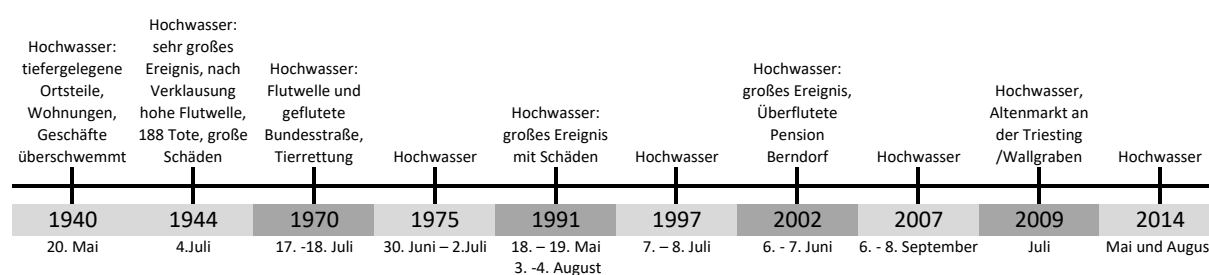


Figure 4: Timeline of documented historical flood events, exemplified at the River Triesting since 1940 (German, because it was used for focus group discussions); own figure.

The second case study region, Steyr-Kirchdorf, is located in Upper Austria. The document analysis on exposure to natural risks was done for Kirchdorf an der Krems, Grünburg, Hinterstoder, Molln, Windischgarsten, Kremsmünster and the City of Steyr, but Kirchdorf an der Krems and Molln were not included in the empirical data collection. In contrast to the Triestingtal, which is mainly affected by one river, the municipalities of Upper Austria are exposed to several independent basins. This complex situation asks for a sensible and more intense analysis to ensure the comparison of the municipalities. Kremsmünster and Kirchdorf are part of the catchment of the river Krems, whereas Hinterstoder,

Molln and Grünburg are located next to the river Steyr. Windischgarsten is mainly influenced by the river Dambach, which flows into the Teichel that itself is a tributary to the Steyr. Due to the European Flood Directive from 2007, the flood extent for 30-, 100- and 300-year events were mapped for Windischgarsten, Steyr, Hinterstoder and Kremsmünster. These visualisations are accessible at WISA, the Austrian water information system (<http://maps.wisa.bmlfuw.gv.at/hochwasser>). In addition, run-off analysis and in some instances hazard zone plans exist for the areas and were obtained through experts in the regions.

In August 2002, persistent heavy precipitation caused an extreme flood event with high discharges and water levels in many parts of Austria and also along the river Enns and several tributaries. This event affected, for example, the City of Steyr: A long humid period of the previous days triggered a rapid increase in the water level in the City of Steyr in August 2002, between four o'clock in the morning and the early afternoon. In this period, the flood discharge increased from 450 m³/s to 3100 m³/s, which resulted in an increase in the water level to 5.2 m. The hundred-year flood event caused high damages and financial losses (Godina et al. 2004). The following flood event, in 2013, affected the municipalities of Steinbach and Grünburg, located next to the river Steyr, where buildings were flooded up to 1.5 m. At this event, the situation in the City of Steyr was critical as well, due to high water levels from the river Enns and Steyr but less "dramatic" compared to 2002. Still, several streets, cellars and ground floors were affected (Habersack et al. 2015).

Risk communication strategies in the case study municipalities

The analysis of current risk communication strategies, channels and contents in the case study municipalities aimed at understanding, if the information on risk is targeted and tailored to different target groups. In order to gain an understanding about how risk is communicated within the municipalities, expert interviews were carried out on the local, regional and sectoral level with experts working in the field of natural hazards, important local actors and decision-makers, stakeholders with migration background and stakeholders working with people with migration background in the case study areas.

In addition to relevant results of the expert interviews, desktop research on information material on natural hazards from different authorities and levels was carried out. The analysis was based on the conceptual framework proposed by Grothmann & Reusswig, (2006) "The Protection-Motivation Theory in the context of natural hazards". It identifies two main factors that have a major impact on whether people are motivated to take precautionary action or not: "threat appraisal" as well as "coping appraisal". Therefore, the aim was to identify how municipalities communicate the natural hazard situation, related risks and the possibilities of private households' prevention as well as to explore the stakeholders' opinion on public risk perception and self-protection. Concerning

communicating “the threat”, the case study region Triestingtal focused to communicate public protection projects, without explaining residual risk or linking to current hazard maps. In Upper Austria, the situation was similar, with the exception of the City of Steyr, which provides information and advice about private flood protection measures, beyond that, for buildings of cultural heritage. In both case study areas, information of past flood events is hardly present on the web pages of municipalities and fire brigades, although the promotion of collective memory about flood risk, by keeping memories about past event alive, is a vital part of resilience and risk awareness (Viglione et al. 2014; Garde-Hansen et al. 2017; Stickler 2012). According to expert interviews, high public risk awareness is present during the (immediate) post-disaster phase and in case people were already affected themselves. Since the federal, provincial and municipal governments recently have substantially invested in public flood protection measures along the rivers, the local municipalities are hesitant to communicate the residual risk. Consequently, risk awareness about remaining risk is rather low. Again, the City of Steyr was an exception and residual risk was communicated and mentioned in local newspapers (Stadt Steyr 2006). The reason for this is that several parts of the city (for example the Ennskai) are – despite all public flood protection activities – frequently flooded and reliant on the adapted building design or on mobile flood protection measures on buildings. Information about self-protection measures on websites of the municipalities and fire brigades is only available in two municipalities (out of eight). Printed information material on self-protection about natural hazards and possibilities for preventive measures on the household-level are only available in German and mainly provided by the federal state, the regional government or organizations like the Austrian Civil Defence Association. One finding is that this printed information material is rarely known by the municipalities and regional experts.

Concerning “coping appraisal” the municipalities inform about individual flood risk mostly in case of building permits for construction projects within hazard zones. In principle, the process of applying for a building permit would be an opportunity to raise interest in self-provision and risk awareness. However, interviewed experts working in municipalities do not perceive themselves as an authority responsible to give additional construction advice, but only to issue constraints based on construction laws. Regarding the Upper Austrian case study, visualised river level measurements from gauging stations on web-sources and apps are regarded as being frequently used by the public in case of emergency. In terms of prevention, results indicate that personal interaction between experts and people living in the flood-prone areas is a vital factor to communicate risk. In the context of private flood prevention and tailored information, the City of Steyr provided a couple of good practice examples. Issues related to the target group of people with a migration background were not prominent in the interviews, because experts stated that they always addressed the entire population. Both case studies helped to identify gaps in risk

communication strategies and provided some good examples and starting points for the development of recommendations (Stickler et al. 2019).

Work package 3: Case study – Field work

The application of a diversity of qualitative and quantitative techniques reflects the interdisciplinary approach of this project. The methods of data collection in this project were interviews with people with migration background in the case study areas (short questionnaires “street survey”, semi-structured interviews), semi-structured interviews with local and regional stakeholders involved in disaster risk reduction and climate change adaptation (see WP2 on analysis of risk communication), detailed surveys of families in each case study area and focus group discussions with residents with and without migration background. Since spatial and social aspects are of growing importance in the context of climate change and natural hazards, structural factors, demographic data, current risk communication strategies, spatial planning instruments and related processes and the current spatial and environmental situation (including hazards and hazard zones, geographical locations, building and settlement types) were analysed. For further details on the field work see also chapter 6 “methods”.

Work package 4: Analysis and recommendations

The first part of WP4 focuses on the analysis of the data collected in WP2 and WP3. Based on the results of WP2 and WP3, recommendations for different target groups (communities, civil protection units with focus on fire brigades, organizations of/for migrants, building and planning sector, the broad public with focus on migrants and the federal and national level of flood protection management) were elaborated and discussed in a stakeholder consultation feedback loop (see chapter 5 on recommendations). The analysis follows the research questions and is based on the results of expert interviews WP2, and empirical work of WP3, the street survey, semi-structured interviews, the family survey and the focus group discussion.

RQ1) What do migrants know about climate change and natural hazards in Austria and how do they perceive natural risks on a local level and in their neighbourhood.

The level of risk awareness regarding climate change and natural hazards among migrant groups in Europe is rather unknown, with a few exceptions (Twigger-Ross et al. 2014; Alex et al. 2018). Research suggests that risk awareness is associated with low probability in comparison with other potential non-natural ‘everyday’ threats and daily economic, social, political and environmental pressure (Dzialek et al. 2013). Respondents of the two regions have provided a wide range of answers on the knowledge about climate change and natural hazards in Austria. In general, respondents tend to believe that **climate change exists**, but do **not necessarily think that it is directly related to a higher probability of flooding** or more frequent events. It is assumed that the

consequences of climate change will affect "our children" or generally the future generation and other countries such as Africa more than Austria.

Regarding the **knowledge about natural hazards**, 50% of the respondents (in semi-qualitative interviews, Lower Austria) already experienced natural hazards. Nonetheless, for them, the flood-event in 2002 was an unexpected event and they rather attributed natural hazards to happen in higher mountainous regions of Austria. In comparison to that, migrants responding in Upper Austria point out, that they know about the possibility of flood events, but were surprised by its scale (referring to the 2002-flood event). The interviews with the comparison group of Austrians (only for Upper Austria) show that **local knowledge** is of great importance. In the City of Steyr, an expert said: "People have developed a high degree of expertise. They can already tell from the colour of the water, water speed and environmental characteristics whether this will remain the same or whether it will be very, very bad". However, the focus group in the City of Steyr was questioning whether the younger generation and migrants can correctly assess the risk of flooding, or whether this knowledge can only be retained in the population through their **own experience**.

High Risk perception and risk awareness were mainly connected to the degree of damage due to natural hazards. The degree of damages influences risk perception to the extent that those who were severely affected, especially in the case study region of Upper Austria, durably think about the probability of recurring flood events. This degree of damages also influenced the motivation to take personal precautionary measures (protection-motivation): those who were affected, more probably installed measures, e.g. in the City of Steyr.

With regard to the street survey, risk perception and threat appraisal are rather low in comparison to people's exposure (50% of the respondents are living in hazard zones). The majority of respondents has already experienced natural hazards and flooding in their communities (approximately 80%) and most of them were personally affected. However, there are differences in risk perception in the two case study areas, with respondents from Upper Austria, rating the possibility of recurring events higher than respondents in Lower Austria (Figure 5). This result was also mirrored in the semi-structured interviews, where respondents do not assume that future flood events will likely occur. This can be traced back to the fact that there were no fatalities and that public structural protection measures (linear walls and retention basins) already proved to be effective in reducing the water level during heavy precipitation events. Nonetheless, respondents are worried about damages due to groundwater. Concerning the distinction of risk perception of people with migration background and Austrians, the survey shows that people with a migration background more often stated they did not believe that floods will occur in the next few years (Figure 5). Within expert interviews and focus group discussions, it was affirmed, that not only among migrants but "long-established" Austrians, risk perception is perceived as being rather low, consequently leading to low protection-motivation. The focus group in the City of Steyr discussed the fact that, in the opinion of the

experts, migrants often have completely different attitudes to disasters based on the experience within their home countries. With respect to this assumption, natural hazards are better managed and controlled in Austria due to regulations by the state laws and institutions dedicated to disaster risk reduction and emergency services.

Regarding the family survey, there were certain common aspects like the tendency of fatalism with its implication that natural hazards are considered to be pure destiny. Compared to risks in Austria, the person interviewed in Lower Austria assumed a much higher risk for natural hazards in other countries, e.g. in the United States of America for hurricanes. These findings go in line with other results from the interviews with persons with migrations background that perceive natural hazards in their countries of origin as more rough and uncontrollable compared to hazards in Austria. Both families were not involved in any kind of decision-making processes and saw no efficacy regarding this matter, also because one family did not receive any help when turning to the municipality in prior issues.

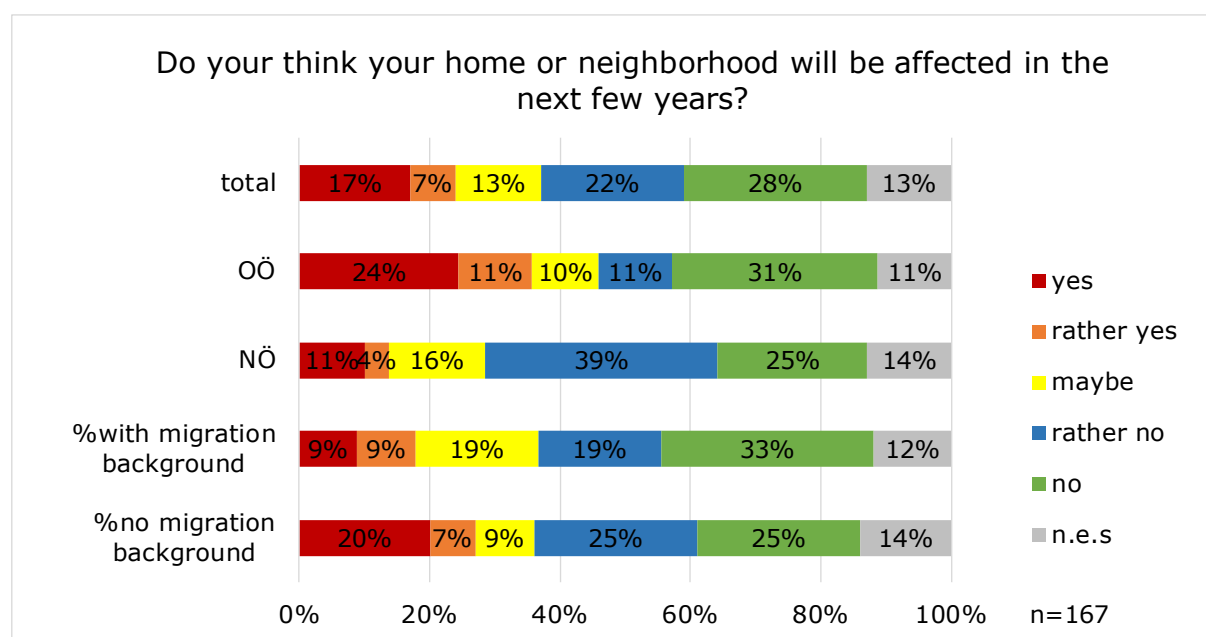


Figure 5: Risk perception of respondents in the street survey, differences between Lower and Upper Austria; own figure.

RQ2) What is the level of preparedness and capacity regarding climate change impacts, like weather-related natural hazards? How are they dealing with hazards, risks and changes in their life in general?

Adaptation measures to protect against natural hazards tend to be, in relative terms, implemented more often by Austrians, compared to people with migration background. Regarding the full sample of the street survey, the most common adaptation measures are systems to block the water (like sandbags, installations at windows and doors), to avoid storing valuables or goods in cellars and garages and the reconstruction and local structural measures. In total, 27% already

implemented measures, with variations within the case study regions (21% Lower Austria, 36% upper Austria). Within the group of migrants, the most common (and low cost) adaptation strategy was to avoid storing of valuables and goods in cellars or garages, whereas Austrians far more likely applied systems to block the water and local structural measures.

Establishing a link between risk perception and self-protection, most of the experts, in particular those in the field of natural hazard management, said that risk perception and the motivation for self-protection declined as time passed after an event.

Nonetheless, the availability of **economic resources, property rights, trust in public protection measures, the question of responsibility** to apply adaptation measures and **perceived self-efficacy** matter in this regard.

- **Economic resources** and the capacity to invest in “flood-safe” furniture were issued in the focus group discussion in Upper Austria, mentioning experiences of the 2002 floods. This experience showed that people with migration background suffered more from the floods, as their furniture was less flood-safe. This affirms experiences in Lower Austria, where experts observe an increase of people with a migration background, buying houses, but not the motivation to protect or invest in “quality materials”.
- Closely linked to economic resources, **property rights and housing conditions** influence adaptive capacities. This was confirmed by semi-structured interviews, where a respondent in Lower Austria states: “... we cannot do anything, we do not own this house. What could we do, run away?”.
- The prevailing opinion in Lower Austria (semi-structured interviews) was that the person itself is not responsible for flood protection. In turn, the municipality, the state Lower Austria, politicians, the federal government and fire brigades are regarded as being responsible. The general claim, regarding experts’ opinion, is: “Someone will care for it, anyway”. Above all, the (voluntary) fire brigades were mentioned to help in case of emergencies, during the warning and alerting and in the acute phase of prevention.

With respect to dealing with hazards, risks and **changes in their life in general**, the question of issue importance was raised. Especially in the case study region of Lower Austria, the fear of flood risks is listed at the lower end. In the case of natural hazards, the fear of high groundwater or earthquakes (in Turkey) is more likely to be mentioned, otherwise, there are other concerns that have nothing to do with natural hazards, such as the Slovak nuclear reactor or the fear of losing one's job and having no money. In comparison, respondents from Upper Austria, show a tendency to suffer from anxiety and nervousness due to the danger of flooding and experience with past events. This fear applies also to people with a migration background – although not significantly different compared to Austrians. The respondents are sensitive in the case of long-lasting rainfall and tend to repeatedly check water levels or avoid going on holidays.

Mentioned in a family survey, the corresponding family is constantly being bothered with fear of flooding on rainy days by a female household member. When it comes to age-related habits in dealing with natural hazards, the older generation refers to earlier flood experiences (interviews with experts) and can thus better deal with the possible danger. On the other hand, older people no longer feel able to cope with the challenges of a flood (interviews with residents).

RQ3) Where do migrant groups live? What is the quality of their housing, built environment and open spaces and their resilience and adaptive capacities in terms of natural hazards?

The respondent's residence was collected by asking the respondents to mark on a map (open street map) where they lived. This information was overlayed with hazard maps and flood risk maps available for the regions, using the geographical information system Arc GIS ©ESRI. On the basis of these statements, it was analysed that (for the street survey) 50% of the migrants and 47% of Austrians are living in a hazard zone. Referring to data gathered in WP2, housing conditions, both study areas show a significant difference between migrants and Austrians, showing that, for migrants, there are significantly higher shares of multi-flat housing, crowded housing and higher attendance in institutional facilities. This is also mirrored in the street survey, where far more respondents with a migration background are renting apartments, rather than own in comparison to Austrians, (in the street survey: 24% Austrians / 66% migrants) and in statistical reports of Statistics Austria (2015). Although the link between affluent residents and the location of the residence next to rivers is not straightforward. As for example, in Steyr or Kremsmünster, experts stated that "Often living next to the water is something you have to be able to afford."

Landscape planning survey and mapping within flood risk zones

A typology of categories, based on a landscape planning stroll (Burckhardt 2015; Hülbusch 1988) in the case study municipalities, was developed to perform a comprehensive mapping within flood hazard (risk) zones on the level of individual property scale (mapping basis: cadastre; Stichtagskataster, BEV 2016 and 2017). The mapping criteria were developed for four different types of maps: (1) Built environment, (2) Open-space structure, (3) Land use and (4) Local structural protection measures (Private flood protection). For further details see chapter 6 Methods, E) Landscape planning survey and mapping within flood risk areas.

In the mapping, the research team focused on private adaptation measures. Depending on the natural hazard process and the local conditions various possibilities exist. Local structural protection can be either installed as a permanent device or can consist of mobile modules which are installed in case of early warning (Holub and Hübl 2008). For example, flood resilience technologies can be implemented as an enclosing structure or as a structure directly attached

to the building (ibid.). Holub et al. (2012) stated that, in order to reduce the vulnerability of a building against natural hazard impacts, it needs both adapted construction design in the sense of local structural protection and suitable interior use. For example, in areas with a high probability of flood events, it would not be appropriate to store valuable goods in the basement. Ideally, the structural protection should be considered already in the design phase of a new building, by appropriate technologies, building construction methods and water-resistant building materials to avoid high costs for changes afterwards or repair costs after damages (Hübl and Tschärner, 2015). Focusing on the whole plot, adaptation can be also achieved through changing the landscape, drainage, retention features and free-standing structures, the elevation of the building itself or the installation of barriers to prevent water reaching the building (Proverbs and Lamond 2017). The available materials used and technical solutions for structural protection on the household level have constantly been improved during recent years. Depending on the type of building (single-family house or multi-storey apartment building), there are various possibilities to adapt to flood risk. The mapping shows that even within areas potentially affected by flooding, there are buildings with elements vulnerable to flooding such as cellars, entrances at ground level and low openings as well as sloping garage entrances/driveways. In the mapping, private property protection measures, such as devices to anchor mobile flood protection elements were mapped. An example where such measures were implemented quite frequently is the City of Steyr, in particular locations on islands and the quay (Figure 6).



Figure 6: Possible structural protection measures: Left, a permanently installed window guard; right, mounts to hang in mobile flood protection elements which are kept nearby; own photo 2017.

In addition, elevated entrances and elevated ground floors have frequently occurred in locations potentially affected by floods and groundwater and often were linked to the building age. The position of building openings in general influences, if water or debris are entering the building and lead to damages. Buildings located in floodplains often have elevated entrances either due to local knowledge or due to building regulations (OÖ. Raumordnungsgesetz 1994; NÖ Raumordnungsgesetz 2014). Especially new buildings (after the millennium), tend to be elevated and do not have cellars (Figure 7).



Figure 7. Elevated entrances in an area prone to flooding (left, Windischgarsten; right, Steyr); own photo 2017.

Combining both study areas (Upper and Lower Austria), 2689 (100%) plots with buildings were mapped, thereof 1564 (58%) in Lower Austria and 1125 (42%) in Upper Austria (Table 2). The result is a comprehensive mapping within flood risk zones which was used to identify clusters ("hotspots") and gaps of structural protection measures based on the mapping of private protection measures (Figure 8). For further details on the mapping also see AutorInnengemeinschaft 2017a, 2017b, 2018; Kaunert 2019, Dopler 2018.

Table 2: Mapped plots and buildings with flood protection measures

Built environment	Upper Austria	Lower Austria	Total
Mapped plots	1125	1564	2689
plots with private mitigation / structural changes	572	829	1401
plots with mobile flood protection	107	204	311

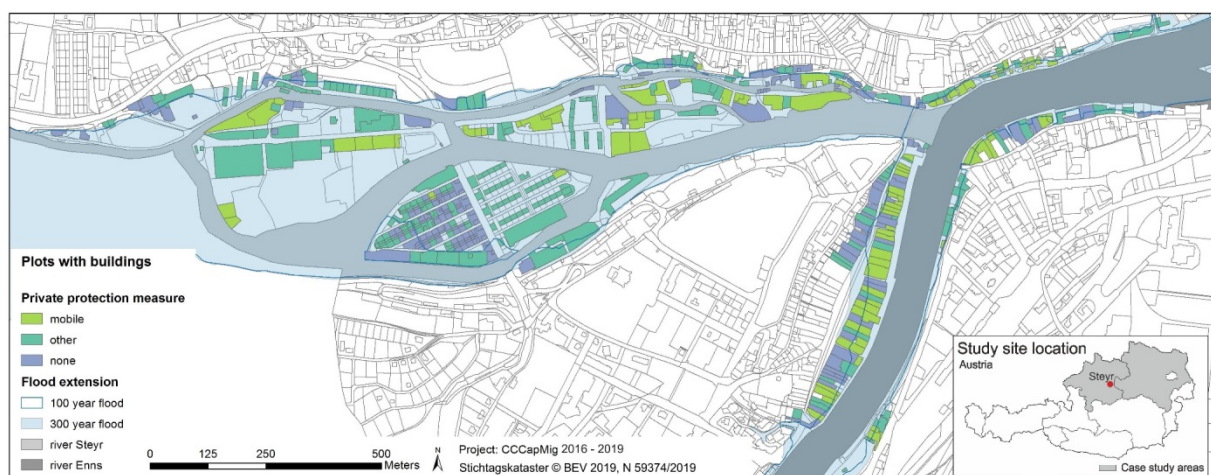


Figure 8: Visualization of mapped private protection measures with a focus on mobile flood protection, Steyr, Upper Austria; Kaunert 2018.

RQ4) What kind of experience related to natural hazards and disasters do migrant groups have in Austria and in their country of origin?

Experiences of people with a migration background with natural hazards are similar to those of Austrians (Table 3). About 80 %, the majority of the respondents have already experienced a flood themselves or in the neighbourhood. Depending on the location, the damage varies in hazard zones and the type of dwelling, people with a migration background live - in relation to the sample of this project - more frequently in flats and for rent and less often tend to be affected themselves. With regard to the experience from the countries of origin, no new insights could be gained on a detailed level, the knowledge that floods could occur in one's own country, for example, was mentioned. The expected damage after floods was rated much higher in other countries than Austria, where disaster management is perceived as comparatively "safe", as organised by the state and emergency organisations such as fire brigades and financial support, e.g. the disaster fund.

Table 3: Experience with natural hazards and flooding, street survey

		Yes	No	n.e.s
Did you experience any kind of floodings before?	MIG	79%	19%	2%
	AUT	78%	21%	1%
	Total	79%	20%	1%
Was your own property or neighbourhood affected?	MIG	48%	45%	7%
	AUT	53%	33%	14%
	Total	51%	38%	11%

N=167

RQ5) Where do they get information on natural hazards and risks from and do they understand the information? Do they know stakeholders in the management of natural hazards?

Recent research suggests that information paths in people with a migration background are often different from people with no migration background (Heuser et al. 2013), this is partially confirmed by this survey. The two main sources of information for natural hazards and flood risk are for both groups the fire brigade and the municipality. In addition to that, people with migration background more often name other sources of information like family, friends and colleagues. Additionally, the internet (Google, Youtube, Facebook) and information about water levels and gauging stations were mentioned to be an essential source of information. The family interviews showed that do-it-yourself stores were another contact point, as they provided information after the flood events and discounts for people affected. For further information on this question, also see Weber, Wernhart et al. (2019).

RQ6) Do migrant groups participate in decision-making and communication processes related to natural hazards? What kind of obstacles do they face?

In both case study regions, people with a migration background are underrepresented in voluntary organizations, like the fire brigade, which is an important organisation for informal knowledge transfer in terms of natural hazards. Only a few events about natural hazards were reported, mainly on the topic of the establishment of flood protection projects in Lower Austria and after the devastating floods in Upper Austria. These events were rather informative than participative. In Upper Austria, a few information events were organized, however, these events are not held on a regular basis. Still, some initiatives already took place:

- The City of Steyr put forth a so-called advisory committee, dedicated to flood issues, which was organized by people concerned but is not active at the moment.
- In Grünburg, a sequence of flood events triggered an initiative, also sustained by people with a migration background, pushing forward structural flood protection within the municipality.

5 Conclusion and recommendations

The aim of this project was to elaborate target-group oriented guidelines and recommendations on a local, provincial and national level for the responsible departments as well as for NGOs, volunteer groups and households. The recommendations are available for download at: http://www.umweltbundesamt.at/aktuell/publikationen/publikationssuche/publikationsdetail/?pub_id=2289 (Stickler et al. 2019).

The recommendations were developed for different audiences:

Municipalities, civil protection/fire brigades, organisations dealing with topics of integration, stakeholders from the building sector, broad public with a focus on migrants and incomers and politicians and administration responsible for flood risk protection on the federal and national level. Each recommendation is divided in a description of the background for the recommendation "why is it necessary?", the goal "what should be achieved?", a description of single steps or single measures "who is responsible and who should contribute to the implementation" and "good practices". Good practices are understood in a very broad sense since only a few really good practices for persons with a migration background and issues related to natural hazard were found. Most examples only cover either the issue of inclusion natural hazards, but were included when interesting transferable aspects could be identified.

The following section includes the list of recommendations, which were elaborated and described in detail in Stickler et al. (2019) and exemplifies the recommendations for the public (Table 4 and Box 1).

Table 4: Overview of target audiences and its related recommendations, for details see Stickler et al. (2019).

Target audience	Recommendations
municipalities	<ul style="list-style-type: none"> • Promote education at the level of municipalities • Sensitize people with and without migration background for natural hazards • Promote building and renovating in a way that is safe from natural hazards in municipalities • Motivate and empower for private protective measures
emergency services, notably voluntary fire brigades	<ul style="list-style-type: none"> • Encourage the participation of people with a migration background in voluntary fire brigades • Promote education for fire brigade members for intercultural communication • Use fire brigades as channels to inform about private protection measures and natural hazards
organisations working in the field of integration	<ul style="list-style-type: none"> • To connect activities within the field of integration with natural hazards
stakeholders working in the building sector	<ul style="list-style-type: none"> • Promote building and renovating in a way that is safe from natural hazards in municipalities
public, notable incomers	<ul style="list-style-type: none"> • Advice to protect against natural hazards (Box 1)
politics and administration at the federal and state level	<ul style="list-style-type: none"> • e.g. measures on risk-governance, risk communication and promotion of connections between municipalities

Box 1: Example of recommendations for the public, translated, originally Stickler et al. (2019), c.f. 60-63.

A detailed description of recommendations for the public, notably incomers, which include tips to protect from natural hazards (selection).

Background: Already today, the increase in the severity and frequency of extreme weather events. Climate change will intensify this trend and increase the vulnerability of the population. Awareness of the risks by natural hazards is, however, generally low and private flood protection measures are only implemented to a limited extent. People, who are new to a community are not familiar with local conditions and often do not know about the possible risks.

Benefits: To be able to protect your belongings from danger, you have to know the risk and be informed about possible precautionary measures. Each and every individual can personally contribute to reducing potential damages. The following tips can be distributed by information materials for the population by municipalities and volunteer fire brigades.

This is what you can personally do (selection):

Clarify risk and residual risk - Clarify for your building and your living environment whether there is a possible risk of flooding, heavy rainfall etc. You can do this e.g. by examining hazard zone plans or flood risk maps, slope water maps, etc., which are, predominantly in electronic mode, available at the municipal and district level and in the provincial governments. Attempt to additionally find out whether there have been floods in the past in your neighbourhood. If there is a risk, clarify which immediate and long-term measures are possible. Another source of information is the digital hazard map HORA 2.0 You can perform an address query on the Internet. The hazard zones and risks can be identified for each plot with regard to floods, avalanches, landslides, storms, lightning, hail, snow loads and earthquakes. Link: www.hora.gv.at

Strengthening personal provision – Technical and structural measures begin with the selection of the construction site, including planning measures during the construction (such as waterproofing, elevation or renunciation of the cellar) and include subsequent protective devices (e.g. preparation of short term and waterproofing in front of building openings). Personal precaution measures also consist of emergency training, stockpiling, insurance contracts etc.

Check regularly (before an event): the continuity of the rainwater gutters; the condition of the roof and fireplace; the stability of canopies, porches, façade claddings; the trees on your property with regard to rotting and loose branches.

Actively use information offers: information brochures on personal protection measures are published by the BMNT, the states, the Civil Defence Association, emergency organisations, etc. on the internet is made available.

A) Project details

6 Methods

The knowledge exchange with local stakeholders (understood as representatives of the organized public) started already in the design phase of the project. Additionally, the inclusion of laypersons contributes to a transdisciplinary approach and adds practical first-hand experience as well as tacit knowledge with the impact and management of natural disasters. The methodological approach applies a combination of social and spatial research, following an evidence-based landscape planning approach (Figure 9).

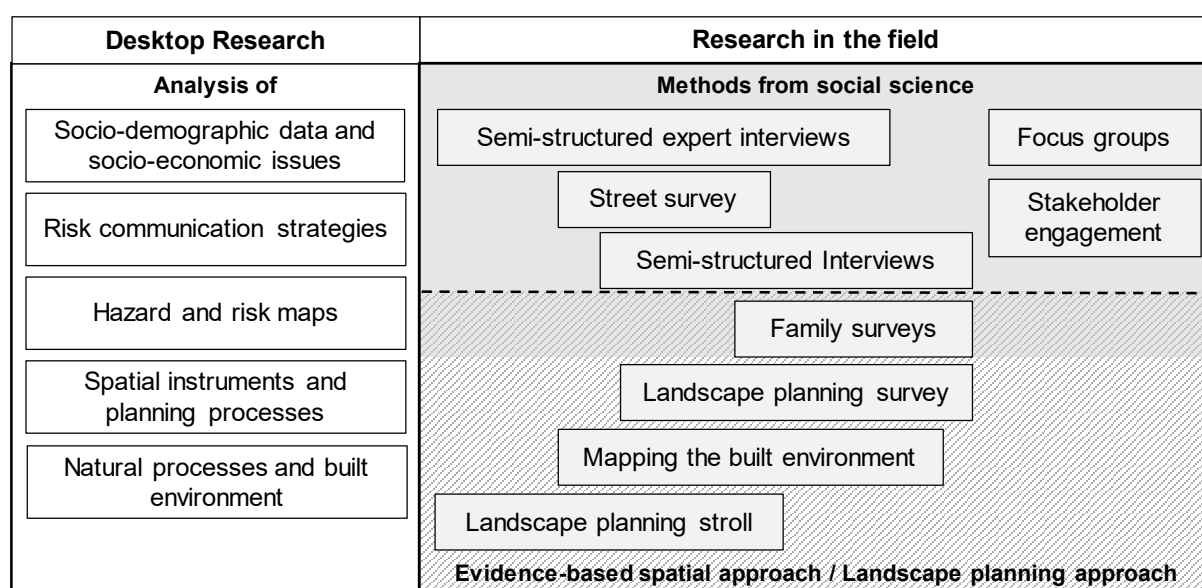


Figure 9: Methodological approach in CCCapMig; own figure.

The initial feedback of stakeholders in the case study areas regarding experiences to contact people with a migration background indicated challenges. This underpinned the hypothesis that people with a migration background are regarded as being hard-to-reach (Heckl 2010; Engels 2004). Therefore, the team decided to use a variety of low-threshold approaches (as e.g. recommended by Heuser et al. 2013) and ways to meet and invite people with a migration background to participate in the interviews, surveys and discussions.

- One approach was to **attend events and festivities** like the Turkish Spring Festival of the Turkish-Austrian Cultural Association in St.Veit (Berndorf), the Multi-Kulti-Fest in Leobersdorf organized by the Serbian association MLADOST or a festivity in Steyr organised by Paraplü, Caritas.

- Another opportunity to meet and reach out to people with migration background arose **during the mapping of the built environment** (landscape planning survey and mapping within flood risk zones) during which the project team, supported by projects with students (AutorInnengemeinschaft 2017a, 2017b, 2018), **spent a lot of time** in the streets of the case study areas.
- Additionally, **recommendations via gatekeepers and stakeholders** were also used to reach the target group. The approach to contact representatives of associations for people with migration background worked well in the Triestingtal (Turkish-Austrian Cultural Association and the Serbian cultural association MLADOST). Contacting religious organisations in Upper Austria, turned out to be difficult, as e.g. phone numbers to contact persons were outdated.
- Trying to find respondents in **places which are highly frequented** e.g. in front of schools and kindergartens was **least successful**, due to time constraints of the respondents, e.g. parents wanted to pick up take their children.
- Bus stops, train stations and shops, e.g. Turkish supermarket, refreshment huts, were generally better to conduct interviews.

Despite the application of a variety of approaches, the project team faced **difficulties** to engage persons with a migration background for **exhaustive semi-structured interviews and the detailed family surveys**. Especially in the Triestingtal, flood risk awareness and the motivation to put private adaptation measures in place were identified as rather low: People could not relate to the topics of the interviews, assuming that they are not relevant to them. Other risks, as for example the threat of loss of employment, nuclear reactor accidents in the neighbouring countries or earthquakes are regarded as being more important than floods. The risk of flooding is considered to be of very low issue importance, with a few exceptions for persons, who have experienced huge damages from flooding before.

The following section gives an overview of the conducted surveys and interviews:

The empirical work is composed of A) expert interviews with stakeholders (WP2), B) a short street survey (n=167), C) semi-structured interviews with people affected (n=23), D) detailed family surveys with people with migration background (n=2), E) Landscape planning survey and mapping within flood risk zones, F) four focus groups. The recommendations were developed based on the results gathered in WP2 and WP3 and were validated by stakeholder consultation (G).

A) Expert interviews, originally planned for WP2

The project team developed a guideline for semi-structured interviews and carefully selected interview partners to include experts on the local, regional and sectoral levels, experts working in the field of natural hazards, important local actors and decision-makers, stakeholders with migration background and stakeholders working with people with migration background in the case study areas. In total, 33 persons were interviewed (Table 5).

Table 5: Sample of expert interviews

	Lower Austria	Upper Austria	total
Fire brigade (and civil protection)	2	5	7
Natural hazards, flood risk	3	4	7
NGO		1	1
Representatives of administration from municipalities	7	6	13
regional management / Leader management	1	2	3
other	1	1	2
male	11	16	27
Female	3	3	6
local	10	13	23
regional	4	6	10
In total	14	19	33

B) Street survey

The street survey was conducted with people with and without migration background who are living in areas prone to natural hazards and having already experienced hazard events. A total number of 201 people were questioned within a face-to-face survey – out of that, a total number of 167 questionnaires are considered for the final analysis⁴ (Table 6). A percentage of 35% of respondents have a migration background, according to the definition used in CCCapMig. The backbone of the survey as well as the analysis was the theoretical framework developed in WP1, mainly referring to the Protection-Motivation-Theory (Grothmann and Reusswig 2006) and the Sustainable Livelihoods Framework (FAO 2008). A similar proportion of Austrian respondents and people with a migration background live within hazard zones and therefore are exposed to natural hazards. Location in hazard zones was identified by asking the respondents to mark in an open street map where they live. This information was combined with hazard maps and flood risk maps available for the regions by the geographical information system Arc GIS ©ESRI.

⁴ Criteria for exclusion are – person does not live in case study region and/or is under 18 years old.

Table 6: Street survey – data characteristics

total	201	
selection for analysis	167	
not included in analysis: not living in case study area and/or not older than 18 years	34	
under 18 years	6	
not in case study area	26	
per case study region		
Lower Austria (NÖ)	97	58%
Upper Austria (OÖ)	70	42%
team	92	55%
students	75	45%
per age		
18-29 years	20	12%
30-44 years	45	27%
45-59 years	45	27%
60-74 years	32	19%
75 years and older	23	14%
per gender		
female	85	51%
male	82	49%
per migration background		
no migration background	106	64%
migration background	58	35%
1st generation	45	27%
2nd generation	13	8%
not else specified	3	2%
per location in hazard zone		
no hazard zone	74	44%
in hazard zone	84	50%
not else specified	9	5%

C) Semi-structured interviews with people affected by floodings

Similar to the street survey, semi-structured interview were conducted with people with and without migration background who are living in areas prone to natural hazards and having already experienced hazard events⁵. A total number of 23 people were interviewed, with 11 a migration background, according to the definition used in CCCapMig (Table 7).

Table 7: Overview of semi-structured interviews with inhabitants

	Triestingtal	Upper Austria
Number of persons interviewed	8	15
Migration background	8	3
Male/Female	3/5	5/10
Municipalities	Berndorf: 1, Hirtenberg: 2, Leobersdorf: 5	Kremsmünster: 8, Steyr: 3, Windischgarsten: 4

⁵ Interviews with Austrians were only carried out in the Upper Austrian case study area.

D) Detailed family surveys with people with a migration background

The family surveys were conducted to enhance the understanding of daily living conditions of migrant families, both from a social-science perspective the semi-structured guideline elaborated for interviews with people with a migration background was also used for this survey and from a spatial science perspective, by conducting a landscape planning survey on the plot to map building and open space structures, protection measures, damages from past events (spatial scale ~1:500). Two families, one with a Russian background in the region Triestingtal and one with Turkish Background in Upper Austria, were visited (Table 8).

Table 8: Overview of family surveys

	Triestingtal	Upper Austria
Number of households	1	1
Migration background	Russian	Turkish
Municipalities	Berndorf	Grünburg

E) Landscape planning survey and mapping within flood risk areas

A typology of categories, based on landscape planning strolls (Burckhardt 2015; Hülbusch 1988) in the case study municipalities, was developed to perform a comprehensive mapping within flood hazard (risk) zones on the level of individual property scale (mapping basis: cadastre; Stichtagskataster, BEV 2017). The mapping criteria were developed for four different types of maps: (1) Built environment, (2) Open-space structure, (3) Land use and (4) Local structural protection measures (private flood protection).

The data for flood hazard (risk) areas were gathered from web-GIS applications of the federal states on flood hazard and risk maps (e.g. www.doris.gv.at) and where more detailed information was available, the flood risk assessment provided by regional experts (e.g. results of run-off analysis) were used. The flood extension areas for 30-, 100- and 300-year flood events and the yellow hazard zone were the basis to define the area for mapping. The mapping was carried out empirically on site to identify the building characteristics, displayed (spatial scale ~1:5000) and analysed in Arc GIS ©ESRI. The mapping was done simultaneously with the street surveys.

F) Focus groups

Two focus groups for the Triestingtal (1st Focus Group: 28 November 2017, Berndorf; 2nd Focus Group: 21st February 2018, Leobersdorf) and two focus groups for the region Steyr/Kirchdorf (1st Focus Group, Steinbach an der Steyr 2nd March 2018, 2nd Focus Group, City of Steyr 16th March 2018) were conducted. In total, 93 persons were invited by e-mail, telephone or letters and 28 persons participated. The participants in the focus groups in the Triestingtal comprised of

stakeholders from the municipal administration, political representatives from the municipalities with and without a migration background, fire brigade members, a member of the Lower Austrian Civil Protection Association, member of the LEADER / regional management, a technical expert from the WLV (Avalanche and Torrent Control) and one representative of the water association Triestingtal. (Table 9 and Table 10) The participants in the focus groups in Upper Austria comprised of public authorities of municipalities and the City Steyr, fire brigade and civil protection Upper Austria, regional management, NGOs and inhabitants, who as well are either members of public authorities or fire brigades. Focus group discussions are often used to generate or test certain hypothesis and ideas. A short presentation on the project itself initiated the topic under discussion and was brought into the group by the researchers (Henseling et al. 2006). After a presentation of the activities of CCCapMig and the main results of the research project, a discussion started along with the three topics: lessons learned & experiences; ideas & recommendations; information & communication.

Table 9: Structure of participants in the focus groups

	NÖ	OÖ	Total
Public authorities	4*	7*	11
Fire brigade, civil protection	3	4*	7
Natural hazards, flood risk	2*	3	5
regional management	1	2	3
NGO	-	2	2
other	1	-	1
inhabitant, flood experience	-	3*	3
	10	18	28

* Persons with more than one attribution, e.g. inhabitants were as well in fire brigade or public authority

Table 10: Persons invited to focus groups and participants

FG Number	Invited	Participated	Response rate
1	27	8	30%
2	35	10	29%
3	18	8	44%
4	13	2	15%
total	93	28	30%

G) Analysis (E excluded)

All interviews were transcribed, captured in electronic data and coded by qualitative content analysis (Kuckartz 2016; Mayring 2000). This deductive approach was then extended to a mixed approach (Kuckartz 2016; Gläser and Laudel 2010) to allow for additional codes, emerging from the interviews. The input from the experts with a migration background or dealing with migration communities – as well as the semi-structured interviews with the residents, was

analysed in WP4. The coding system (supported by the software Atlas.ti) served as an analysing tool for the semi-structured interviews with the residents and experts. The basis for both the interview guidelines and the coding system was the theoretical framework developed by the CCCapMig team. In CCCapMig, the core set of codes is based on the theoretical framework and fine-tuned in a small team workshop to ensure a common understanding of all persons involved in the coding process. During the process of reading and analyzing the interviews additional complementary codes came up and were – after a discussion within the team. The codes were clustered (e.g. family: ‘damages’ = ‘own-damages’, ‘worst-damages’, ‘damages-neighbourhood’) to find a fitting systematic way to contribute to answering the research questions.

The results of the analysis were collected in internal summaries focused on the main insights and used a) as a basis for structuring the main content of the recommendations and b) as material for elaborating the recommendation themselves.

H) Recommendations and stakeholder consultation

The recommendations were elaborated based on the results gathered in WP2 and WP3. They outline the main findings of the project on the practical and consultancy part for enhancing flood risk perception and fostering self-protection for persons with migration background. **The recommendations were developed for different audiences (chapter 5).** In order to ensure the legitimacy of the recommendations, a stakeholder consultation was performed. Therefore, various stakeholders received a draft version of the recommendations (via E-mail) and were asked to give feedback according to the following questions: What are the main challenges of implementing the recommendations? Where do you see critical issues? What are the supporting factors, where are barriers? Which additional steps would be needed to successfully implement actions? Are the main contents already mentioned? Is something missing and do you have suggestions for complementary recommendations? Do you have experience with best practice in similar contents? Should some actions be moved to other recommendations? Subsequently, the feedback was used for the final recommendations, see (Stickler et al. 2019).

7 Work-time flow

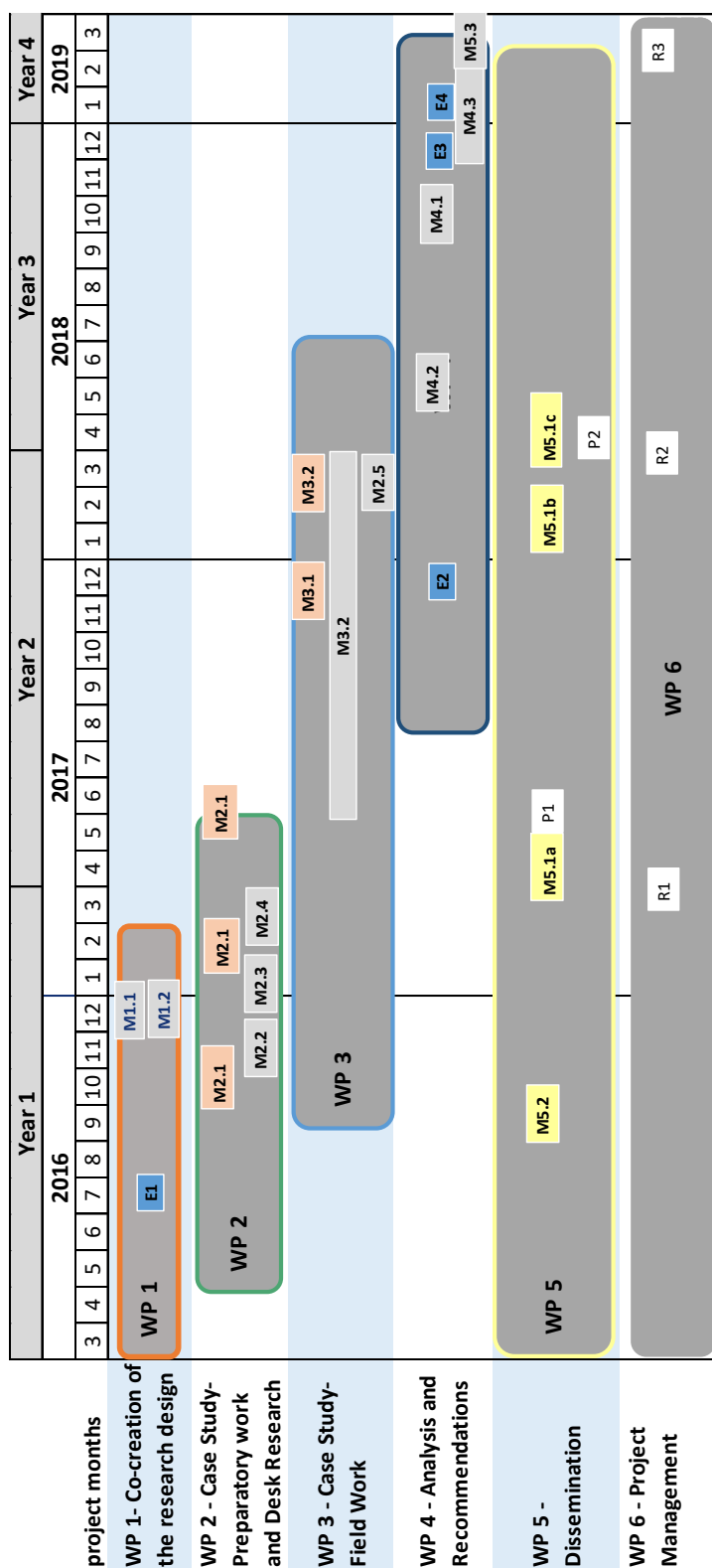


Figure 10: Work flow CCCapMig

8 Publications and dissemination

Tabellarische Angabe von wissenschaftlichen Publikationen, die aus dem Projekt entstanden sind, sowie sonstiger relevanter Disseminierungsaktivitäten.

Table 11: Publications and dissemination, CCCapMig

What & who	Location	Title
Journal article accepted for publication (2019) Weber K., Wernhart S., Stickler T., Fuchs B., Balas M., Hübl J., Damyanovic D.	Mountain Research and Development, 39(2). https://doi.org/10.1659/MRD-JOURNAL-D-18-00060.1	Risk Communication on Floodings: Insights Into the Risk Awareness of Migrants in Rural Communities in Austria
Journal article submitted, not accepted Weber, K., Fuchs, B., Stickler, T., Wernhart, S., Balas, M., Hübl, J., Damyanovic, D.	Environmental Science and Policy	"Bridging the gap: Collaborative development of a theoretical framework for research on capacity building for disaster risk reduction for people with migration background in rural Austria."
Report on recommendations Stickler, T., Balas, M., Glas, N., Weber, K., Fuchs, B., Damyanovic, D., Wernhart, S., Hübl, J.	Umweltbundesamt report - REP-0685	Naturgefahren vermitteln, Eigenvorsorge stärken. Empfehlungen für die Einbeziehung von Zugezogenen und MigrantInnen
Article in Zoll+ published (2019) Weber K., Dopler A., Wernhart S., Fuchs B., Damyanovic D.	Zoll+ Österreichische Schriftenreihe für Landschaft und Freiraum. Ausgabe Nr. 1/2019 – zoll+34. S. 54-59.	Planung und Umgang mit Hochwasserrisiko
Presentation Damyanovic D.	OSZE, Conference "Security and gender in emergencies" in March 2017 in Belgrade, Serbia.	Information about the project as part of the presentation "Gender and DRR – The European experience". Distribution of CCCapMig Folder in English

Presentation Stickler T.	Integrative Wasserbauliche Praxisgespräche, in September 2017 in Nußdorf-Debant.	"Stakeholder involvement and risk awareness: impact of stakeholder participation on risk awareness"
Presentation and Abstract in conference proceedings Weber K.; Wernhart S. (presenting) and Damyanovic D., Fuchs B. (Abstract)	2nd World Symposium on Climate Change Communication in January 2018 in Graz, Austria, 7 th – 9 th February 2018	Plenary presentation on "Target group oriented risk communication in natural hazard management" and award for an outstanding presentation.
Presentation Stickler T.	2nd Bulgarian study tour to participants from civil protection services: "Flood risk and civil protection in Austria" (Umweltbundesamt, Vienna Austria), 16-27 April 2018	Risk communication and Risk perception
Presentation Damyanovic D., Weber K.	General Assembly 2018 of the network we4DRR held on 9 th October in Graz	CCCapMig: Presentation at GA 2018 we4DRR
Presentation and Abstract in conference proceedings Weber K., Wernhart S., Stickler T., Fuchs B., Damyanovic D.	8th International Conference of Building Resilience (ICBR): Risk and Resilience in Practice: Vulnerabilities, Displaced People, Local Communities and Heritages. Lisbon, Portugal., 14-16 November 2018.	Risk perception and capacities for DRR of people with migration background in two Austrian case studies, p.127 in Proceedings: ISBN 987-989-20-8992-8

Poster and Abstract Weber K., Tschärner S., Stickler S., Fuchs B., Damjanovic D., Hübl J.	European Geosciences Union General Assembly (EGU) in April 2017 in Vienna, Austria	Geophysical Research Abstracts Vol. 19, EGU2017- 17736, 2017 "Co-Creating theories and research design for an interdisciplinary project dealing with capacity building for people with migration background in Austria"
Poster Weber K., Tschärner S., Stickler S., Fuchs B., Damjanovic D., Hübl J.	General we4DRR assembly, in May 2017 in Trento, Italy.	"Co-Creating theories and research design for an interdisciplinary project dealing with capacity building for people with migration background in Austria"
Poster and Abstract in proceedings Weber K., Tschärner S., Stickler S., Fuchs B., Damjanovic D., Hübl J.	18th Austrian Climate Day, 22-24 May 2017 in Vienna, Austria	Poster award for best poster. Abstract: Stärkung von Risikobewusstsein und Eigenvorsorge bei Menschen mit Migrationshintergrund in Österreich, 138-139 in: ISBN: 978-3-9503778-2-8
Poster at conference Wernhart, S., Weber K., Stickler S., Fuchs B., Damjanovic D., Hübl J.	"Stand der Technik im Naturgefahren Ingenieurwesen" 2018 at the BOKU Vienna.	Title: Stärkung von Risikobewusstsein und Eigenvorsorge bei Menschen mit Migrationshintergrund in Österreich
Poster and Abstract Weber K., Wernhart S., Fuchs B., Stickler T., Damjanovic D.	European Geosciences Union General Assembly (EGU) 2018, in Vienna, Austria	Geophysical Research Abstracts Vol. 20, EGU2018- 13156, 2018 "Assessing coping capacities, risk perception and level of preparedness in the context of natural hazards among people with migration background in Austria – methodological challenges and preliminary results"

Poster / Abstract and interim presentation Weber K., Wernhart S., Fuchs B., Stickler T., Glas N., Balas M., Damyanovic D., Hübl J.	19. Austrian Climate Day, 23-25 April 2018, in Salzburg, Austria.	„CCCapMig – Stärkung von Risikobewusstsein und Eigenvorsorge bei Menschen mit Migrationshintergrund in Österreich“. In: Tagungsband 19. Klimatag. Aktuelle Klimaforschung in Österreich. p.166-167
Key note speaker Stickler T.	COST-Konferenz "Towards increased Stakeholder Engagement in Flood Risk Management", 26-28 June 2019, Thessaloniki, Greece	What we need to understand about risk perception for better risk communication.
Master thesis Anna Dopler	University of Natural Resources and Life Sciences, Vienna	Dopler, Anna (2018): Landschaftsplanerische Betrachtung des Hochwasserrisikomanagements in Kremsmünster, Oberösterreich. Masterarbeit an der Universität für Bodenkultur Wien, Institut für Landschaftsplanung, Betreuerin: Damyanovic Doris und Weber Karin.
Master thesis Milena Kaunert	University of Natural Resources and Life Sciences, Vienna	Kaunert, Milena (2019): Landschaftsplanerische Betrachtung des Hochwasserrisikomanagements in Steyr, Oberösterreich. Masterarbeit an der Universität für Bodenkultur Wien, Institut für Landschaftsplanung, Betreuerin: Damyanovic Doris und Weber Karin.

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