This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 653748.
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<th>Originated by: Gabriele Quinti</th>
<th>On 25/11/2016</th>
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<td>Version 0.2</td>
<td>Reviewed by: Natividad Mansilla Ovejero</td>
<td>On 28/11/2016</td>
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<tr>
<td>Version 0.3</td>
<td>Revised by UOM, UNS, CDF, SYP, National Authority for Civil Protection, Portugal and LSC</td>
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<td>ADPC</td>
<td>Asian Disaster Preparedness Centre</td>
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<td>CBDM</td>
<td>Community Based Disaster Management</td>
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<td>C4E</td>
<td>Communication for Empowerment</td>
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<td>CO(s)</td>
<td>Citizens' Observatory(ies)</td>
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<td>EC</td>
<td>European Commission</td>
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<td>EMSC</td>
<td>European Mediterranean Seismological Centre</td>
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<td>FAG(s)</td>
<td>Flood Action Group(s)</td>
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<td>FAO</td>
<td>Food and Agriculture Organisation of the United Nations</td>
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<td>FWMA</td>
<td>Floods and Water Management Act</td>
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<tr>
<td>GIS</td>
<td>Geographic Information System</td>
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<td>ICT</td>
<td>Information and Communication Technologies</td>
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<td>IFAD</td>
<td>International Fund for Agricultural Development</td>
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<td>IPPC</td>
<td>International Plant Protection Convention</td>
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<td>LSC</td>
<td>Laboratorio di Scienze della Citadinanza</td>
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<td>NMHS</td>
<td>National Meteorological and Hydrological Service</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic and Cooperation Development</td>
</tr>
<tr>
<td>PAHO</td>
<td>Pan American Health Organisation</td>
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<tr>
<td>PID</td>
<td>Participatory and Integrated Development</td>
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<tr>
<td>PLA</td>
<td>Participatory Learning and Action</td>
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<tr>
<td>PNY</td>
<td>Patanka New Life</td>
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<tr>
<td>PRA(s)</td>
<td>Participatory Rural Appraisal(s)</td>
</tr>
<tr>
<td>PRODERE</td>
<td>Development Project for displaced, refugees and returnees</td>
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<tr>
<td>RFCC(s)</td>
<td>Regional Flood and Coastal Committee(s)</td>
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<tr>
<td>RRA</td>
<td>Rapid Rural Appraisal</td>
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RUG  University of Groningen
TCP  Territorial Coordination Master Plan
TED  Twitter Earthquake Detection
UNCRD  United Nations Centre for Regional Development
UN-DESA  United Nations Secretariat – Department for Economic and Social Affairs
UNDP  United Nations Development Program
UNESCO  United Nations Educational, Scientific and Cultural Organization
UNHCR  United Nations High Commissariat for Refugees
UNISDR  United Nations Office for Disasters Risk Reduction (for the implementation of the International Strategy for Disaster Reduction)
UN-OCHA  United Nations Office for the Coordination of Humanitarian Affairs
UoM  University of Malta
USSD  Unstructured Supplementary Service Data
VISOV  Volontaires Internationaux em Soutien Opérationnel Virtuel
VOST  Virtual Operations Support Team
WMO  World Meteorological Organization
WWF  World Wildlife Fund
Executive Summary

I – The notion of empowerment seems very general and can appear redundant. Conversely, empowerment is a construct shared by many disciplines and arenas such as community development, psychology, education, economics, studies of social movements and organizations. Moreover, this term has been adopted, as we will see below, by several important international organizations, as well as a part of the business world, establishing links with specific societal actors, i.e. people who can to be empowered (individuals such as women, specific marginalized groups, etc. and/or communities).

II – The notion of empowerment and, more importantly, community empowerment and citizens' empowerment spreads, starting from 1970s/1980s, especially in the context of political programs based on many co-existing (at least partially) approaches. The first is an ethnocentric approach, which seeks a solution to difficult social problems of ethnic groups and other minorities. The second is a conservative, liberal approach that seeks to revive the community as a social unit which, among other things, has to care for its weak members. The third is a socialist approach which demands equity and social responsibility in the treatment of social problems. The fourth approach wants to see empowerment as a profound and professional implementation of democracy – one that will contain every legitimate social, ideological current in the democratic society. This is a progressive democratic world-view which aims to live in harmony with the other approaches and attempts to create an integration of them.

III – The attention to empowerment theory and research has been concentrated more in the United States than in any other country. However, applications of empowerment concepts, and the study of those applications, have spread widely throughout the globe.

IV – There are many concepts of empowerment regarding community and citizens. These are different but appear to have (more or less) some common features: (a) empowerment is one process or more interrelated processes; (b) empowerment is multidimensional (in that it involves societal, psychological, economic, and other dimensions); (c) empowerment is related to a community (people, groups) but also to the individuals belonging to this community; (d) empowerment mainly deals with social change; (e) empowerment entails an increase of capacities of concerned people. Other aspects of empowerment may vary per the specific context and people involved (empowerment may encompass participation, collaboration, equity, social and sustainable development, etc.).

V – Empowerment process, at least at its perception level (but also at the operational one), is conditioned by the cultural context.
VI – The promotion of social and technological innovations fosters the empowerment of people in their relations with local authorities, public officials (civil defense officials, health system, etc.). In this sense, technological innovations (and, today, especially those involving ICT) can act as major drivers for people empowerment.

VII – In the context of the Community Based Disaster Management (CBDM), the notion of empowerment is crucial. People/communities, indeed, may have a major role to play in the management of community risk/disaster management programmes and being involved in a more effective way, as critical stakeholders, if they are fully conscious, empowered, and trained. Thanks to citizens' empowerment, people are provided with an opportunity to play a more active role, and this aspect is crucial given that many of the disaster management programmes have failed to be sustainable at the local level after their completion and a critical element of sustainable disaster management has proved to be communities' participation in these activities. To be as effective as possible, local communities must be supported in analyzing their hazardous conditions, their vulnerabilities, and capacities and in how to intervene at the different stages (preparedness, response, and recovery and reconstruction).

VIII – The linkage among disaster/risks management and community/people empowerment has been developed, mostly, in Asia (as shown in the full text). International organisations (such as UNISDR, UNCRD, UN-OCHA, WMO or World Bank), as well as international literature, document many empowerment practices related to disaster/risk management at its different stages (from preparedness to recovery) identified for most in this area.

IX – An empowerment approach entails a shift in disaster management strategies that could be represented as follow:

- Hazard as "core" → Vulnerability (including property concerns) as "core"
- Reactive approach → Proactive approach
- Single agency/actor → Partnerships among all the concerned actors
- Science drives → Multidisciplinary approach
- Response management → Risk management
- Planning for communities → Planning with communities
- Communicating in communities → Communicating with communities

X – Empowerment processes strengthen the resilience of communities prone to disasters.

XI – In CBDM, the relevance of empowerment processes for vulnerable groups is highlighted, considering as, while everyone living in disaster-prone areas is vulnerable, some groups such as children, the elderly, and people with disabilities are more vulnerable than others and, therefore, are the targets of empowerment actions.
XI – Empowerment is a crucial notion in relation to crowdsourcing in disasters’ management, enabling the active involvement of people in crisis mapping at the different stages (mitigation, preparedness, response, and recovery and reconstruction). For contributing (as citizens/volunteers) to crisis mapping that redraws or updates online maps of disaster-stricken areas, little or no technical expertise is needed. However, awareness raising (that is part of an empowerment process, as explained in the full text) is needed. Moreover, citizens can also contribute to the development of software platforms that use voluntary information. In this case, technical expertise is required. This can be done at the local level (mainly based on tools developed during previous disasters) but also at upper levels. Networks such as the International Network of Crisis Mappers or Humanitarian Open Street Map Team, as well as international programmes play an important citizen’s empowerment role through webinars, help desks, online forums, Google groups, specific training courses (for example, training of amateurs – e.g., students – to use mapping tools such as GPS) and international conferences.

XII – Another relevant case of crowdsourcing in disaster/risks management is represented by the Citizens’ Observatories (COs) that enable the collection and utilization of information volunteered by citizens. Through this exercise, citizens are empowered to control better their environment – first by acquiring the capacity to recognize signals of danger and to transmit these signals to the relevant authorities/experts and, then, by being involved in the management of the related risks. Citizens observatories are at the core of European Commission interest as well. Data and information collected through Citizens’ Observatories help empower societies, enabling citizens to play an active role in community decision-making and planning, in partnership with governments and local authorities.

XIII – International organisations (such as UNISDR, UNCRD, UN-OCHA, WMO or World Bank) and EC, as well as international literature, document many empowerment practices related to disaster/risk management at different stages (from preparedness to recovery) identified for the most part in Asia, much less in Europe (apart from Citizens Observatories on environmental risks which are common in Europe too). However in the above mentioned sources, about 50 potential practices on people empowerment related to disaster/hazards management have been identified in Europe and 26 have been selected as valid, according to the following criteria: they concern natural or man-made non-intentional hazards; involve a significant set of actors (as shown in the full text); have a significant social impact in empowerment terms (capacity building, awareness, decision-making, etc.); have a communicative propensity; operate in a given territory for a meaningful time frame.

XIV – These 26 practices are located in the following countries: Czech Republic (crowdmapping in 2013 regional flood; bio-monitoring campaign in Ostrava); France (crowdmapping in 2014 south-eastern flood; multifunctional water management in Rouen); Germany (inclusive decision-making in relation to Saxony River flood 2006–2013; Timmendorfer Strand coastal protection strategy); Hungary (capacity building and citizens’ empowerment in the context of heatwave and forest fire
in Tatabanya); Italy (Florence civil protection system; resilience communities policy in Potenza; civil protection experimentation in the Alto Adriatico; networking and crisis mapping after Badia landslide in 2012); Norway (Multi-Hazard Approach to Early Warning System in Sogn og Fjordane); Poland (Lodz Learning Alliance/floods and increased air pollution); Portugal (Earthquake drill and capacity-building); Slovenia (citizen scientists in Ljubljana); Spain (citizens' observatory–CO to empower citizens to contribute to and participate in environmental governance in Barcelona; environmental CO in Vitoria-Gasteiz; Stakeholders engagement to reduce vulnerability to drought in Segura and Tagus basins); Sweden (regeneration initiative of Augustenborg); The Netherlands (Delft monitoring network); UK (citizens' flooding networks in Doncaster; climate change citizens' monitoring in East Salford; support networks in the context of heat wave in London; engaged communities of resilience practice in relation to floods in Northern England 2005–2009: stakeholders and community engagement/Humber coastal floods). One of the identified practices involves four further countries (Bulgaria, Romania, Ukraine, and Moldova).

XV – Most of the identified practices are related to floods (mainly river floods but also coastal floods), but some concern other hazards, such as heatwave, forest fire, landslide, avalanche, heavy storm, atmospheric pollution increase, and civil protection in general (plans, practical exercises, etc.). Actors involved, beyond local authorities and disaster/hazard managers (national civil defense, and other technicians), are mainly "common" citizens, NGOs, and other organized groups, business and private sector, and scientific community (conversely, there is no evidence – except in rare cases – of an active involvement of media and of specific vulnerable groups – the most considered being children). Empowerment practices are mainly related to the construction of partnership/alliances among these actors and, more specifically, among civil protection and/or other relevant authorities and citizens (e.g., for the design/preparation of emergency plans) and to other networking activities; to crisis mapping and the set-up of citizens' observatories (and to people involvement in hazards/risks monitoring); to citizens' enhancement of capacities (up to the idea that people can become citizen scientists); to the organization of awareness/monitoring campaigns and to communication increase among the above mentioned actors; to the implementation of simulations/drills and to learning exercises from previous crisis. In some practices social networks and/or ICT play a relevant role. Among the effects (in relation to empowerment and beyond the specific effects in the management/control of hazards), there is/was almost always an increase of citizens' awareness of local hazards (e.g., the strengthen of a "civil defense culture") and often an increase in their skills/capacities (or in the skills/capacities of some of them) for the implementation of actions related to risk/hazard management (e.g., an increased preparedness in subsequent events). Moreover, in most cases, citizens (or some of them) become more responsible and in some cases they become more engaged in decision-making processes with civil protection and/or other relevant authorities. Solidarity increase among local community and reduced crisis management costs are sometimes other recorded effects.
XVI – Citizens’ summits held in Malta and in Bucharest have shown\(^1\) that participants showed a significant lack of knowledge about the guidelines and procedures their local disaster management authorities are following. On the other hand, participants expressed their considerable interest in information about disaster preparedness and strong intentions to prepare for disasters. Finally, they make a wide use of social media. Citizens’ summit participants cannot be considered a statistical sample of anything. However, the mentioned tendencies are so "strong" that we can have the impression that if we wish to involve citizens in hazards/disasters management, there could be a need of empowerment (due to their lack of ability and awareness, as well as, their unfamiliarity with it); and, at the same time, they manifest their availability (or willingness) to be involved in related empowerment practices.

XVII – Thus, empowerment practices in hazard/disaster management may be much more widespread in Europe; and citizen engagement following empowerment practices can be useful; while, at the same time, the citizens’ summits lead us to imagine that for being engaged citizens should be empowered. It is, therefore, mandatory to better understand how citizens' empowerment works or can work in hazards/disasters management. And this will be done through tasks 7.2 and 7.3 that will investigate the socio-economic and cultural aspects of empowerment to reach, at the end, specific recommendations that practitioners (as well as other involved actors) should take into account to guarantee a better disaster management informed by cultural and socio-economic issues. Such recommendation should inform the CARISMAND toolkit, as well as other final outputs.

\(^1\) See CARISMAND deliverables D5.3 and D5.4.
Introduction

1. Institutional Framework

This report is the deliverable D7.1 of Work Package 7 (WP7) "Citizens' empowerment" of the CARISMAND project "Culture And RISk management in Man-made And Natural Disasters" (G.A. no. 653748), funded by the European Union under Horizon 2020, and coordinated by the University of Groningen (RUG).

The project started in September 2015. The project objectives, to which the current report aims to contribute, are:

- To explore the possibilities and current practices of how cultural aspects can strengthen the ability of citizens and communities to prepare for disaster situations, respond efficiently, and accelerate recovery processes, proposing recommendations for disaster managers on how cultural values can be used for citizen empowerment

- To develop an active feedback loop between disaster management stakeholders and citizens that can be institutionalised. This will establish, test, and refine solutions for culturally informed best practices in disaster management and benefit from a wide cross-sectional knowledge transfer.

In this overall framework, WP 7 – "Citizens' empowerment", coordinated by LSC, aims to:

- Analyse the possibilities – and current practices – of how cultural aspects can enhance the ability of citizens and communities to prepare themselves, respond efficiently, and accelerate recovery processes

- Provide recommendations for disaster managers on how cultural values can be used in their day-to-day practice for enhancing citizen empowerment

- Provide substantial input for empowering citizens/communities through the Stakeholder Assemblies discussions and the Citizen Summits and for the toolkit for disaster stakeholders that will be prepared at the end of the project.

This report represents the first deliverable within the WP7 of CARISMAND project. As the final output of task 7.1, it presents a literature review and state of the art on community empowerment concepts and practices. This report deals at first with the notion of community empowerment in itself and later with the use of this notion in relation to disasters/risks
management. At the end some community empowerment practices related to natural and man-
made hazards are illustrated, aiming to identify, in some cases, also the role played in this regard
by the uptake of technologies.

This report has been prepared by the LSC team in the CARISMAND project and, more specifically,
by Giovanni Caiati, Statistician and expert in ICT and the societal dimensions of technological
innovation, and environmental issues; Federico Luigi Marta, socio-psychologist; and Gabriele
Quinti, socio-statistician, expert on social vulnerability, crisis mapping, and community
participation in relation to natural hazards, also thanks to inputs from RUG, UoM, Florence
Municipality, the Portuguese National Authority for Civil Protection, and EMSC.

2. Theoretical framework

2.1. General Approach

This review is based on research texts prepared by scholars from different disciplines (sociology,
anthropology, economics, psychology, political science, risk management) as well as policy
documents, strategies and follow-up reports of crisis and disaster management entities
(international organizations, NGOs, civil defense services, etc.) across the world that have been
involved in the management of serious crisis and disaster situations.

The approach adopted in this document has been multidisciplinary, the special focus being placed
on the societal aspects of community empowerment, also taking into account its economic,
psychological, juridical, and political aspects.

2.2. Aim

The starting point of the current review was the origin of the concept of empowerment spanning
the years 1970s and 1980s and, consequently, the multiple and sometimes partially divergent
definitions of empowerment which were minted in particular during the last 20 years.
Empowerment sometimes refers to a whole community while, in other cases, addresses specific
societal actors, in particular members of groups excluded from decision-making processes such
as women, or more in general to powerless people such as people with disabilities, elders, and
ethnic minorities. Since WP 7 concerns "citizens' empowerment", we shall consider both sets of
definitions. Afterward, we will try to identify what are the basic elements of the notion of citizens' empowerment.
Later, we will restrict the scope to citizens' empowerment in relation to risk/disaster management, taking into account both the conceptual level (concepts, approaches, etc.) and the operational one (practices related to natural and man-made hazards).

3. Methodological Framework

This report is based mostly on desk analysis and research. At the same time, the report makes partial use of the findings of the Citizens’ Summits that were organised by CARISMAND project team in Bucharest and Malta in July 2016.

The following categories of sources have been consulted:

- Books and scientific articles (in paper or on the web)
- Documents made available by agencies dealing with hazards across the world and by international, governmental (central and local) and non-governmental entities
- Documents and websites of local authorities.

These three categories of sources have been used for the literature review on empowerment (conceptual level); the second and the third have also been utilized for the analysis of several community empowerment practices related to natural and man-made hazards (operational level).

At the conceptual level, sources have been considered chronologically. Entry threshold for the sources cited has been considered whether they offered a differentiated view from the previous ones. At the operational level, a geographic approach has been adopted (a practice in a specific locality/area). According to the DoW, the review of citizens' empowerment practices has been restricted to the European countries, although many interesting experiences in citizens' empowerment happened in the rest of the world (and, therefore, some of them are mentioned, but are not considered among the 26 "European empowerment practices" described in Chapter 3).

Informal consultations with CARISMAND partners were also included.

The drafting of the report, between January 2016 – December 2016, involved the following steps:

- Analysis of the literature on the concept of empowerment, both in the "scientific community" and in the "operational community" (e.g., UN-DESA, World Bank, UN-WOMEN, WMO, UNISDR, IFAD, FAO, UNDP, etc.)

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2 See CARISMAND deliverables D5.3 and D5.4.
Overall review of the state of the art of community empowerment practices through documentary analysis (via the web)

Identification of around 50 communities in Europe prone to hazard with potential citizens' empowerment practices

Specific review of the state of the art of actual community empowerments practices in a selection of the identified communities

Analysis of results of WP3 regarding empowerment practices through the uptake of technologies

First draft of this report

Circulating the first draft to partners for comments

Revising the first draft and final report.

4. Description of the Report

The report includes: (1) an introduction into the institutional, theoretical, and methodological framework, (2) a first chapter on Community/citizens Empowerment concepts; (3) a second chapter dedicated to understanding Community/citizens empowerment process in relation to disasters/risks management. Finally, (4) a third chapter aimed at providing insight from specific situations. In this particular part of the report, a set of 26 cases of Community empowerment practices in European communities prone to man-made and natural hazards were considered. In some cases, these practices are (also) characterized by the uptake of technologies. Conclusions, summarized lessons, main findings from the case studies are highlighted at the end of this chapter.
CHAPTER ONE: Community/Citizens' Empowerment Concepts

1. What Does Empowerment Mean?

Following are several definitions of empowerment taken from some major online dictionaries are provided.

"Empower" means give power or authority to someone. "When you educate children and believe in them, you empower those kids to go after their dreams (...) empower often refers to helping someone realize their abilities and potential, perhaps for the first time"³.

Empowerment is "a management practice of sharing information, rewards, and power with employees so that they can take initiative and make decisions to solve problems and improve service and performance. Empowerment is based on the idea that giving employees skills, resources, authority, opportunity, motivation, as well holding them responsible and accountable for outcomes of their actions, will contribute to their competence and satisfaction"⁴.

Empowerment is to "give (someone) the authority or power to do something: members are empowered to audit the accounts of limited companies"⁵.

Empower is "to invest with power, especially legal power or official authority" and/or "to equip or supply with an ability"⁶.

"The term empowerment refers to measures designed to increase the degree of autonomy and self-determination in people and in communities in order to enable them to represent their interests in a responsible and self-determined way, acting on their own authority. Empowerment as action refers both to the process of self-empowerment and to professional support of people, which enables them to overcome their sense of powerlessness and lack of influence, and to recognize and eventually to use their resources and chances"⁷.

³ https://www.vocabulary.com/dictionary/empower
⁴ www.businessdictionary.com/definition/empowerment.html
⁵ http://www.oxforddictionaries.com/definition/english/empower
⁶ http://www.thefreedictionary.com/empowerment
⁷ https://en.wikipedia.org/wiki/Empowerment
Taking into account definitions found in some major online dictionaries, the notion of empowerment seems very general and can therefore appear redundant, if not worse: "empowerment is a word that has been used so often and so widely that its definition has become blurred" (Malhotra, A. et al. 2002); empowerment "became an overused buzzword in consulting, self-help, and policy circles; to many, its frequently vague, meaningless usage (sometimes, ironically, for the purpose of co-opting or placating people) has given empowerment a bad name" (Perkins, D.D. 2010).

Conversely, empowerment is a construct shared by many disciplines and arenas: community development, psychology, education, economics, studies of social movements and organizations (Kasmel, A. 2006). According to the sociologist Marie Hélène Bacqué "the concept of empowerment has gained popularity over the last two decades, in numerous fields, including social work, community health, urban policies, education, management, etc., and in various local contexts, such as international literature (Bacqué, M.H. 2014).

Moreover, this term has been adopted, as we'll see below, by some important international organizations, as well as a part of the business world, establishing links with specific societal actors, i.e. people who are supposed to be empowered (individuals such as women, specific marginalized groups, etc. and/or communities).

Before going into these aspects, some historical reference seems appropriate.

### 2. The Origin of the Notion of Empowerment

*Empower* might be considered to be a relatively recent word, but it has been around since the 17th century. Moreover, it has been used by women rights movements in the 1960s (when women felt like second-class citizens, the women's movement empowered them to stand up and demand equal rights)\(^8\).

In academic literature, the word *empowerment* first came into the scene with regards to civil rights. One of the first articles on this topic was written in 1975 and called "Toward Black Political Empowerment – Can the System Be Transformed" (Conyers, J. 1975). The following year, in the Barbara Solomon's 1976 book "Black empowerment: Social work in oppressed communities", the term "empowerment" appeared in its current usage. This sparked multiple articles discussing empowering the black community, but it also ignited the use of the word in other circles. These texts were soon followed in 1977 by an influential American Enterprise Institute monograph by Peter Berger and Richard Neuhaus entitled "To empower people: The role of mediating structures\(^8\).

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\(^8\) https://www.vocabulary.com/dictionary/empower
in public policy”. Berger and Neuhaus provided an important focus on voluntary associations, churches, and other community organizations, which serve to mediate between individuals or families and impersonal and unresponsive mass society institutions, such as large government agencies and corporations, but the authors also had a clear conservative, small government agenda (Perkins, 1995). Berger and Neuhaus foresaw increased citizen participation (or at least control, e.g. in the form of school or child care vouchers) in many policy areas, including law enforcement, education, mentoring, housing, human services, and health care (Perkins, D.D. & Zimmerman, M.A. 1995). In 1978, the social work community utilized the word in an article entitled "From Service to Advocacy to Empowerment" (O’Connel, B. 1978). Still other groups, from political entities to health organizations, latched on to the word citing it in articles such as "Grassroots Empowerment and Government Response" in Social Policy (Perlman J. 1979) and "Counselling for Health Empowerment" (Sternsrud, R.H. & Sternsrud, K. 1982). The term took off with literature discussing empowerment of marginalized peoples, such as women and the poor, and especially with regards to community development. For example, in 1983 the Women's Studies International Forum discussed empowerment of women in "Power and Empowerment" (Moglen, H. 1983).

The concept of empowerment was, therefore, introduced in the late 1970s and early 1980s (in relation to public policies/programs) and it was based on the following observations:

- The finding of the prevailing failure of social promotion programs financed by the public sector in providing appropriate solutions
- The destructive by-product of these programs, i.e. the creation of powerlessness among those in need of the programs
- The finding of how often in the implementation of such programs local knowledge and resources were ignored in corrective intervention while, in parallel, the missing resources were provided insensitively, without consideration for what is already there.

One, therefore, has the impression that—beyond some specific contributions (such as the one from community psychology, e.g. from Julian Rappaport (1984)—people start talking more and more on empowerment issues facing the (funding) crisis of public welfare. Since the public sector is not able to ensure all the necessary facilities appropriately, therefore citizens should be empowered so as to exploit their resources and enable them to make their own contribution.

In this frame, it could be useful to mention the "Sixth estate" theory, formalised at the end of the 1980s, referring to the increasing number of groups of organized citizens who work to bring law and rationality in the public services sphere and, more generally, where there is chaos and arbitrariness; this suggests the existence of a new power, the power of citizens which had to be acknowledged. This sixth "estate" adds up to the three traditional estates of democracies and those of the mass media (the fourth and fifth estate) (Quaranta, G. 1989).
Starting from those years, the issue of empowerment and, even more, of community and citizens' empowerment gained currency, especially in the context of political programs.

These programs are inspired by different approaches and ideologies. The first one is an ethnocentric approach, which seeks a solution to difficult social problems of ethnic groups and other minorities (Solomon, B.B. 1976; Gutierrez, L. & Ortega, R. 1991).

The second one is a conservative, liberal approach that seeks to revive the community as a social unit which, among other things, should care for its weak members as well (Berger, P. & Neuhaus, R. 1977).

The third one is a socialist approach which demands equity and social responsibility in the treatment of social problems. The fourth approach considers empowerment as a profound and professional implementation of democracy – one that will contain every legitimate social, ideological current in the democratic society. This is a progressive democratic world-view which aims to live in harmony with the other approaches and attempts to create an integration of them.

Beyond these ideologies, these political programs are based on a contextual-ecological approach to the treatment of social situations. Their supporters (although with different and sometimes opposed orientations) discussed the failure of social programs to provide social solutions, and the destructive by-product of these programs – the creation of powerlessness among those in need of the programs. The root of the evil, they claimed, is that local knowledge and resources are ignored during the corrective intervention and that the missing resources are provided insensitively, without consideration for what is already there.

The attention to empowerment theory and research has been concentrated more in the US than any other country. However, applications of empowerment concepts, and the study of those applications have spread widely throughout the globe. "The concept has traveled widely, from social movements to institutions and between countries of the North and South" (Bacqué, M.H. 2014). Outside the United States, Latin America has provided the greatest wealth of literature on empowerment. One of the first and best studies was conducted by Serrano-Garcia who found

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9 According to the already quoted sociologist Marie Hélène Bacqué "The concept of empowerment is (...) subject to neoliberal interpretations, in which it is used in the context of poverty management and accountability of individuals, as well as radical interpretations, in which it designates a process of emancipation leading to social change. In the latter interpretation, it aims to link up individual emancipation and social change and to help reconsider the State's relationship with individuals and collectives. It implies that social change should be considered as a bottom-up process linking up distribution of goods and social recognition".

10 In 1989, for example, first lady Laura Bush in the US, underlines the great importance of citizens organized in the United States that makes it possible to decrease the public welfare. Later, a right-wing think tank and lobby organization entitled Empower America was created in 1993 by conservative Republican political leaders and a few of their wealthiest donors. At the same time, "empowerment" was also co-opted by neo-liberals for overtly political purposes.
that empowerment could be illusory in the context of colonialism and rural development in Puerto Rico. She describes a community development intervention which used empowerment strategies and tactics (modelling of collaborative roles, explicit verbalization of values, questioning, providing information, musical interventions) to facilitate residents’ ideological and skill developments. Although participants were empowered, on an ideological level, Serrano-Garcia concluded that empowerment was only an illusion in that the dominant culture and its institutions were still conservative, capitalist, individualistic, pro-U.S., and participants remained part of that culture and were heavily influenced by its values (Serrano-Garcia, I. 1984). Another scholar, Kroeker, worked with a Nicaraguan agricultural cooperative and observed relationships across levels of organization that were complex and not always reciprocal. It met the material needs of its community. Its organizational structure and consciousness-raising processes promoted broad participation in decision making. Those and the national coop movement fostered psychological empowerment at the individual level. However, leaders tended to be autocratic, and members feared to speak in meetings and could not face crises, and outsiders thought the coop was poorly organized. Thus, there was mixed evidence of empowerment within the organization, and outsiders and the macro-political context hindered empowerment (Kroeker, C.J. 1995).

3. The Individual Empowerment

This report is focused on community/citizens' empowerment. However, before going to this level, considering that "central to empowerment process are actions which both build individual and collective assets, and improve the efficiency and fairness of the organizational and institutional context which governs the use of these assets" (Kasmel, A. 2012), it appears necessary to mention the concept of individual empowerment. The oldest and widely deployed definition of individual empowerment has been formulated by the community psychologist Julian Rappaport in the 1980s. According to him, empowerment is a "construct that links individual strengths and competencies, natural helping systems, and proactive behaviours to social policy and social change" (Rappaport, J. 1984). Moreover, Rappaport noted that it is easy to define empowerment by its absence but difficult to define it in action as it takes on different forms in different people and contexts.

Individual empowerment is a process of internal and external change. The internal process is the person's sense or belief in his ability to make decisions and to solve his own problems. The external change finds expression in the ability to act and to implement the practical knowledge, the information, the skills, the capabilities and the other new resources acquired during the process (Parsons, R. 1991). Some writers call the internal change "psychological empowerment"
and the external change political empowerment. Based on this distinction, psychological empowerment occurs on the level of a person's consciousness and sensations (or awareness), while political empowerment is a real change which enables a person to take part in the making of decisions that affect his life. To achieve psychological empowerment a person requires only internal strengths, while to realize his personal political empowerment a person requires environmental conditions, mainly organizational ones, which will enable him to exercise new abilities (Gruber, J. and Trickett, E.J. 1987).

Several further attempts have been made to define individual empowerment by means of psychological constructs. Especially conspicuous is the desire to connect empowerment to two groups of psychological constructs. The first group is that of personality constructs which are called locus of control (Rotter, J. 1966); the second group is that of cognitive constructs, which focus on self-efficacy, i.e. the belief in one's efficacy to alter aspects of life over which one can exercise some control (Bandura, A. 1982; 1989).

Locus of control is a concept with an internal-external continuum. In general terms it determines that someone whose locus of control is internal expects reinforcement from himself, possesses inner motivation, and therefore his achievements will be perceived as being more under his control. Conversely, someone whose locus of control is external, perceives reinforcements as beyond control and due to chance, fate or powerful others. Several studies have attempted to define individual empowerment by means of the locus of control construct. Here, an internal locus of control indicates the realization of the empowerment process, while an external locus of control means the continued existence of powerlessness in self-efficacy (see paragraph below). However, studies on the locus of control construct indicate that there is no unequivocal connection between important factors linked with the concept of empowerment and this construct. For example, no significant association has been found between the locus of control and political, social activity. Likewise, especially in extreme states of powerlessness, no indication has been found of the advantage of internality over externality, particularly not among women.

Self-efficacy is a central individual mechanism (which operates by means of cognitive, motivational, and affective processes) which is comprised of a person's perceived belief in her capability to exercise control over events. Studies indicate that a person's belief in her ability to achieve outcomes is, among other things, linked to her thinking patterns – to what extent they help or hinder her to realize goals. This belief determines how a person will judge her situation, and influences the degree of motivation that people mobilize and sustain in given tasks, degree of endurance in situations of stress and their vulnerability to depression, as well as the activities and the environmental frameworks that people choose. The social influences operating in the selected environments can contribute to personal development by the interests and competencies they cultivate and the social opportunities they provide, which subsequently shape their possibilities of development.
In the individual sphere, the advantage of the concept of empowerment lies in its integration of the level of individual analysis with the level of social and political meanings. This conjunction appears in feminist thinking, which connects the personal with the political: what happens in the life of an individual woman is not only her private affair; it is also an expression of her social situation. The severance between the private and the public has reinforced the view that citizens, as individuals, or as residents in a community, are not capable of effecting a change in politics or the economy: they are busy realizing personal goals and are involved in conflicts with one another for the sake of their own interests.

Self-interest is natural, and this implies that for people to cooperate and contribute to the general interest there needs to be a great change in behaviour and attitudes. Empowerment is a political concept because it comes out against these views, and connects the individual with a public, a community, and politics. Individual empowerment is a political demand by women – and men – not to stop them at the door of their residences (Ackelsberg, M.A. 1988). Empowerment promotes involvement in politics because it broadens a person's social understanding and connects her with others in the same situation; empowerment broadens a person's horizons, imbues him with faith in social change, and accords him the ability to change.

Finally, mention should be made on Keiffer’s work on personal empowerment (Keiffer, C. 1984). It is one of the major empirical studies which examine personal empowerment as a process. He labels empowerment as a developmental process which includes four stages: entry, advancement, incorporation, and commitment. The entry stage appears to be motivated by the participant's experience of some event or condition threatening to the self or family, what Keiffer refers to as an act of 'provocation'. In the advancement stage, there are three major aspects which are important to continuing the empowerment process: a mentoring relationship; supportive peer relationships with a collective organization; and the development of a more critical understanding of social and political relations. The central focus of the third stage appears to be the development of a growing political consciousness. Commitment is the final stage – one in which the participants apply the new participatory competence to ever expanding areas of their lives.

4. Some Definitions of Empowerment Regarding Communities and Citizens

According to the already quoted Douglas D. Perkins, "Empowerment is, by definition, a collective rather than just an individual process (...) In a more mundane, but real and important sense, empowerment is about the commitment it takes to do all the vital, if not always exciting, activities
that make groups and organizations effective and give their members at all levels 'voice and choice' – that is, real collective decision-making and shared leadership" (Perkins, D.D. 2010).

There are many concepts of empowerment regarding community and citizens. Some definitions are proposed below.

On the World Bank web-site\(^{11}\), empowerment is defined as "the process of enhancing the capacity of individuals or groups to make choices and to transform those choices into desired actions and outcomes. Central to this process are actions, which both build individual and collective assets and improve the efficiency and fairness of the organizational and institutional context which govern the use of these assets (...). Empowered people have freedom of choice and action. This in turn enables them to better influence the course of their lives and the decisions, which affect them (...). Empowerment (...) implies bringing together the supply and demand sides of development – changing the environment within which poor people live and helping them build and capitalize on their own attributes".

Apart from its web-site, some scholars cooperating with the World Bank have proposed definitions in the same line. According to Ruth Alsop, Mette Frost Bertelsen and Jeremy Holland (2006) "Empowerment is defined as a group's or individual's capacity to make effective choices, that is, to make choices and then to transform those choices into desired actions and outcomes".

For Deepa Narayan (2005), cooperating too with the World Bank "Empowerment is the expansion of assets and capabilities of poor people to participate in, negotiate with, influence, control, and hold accountable institutions that affect their lives".

Empowerment (in relation to communities, people, etc.) is a concept spread inside other international organisations in the United Nations.

According to the Department of Economic and Social Affairs of the UN Secretariat (UN-DESA), empowerment is "the process of enabling people to increase control over their lives, to gain control over the factors and decisions that shape their lives, to increase their resources and qualities and to build capacities to gain access, partners, networks, a voice, in order to gain control" (UN-DESA 2012).

According to IFAD, the UN International Fund on Agricultural Development, empowerment is "the various interrelated (economic and social) processes through which people, individually and collectively, acquire the ability to access the productive resources they require to increase their earnings, obtain the goods and services they need, and at the same time participate meaningfully in decision-making that affects their livelihoods. Empowerment thus concerns both accessing assets, and having and using opportunities to increase one's earnings and to participate in shaping

collective choices" (IFAD 2015a). Moreover, IFAD concentrates its attention on women's empowerment (IFAD 2015b) as a process of women scaling-up within a community related to economic and legal issues.\(^{12}\)

Women empowerment is also at the core of the interest of the World Wide Web Foundation (more specifically interested on how the web can contribute to women' empowerment). According to this Foundation, "empowerment is the expansion of freedom of choice and action; it is the ability of people to make strategic life choices in a context where this ability was previously denied to them" (World Wide Web Foundation 2015).

Going beyond the international organizations, we can find many other definitions of empowerment in relation to community/people/citizens.

For Israel et al. (1994) "Empowerment, in its most general sense, refers to the ability of people to gain understanding and control over personal, social, economic and political forces in order to take action to improve their life situations".

According to the sociologist Elisheva Sadan (2004), "The process of empowerment means a transition from a state of powerlessness to a state of more control over one's life, fate, and environment. The process is aimed at changing three dimensions of a social condition, i.e., to bring about a change in: people's feelings and capacities; the life of the collective that they belong to; and the professional practice that gets involved in the situation (...) Community empowerment is a creative process which transforms a powerless community into one that is capable of action for its interest and its environment". In this same discipline, per Wallerstein (1992), "empowerment is a social action process that promotes participation of people, organizations, and communities towards the goals of increased individual and community control, political efficacy, improved quality of community life, and social justice".

According to the philosopher and social worker Robert Adams (2008), empowerment is "the capacity of individuals, groups and/or communities to take control of their circumstances, exercise power and achieve their own goals, and the process by which, individually and collectively, they are able to help themselves and others to maximize the quality of their lives".

Jan Servaes (communication and development expert) links 'empowerment' to participation in the collective decisions at all levels of society so that people can control the outcomes of these decisions. Empowerment is making sure that 'people are able to help themselves' (Servaes, J. 1999).

\(^{12}\) It should also be underlined that the newly adopted UN Sustainable Development Goals include an important pledge to harness information and communications technologies (ICTs) to advance women's empowerment, as well as a commitment to connect everyone in Least Developed Countries to the Internet by 2020. However, women are about 50% less likely to be connected than men in the same age group with similar levels of education and household income. See World Wide Web Foundation Global report (2015).
Finally, according to the Cornell empowerment group, this term means "an intentional, ongoing process centred in the local community, involving mutual respect, critical reflection, caring, and group participation, through which people lacking an equal share of resources gain greater access to and control over those resources" (Zimmerman, M.A. 2000); or "a process by which people gain control over their lives, democratic participation in the life of their community, and a critical understanding of their environment" (Perkins, D.D. & Zimmerman, M.A. 1995).

The above-presented definitions are different but appear to have (more or less) some common features.

- Empowerment is one process or more processes interrelated\(^\text{13}\)
- Empowerment is multidimensional (in that it involves societal, psychological, economic, and other dimensions)
- Empowerment is related to a community (people, group) but also to the individuals belonging to this community
- Empowerment mainly deals with social change
- Empowerment entails an increase of capacities of concerned people.

Other aspects of empowerment may vary considering the specific context and people involved (empowerment may encompass participation, collaboration, equity, social and sustainable development), but those five listed above remain quite constant (Hawe, P. 1994).

Moreover, how empowerment is understood varies according to perspectives and context too.

A further reference in empowerment regarding citizens refers to legal empowerment\(^\text{14}\). "Legal empowerment occurs when poor, or marginalised people use the law, legal systems, and justice mechanisms to improve or transform their social, political or economic situations. The concept of legal empowerment emerged within the development community in the early 2000s from a critique of the 'rule of law orthodoxy' and its perceived top-down technical assistance approach to justice sector reform. By contrast, legal empowerment approaches are explicitly interested in the agency and priorities of marginalised people, and understanding how they can use the law to advance their interests. As a concept, it was important in reorienting the attention of the international community towards the experience of the 'end-users' of law and justice"

\(^{13}\) However, per Hawe (Hawe, P. 1994) – "Empowerment is usually described as a process, but may be considered an outcome variable (i.e. an object of interest)".

\(^{14}\) Domingo, P. and O’Neil, T. (2014). To date, understanding of legal empowerment has remained confined to a relatively small group of legal experts and within a narrow silo of justice support as part of international assistance efforts. But, as this wider legal activism continues in countries around the world, its relevance to development outcomes is becoming much clearer; this includes use of the law and justice mechanisms to expand access to public goods and services or to reduce marginalisation and inequality. This overview summarizes recent evidence on legal empowerment and highlights political economy perspectives on what it will take to realise greater empowerment for those who need it most.
programmes. At the same time, the use of the law and legal systems by disadvantaged people to contest the unfair distribution of power and resources is a real-world phenomenon that predates and exists independently of international law and justice assistance. These activities are rooted in context-specific histories of how law, politics, and development intersect to shape the distribution of resources and power

Finally, mention may be made that in marketing, empowerment is providing people (as consumers) with options, tools, and resources to facilitate decision-making, allowing consumers to tailor a product or brand experience to suit their specific needs and desires. By providing consumers with the power to make choices and take action, marketers give up control over consumer brand interaction, but the result is often that consumers are happier with the brand experience and more likely to engage with the brand in a positive way, and even become "brand evangelists" (a brand evangelist is a true fan, someone who wants to talk about and share your message and get involved in any way they can), than they are with brands that use more traditional marketing methods.\(^{15}\)

### 5. Empowerment and Power

The essence of the concept of empowerment is the idea of power. According to Lukes (1994) power may occur at several levels and this clarifies the understanding of the term and its relationship to a community organization. At the level of individual, power refers to the ability to make decisions; at the organization level power involves the shared leadership and common decision-making. The possibility of empowerment depends on two things – empowerment requires that power can change and expand (Czuba, C.E. 1999). Empowerment is a process that fosters power (that is, the capacity to implement) in people, for use in their lives, their communities, and in their society, by acting on issues that they define as important. Power is often related to the ability to make others do what we want, regardless of their wishes or interests (Weber, M. 1946). Traditional social science emphasizes sometimes power as influence and control, often treating it as a commodity or structure "divorced" (i.e., placed in another sphere) from human action (Lips, H. 1991).

The second requirement – concept of the empowerment also depends upon the power that can expand. Understanding power as zero-sum, as something that some get at others expense, cuts most of the people off from power. A zero-sum conception of power means that power will

remain in the hands of the powerful unless they give it up. Although this is certainly one way that power is experienced, it neglects the way power is experienced in most interactions.

Grounded on the understanding that power will be seen and understood differently by people who inhabit various positions in power structures (Lukes, S. 1994), contemporary research on power has opened new perspectives that reflect aspects of power that are not zero-sum but are shared. Feminists (Miller, J.B. 1976), members of grassroots organizations (Bookman, A. and Morgen, S. 1984), racial and ethnic groups (Nicola-McLaughlin, A. and Chandler, Z. 1984), and even individuals in families bring into focus another aspect of power, one that is characterized by collaboration, sharing and mutuality (Kreisberg, S. 1992) (see §2). Researchers and practitioners call this aspect of power "relational power" (Lappe, F.M. and Dubois, P.M. 1994), "generative power" (Korten, D.E. 1987), "integrative power," and "power with" (Kreisberg, S. 1992). This aspect means that gaining power strengthens the power of others rather than diminishes it such as with domination-power. Kreisberg (1992) has suggested that power, defined as "the capacity to implement", is broad enough to allow power to mean domination, authority, influence, and shared power or "power with". It is this definition of power, as a process that occurs in relationships, that gives us the possibility of empowerment.

6. Empowerment, Agency, and Governance

In the frame of the World Bank approach to empowerment, also taking into account the above-mentioned definition from Deepa Narayan, the concepts of "agency" and "opportunity structure" – will also be adopted. Agency is defined, by Alsop et al. (2006) as "an actor's or group's ability to make purposeful choices – that is, the actor is able to envisage and purposively choose options. But agency cannot be treated as synonymous with empowerment". Furthermore, Alsop and colleagues define the "opportunity structures" as follows: "Even when people have the capacity to choose options, they may not be able to use that agency effectively. They are constrained by their opportunity structure, defined as those aspects of the institutional context within which actors operate that influence their ability to transform agency into action. By establishing the 'rules of the game' for the exercise of agency, institutional contexts determine, to a greater or lesser extent, the effectiveness of agency. To complicate matters further, these rules can also influence the accrual of stocks of assets and determine the value of benefits that flow from these assets". The importance of the interaction between "agency" and "opportunity structure" is explained by Alsop and colleagues: "Using the concepts of asset-based agency and institution-based opportunity structure (...) suggests that investments and interventions can empower people by focusing on the dynamic and iterative relationship between agency and structure". According to this approach, therefore, the main components of empowerment are, on the one
hand, the agency the social actors are endowed of and, on the other hand, the "structure of opportunities" faced by these actors within various social settings (i.e., the "domains" defined by the World Bank above).

More in details, agency can be considered as the result of a set of aptitudes and capacities relevant to enable individuals and communities to increase the control over their own environment and, in particular, to act upon situations of suffering as those arising from poverty. The aptitudes we are referring to here are those relevant to promote the social action of groups and individuals, with special reference to those involved in the process that leads to the definition of choices. The capacities considered here are those concerning the ability of groups and individuals to actually pursue the choices made (CERFE 2012). It is useful to stress that, even regarding these analytical aspects, the outlined approach is in line with the definition of agency proposed by the World Bank and, in particular, with the idea that "a person or group's agency can be largely predicted by their asset endowment" whereas "assets are the stocks of resources that equip actors to use economic, social, and political opportunities, to be productive, and to protect themselves from shocks" (Alsop R., Frost Bertelsen, M. and Holland, J. 2006). As a matter of fact, the proposed approach fully recognizes that various types of assets contribute to the actors' choice process and allows taking into consideration other aspects of such a process, from a somewhat different angle, precisely using the concept of aptitude.

A further elaboration (CERFE 2012) is on the issue of "structure of opportunities", based on the link – considered by the World Bank as fundamental – between empowerment and governance. It is widely acknowledged, indeed, that a high level of empowerment tends to bring about a greater control of citizens over public institutions and better governance. On the other hand, a better governance, also at the local level, makes the institutional system (i.e., public bodies at the central and at the local levels) the societal actors (from citizens to entrepreneurs) interact with more productive in terms of both promotion of development and effectiveness of public policies (especially when the struggle against poverty is concerned). Therefore, it is fundamental to deal with not so much the empowerment in isolation, but what might be referred to as the empowerment-governance connections. In this frame, a relevant role will be given to local governance.

Linkage among empowerment and governance is explored (among others) also by OECD that considers, as related to empowerment, some good governance key elements such as accountability, decentralisation, local services delivery and transparency. "Poor people live their daily lives at the local level where they engage with the state, public services, markets and the political system. Their empowerment requires participation and accountability in local governance and decision-making through effective and inclusive local citizenship. Supporting inclusion requires an understanding of existing power relationships and the practical obstacles to participation faced by poor people. Public sector decentralisation is an important opportunity for empowerment through increased accountability for public expenditure allocations and local
delivery of pro-poor policies. Capacity development, for both communities and citizens, must promote leadership and facilitation, communication, advocacy and political skills. Widely available, transparent and substantive information is a critical but easily achievable first step in capacity development. All development aid modalities can support local empowerment and donors should coordinate to identify and maximise opportunities for empowerment at the local level" (OECD 2012).

7. Empowerment and Culture

According to the World Bank\textsuperscript{16} "(...) perceptions of being empowered vary across time, culture and domains of a person's life: in India, a low caste woman currently feels empowered when she is given a fair hearing in a public meeting, which is comprised of men and women from different social and economic groups; in Brazil, in Porto Alegre, citizens – both men and women – feel empowered if they can engage in decisions on budget allocations; in Ethiopia, citizens and civil society groups report feeling empowered by consultations undertaken during the preparation of the poverty reduction support program; in the USA, immigrant workers feel empowered through unionization which has allowed them to negotiate working conditions with employers; and in the UK, a battered woman feels empowered when she is freed from the threat of violence and becomes able to make decisions about her own life. In essence, empowerment speaks to self-determined change".

Empowerment process, at least at its perception level, is conditioned by the cultural context. But also at the operational one, since local communities are not homogeneous units. In fact, it is to consider that, in today's complex societies, identity and experience, in their many dimensions, are increasingly blending or anyhow are co-present. Moreover, holistic and monolithic approaches to communities should be avoided, considering their internal articulation and differentiation. We also found a great variety of opinions and attitudes towards the degree of cooperation with the public officials (local authorities, civil defense, etc.). Therefore, it is vital for enhancing empowerment to be as broad as possible, so that different points of view, sensibilities, and problems can be considered, as well as the resources of the different types of actors. In this sense, it is important to take into account gender, as well as generational, religious, ethnic and other differences, both to avoid forms of discrimination and violations of human rights (OSCE

2008; 2009). At a glance, social and cultural diversity is a crucial point and should be considered in relation to the actual participation and empowerment of citizens.

Moreover, culture influences empowerment processes per se. According to the scholar Robert A. White (communication and development expert), "A deeper issue are the cultural values which see minorities such as women as not capable of making a contribution. Thus, the new movements seek to 'empower' themselves by re-signifying the meaning of gender, youth, race, ethnicity and region as key actors in the development process and therefore as worthy of access to resources. Empowerment is central to the process of development, but empowerment, it is argued, needs to be located within a broader framework, which sees the goal of development as the cultural and political acceptance of universal human rights. Power must be seen as a source of social responsibility and service. Movements cannot stop at their own empowerment but must gain the respect for the rights of all in the society" (White, R.A. 2004). White also refers to Servaes (already quoted above) (Servaes, J. 1999) that emphasizes culture as the arena of the struggle for empowerment, in part because the new nations and movements for empowerment have themselves insisted that affirmation of independent cultural identity is the heart of the matter. Moreover, technology, economic and political systems are cultural constructs themselves. Within culture realm, empowerment can be considered as emerging from relationships in particular places and organizations such as families, friend groups, church, neighbourhood, workplace, community, town, and city. According to the political theorist Sheldon S. Wolin (1992), "these relationships are the sources from which political beings draw power – symbolic, material, and psychological – and that enables them to act together".

Culture and empowerment are related notions also from a totally different point of view, less in the scope of the CARISMAND project, dealing with empowerment in the sphere of management and organizational theory. In this context, empowerment involves approaches that promise greater participation and integration to the employee in order to cope with their tasks as independently and as responsibly as possible (in this frame, a strength-based approach known as "empowerment circle" has become an instrument of organizational development). Moreover, empowerment of employees requires a culture of trust in the organization and the Characteristics of an Employee Empowered Culture have been defined17.

Finally, a very specific approach to relations among empowerment and culture is suggested by the Greek architect Maria Kalsa, dealing with "on how expressions of art and culture in public space empower people in critical ways (...). Artists connected to problems and interesting arguments came to light. Together with architects, critics and people they discussed how to communicate, idealize or expose the unknown city and its darker aspects in disturbed zones. Also, how art channels interest, opens a dialog between people of different backgrounds (...). Within a rough, ever-changing urban environment, both above initiatives empower people to right to the

17 https://www.goco.io/blog/13-characteristics-employee-empowered-culture/
city while they contribute to the development of a collective conscience and point out conditions under which this can be met" (Kalsa, M. 2014)\(^ {18} \).

## 8. Empowerment and Technology Innovation

A factor that can aid the full implementation of community participation is the promotion of social and technological innovations that foster the empowerment of people in their relations with local authorities, government and other public officials (civil defense officials, health system officials, etc.). In this sense, technological innovations (and, today, especially those involving ICT) can act as major drivers for people empowerment.

As stated in Carismand D3.1 (Report on technologies use and cultural factors) "With the development of an internet and technology culture, intensive uses of technologies during disasters have been observed. Citizens develop a new culture of disaster response and blend new practices, best practices. For instance, after a disaster more and more Facebook users expect to be able to mark themselves as safe to reassure their relatives. This is changing the disaster response\(^ {19} \). The specific technological culture is changing citizens' expectations about ways to respond to the crisis (…). Mobile phones, and to a lesser but significant extent smartphones, are among the most used devices during a disaster. Mobile phones and smartphones also present the advantage to have limited but existent power autonomy, so they can be used for a certain amount of time even during a power outage. Finally, these devices are used every day for a very wide set of usages, from contacting loved ones though text messages or social media, to alarm clock, or watching the news (familiarity). During a disaster they can turn essential as they offer the possibility using very limited bandwidth to deliver timely, geo-targeted information to affected people. Because mobile phones are always in citizen's pocket and because they are so much used to using them, they are naturally and massively used during a disaster".

Therefore, a continuous innovation seems to be a key citizens' empowerment factor, and a key role here is played by specialized companies (in the field of ICT) with the capacity to provide creative, flexible and effective tools. In this regard, it should be mentioned that, apart from the

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\(^{18}\) Kalsa, M. (2014). How art & cultural diversity empower citizens: two Athenian initiatives, in "A contribution from Cultural and Creative actors to citizens' empowerment - European Citizens' Laboratory for Empowerment: CIties Shared (ECLECTIS) - A European cultural cooperation project (2013-2014) Enhance European urban space diversity Amsterdam - Barcelona - Kotor - Ljubljana - Paris - Torres Vedras, Supported by the Culture programme of the European Union. Available at: www.eclectis.eu. By facilitating cultural and artistic experimentation in public space, projects such as ECLECTIS empower citizens. This form of empowerment is precious to the public discourse because its cultural bottom-up dimension contributes to imagining new narratives and alternative practices that can inspire new means of governance.

\(^{19}\) https://www.wired.com/2016/11/facebook-disaster-response/?mbid=social_fb
obvious marketing concerns, there is a tendency for available technologies to be constantly updated and redesigned to keep pace with user requirements.

The situation, however, is not homogeneous and some cultural factors play a key role in the impact of technology innovation on citizens’ empowerment.

As stated in D3.1, "if technologies like mobile phone seem to lead to a better empowerment of farmers and women in rural areas (Murphy, L. & Priebe, A. 2011), other studies have shown a lack of interest for technologies among some communities. Studying technology adoption among 900 Irish farmers, Hennessy et al. found that farmers living alone have a much more limited access to tools such as computer than in larger dairy farms. They were also found to have a weaker interest in these tools. The authors mention that technologies adoption should be encouraged in order to tackle social isolation" (Hennessy, T., Läpple, D. & Moran, B. 2016). Taking into account the gender dimension, technology can also be a good way to empower women. Nevertheless, after a disaster, women may be "constrained by cultural norms that restrict their movement", and they may lack access to adequate technology that would allow them to get accurate and useful information.

A key factor affecting citizen empowerment in relation to the uptake of technologies is privacy. The most popular mobile applications seem to be those that can ensure, as far as possible, privacy "by design".20 Technological changes affecting community policing are linked to what is known as "civic technology" and pose new problems that need to be understood and governed, related to crowdsourcing (see §5 in Chapter 2) and system interoperability.

The adoption, management, and governance of innovation, highlights the importance of close interaction among different types of actors: central and local governments, civil defense officials, citizens (and citizen organisations), research institutions and enterprises. This interaction is crucial if we consider that a fundamental element of any innovation is technology "closure" (Bijker, W.E., Thomas, P.H. and Pinch, T.J. 1987). Over time, any technology (for example, an app) in a specific field can develop creatively in various ways, following its evolution. Often this technology exists simultaneously or in competition with others (Korteland, E. and Bekkers, V. 2007). It can happen, however, that, at a certain point, this technology assumes a well-determined form (even if temporary). This is because there is a sort of consensus among users (in our case, the riskmanagers – e.g., civil defense officials – and citizens), who, through their ideas and choices, help to select the best technological solutions or the ones that meet certain expectations and needs.

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20 Privacy by Design is an approach to systems engineering which takes privacy into account throughout the whole engineering process. The concept is an example of value sensitive design, i.e., to take human values into account in a well-defined manner throughout the whole process and may have been derived from this.
9. Empowerment and Communication

Communication for Empowerment (C4E) is one of the practical approaches developed by the United Nations Development Program (UNDP) to address the lack of inclusion and participation of marginalized and vulnerable groups in decision-making processes by identifying and meeting their information and communication needs through specific media strategies. UNDP developed a three-year C4E initiative (2007-2010) to pilot test the approach and tools.

The pilot initiative was funded by the UN Democracy Fund and was implemented in partnership with UNDP country offices in Madagascar and Mozambique in 2008 and Ghana, Nepal, and Lao PDR in 2009. The pilots in Lao PDR and Nepal specifically focused on the information and communication needs of Indigenous Peoples and were implemented by the UNDP Regional Centre in Bangkok as part of its regional initiative, Indigenous Voices: Communication for Empowerment of Asia’s Indigenous Peoples. Each pilot initiative consisted of three core elements: (i) review of the media context based on the existing research at the national level; (ii) information and communication needs assessments; (iii) program interventions informed by the findings of the assessment to ensure marginalized and vulnerable groups' participation in decision-making processes.

The final country reports present the results of the quantitative and qualitative information and communication assessments carried out at the national, district and local level. The reports also present an analysis of the media environment and media penetration and crucially identify gaps in the information and communication flow from the national to the local level and propose recommendations.

The findings from the five pilot countries and key learning from implementing the C4E Initiative are synthesized and presented in the Global Report on Communication for Empowerment (2010). The findings from each of the five pilot countries reveal several issues that are common to more than one pilot country, some highlighting emerging trends, and others reinforcing existing knowledge and challenges. But all have important implications for designing appropriate program interventions to fill information and communication gaps. They include:

- The dominant role of radio, particularly community radio, as an information medium and potentially a strong communication channel for marginalized and vulnerable groups
- The limited confidence and capacity of many people to use media to communicate
- Differential access to the media by men and women
- The importance of mixing traditional and new information technologies in strategies designed to improve democratic governance and reduce poverty
- The importance of a safe public space in providing support and expanding opportunities for communication and participation in decision-making process

- The growing importance of mobile telephony

- The importance of a supportive legal and regulatory environment for the media.

Overall, the C4E Initiative has helped to widen UNDP conception of Communication for Empowerment. It has evolved from an initial conception as part of UNDP’s access to information work- primarily geared to meeting the information and communication needs of the people through specific media strategies- to a more rigorous approach that promotes inclusive participation, empowerment of poor and marginalized people and accountability of the state to its citizens. A practical guidance note on this issue was drafted by UNDP in 200621.

A similar approach is also adopted by other actors, such as the Leadership Advance Online (an online magazine published by Regent University’s School of Business & Leadership) underlining that positive communication (giving people attention and recognition) is essential to leaders who are attempting to empower and develop people (Phillipy, T.A. 2008) and/or scholars such as the already quoted Robert A. White that underlines that “because personal and social isolation is so much a part of social passivity and exploitation, communication strategies of organization, networking, group communication, and community media are central to empowerment methods” (White, R.A. 2008).

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21 The Guidance Note (UNDP 2006) explains Communication for Empowerment and its importance to poverty reduction. It identifies trends in the media, and highlights key opportunities and challenges, including the impact of liberalization and the ongoing struggle many media face in holding onto hard fought media freedoms. The Note underscores the particular importance of radio in Communication for Empowerment strategies because of its reach, accessibility to the poor and increasingly interactive character. It also outlines a range of ways that UNDP and other development practitioners can best support Communication for Empowerment based on conducting information and communication audits, and choosing the appropriate context specific intervention strategy. It suggests that UNDP’s established roles in-country of convening, facilitating, advising and advocating, as well as its focus on capacity development and its experience in democratic governance equip the organization to play a key role in furthering Communication for Empowerment.
CHAPTER TWO: Community/Citizens' Empowerment and Disasters/Risks Management

1. How Empowerment Meets Disaster/Risk Management

From top-down to participatory approaches

Until the end of the 60s communities had never made use of the participatory approaches, for risk defence, but followed almost exclusively, a top-down approach. As stated by the United Nations Centre for Regional Development (UNCRD) (Pandey, B. and Okazaki, K. 2004) "In the past, top decisions came from higher authorities based on their perception of the needs. The communities serve as mere "victims" or receivers of aid. In practice, though, this approach was proven to be ineffective. It fails to meet the appropriate and vital humanitarian needs. Moreover, it increases requirements for unnecessary external resources and creates general dissatisfaction over performance, despite exceptional management measures employed (...). On the other hand, communities, if left alone, have limited resources to fully cope with disasters".

However, since the '70s, considering the limited impacts of these approaches, the actors mentioned above began to complement top-down approach and structural interventions with more or less effective participatory measures and non-structural actions. Since the second half of the '70s these approaches became gradually more and more "à la mode" (being often only a fashion or a vogue) and were integrated at the level of purposes or design (because the old way to intervene was, at this point, considered anachronistic), but much less actually implemented (indeed a top-down approach remained – and remains – prevalent) (FAO 2003).

"Participatory approaches are a product of long-lasting interaction between researchers, development workers, government agents and local populations. The history of participatory methods in development co-operation began in the late 1970s with the introduction of a new research approach called 'Rapid Rural Appraisal (RRA)', which immediately became popular with decision-makers in development agencies. Building on a close collaboration with local populations RRAs were designed to collect first-hand data from the local people about their perceptions of their local environments and living conditions in rural areas. RRAs were usually conducted as 1-3 days' workshops with villagers in the field and facilitated by small teams of RRA..."
specialists or researchers. RRA methods were specifically adapted to respond to local conditions. Thus, communication processes with illiterate persons not used to communication in abstract terms were carefully considered. Visualization using locally comprehensible symbols, and tools like mapping, diagramming and ranking were introduced. A limitation of RRA, however, was that the role of the local people was limited to providing information, while the power of decision-making about the use of this information remained in the hands of others.

During the 1980's NGOs operating at the grass-roots level used RRA to come up with further fine-tuned approaches called Participatory Rural Appraisals (PRA). PRAs use similar methods and tools as RRA, but the underlying philosophy and purpose changed. While RRAs aim at extracting information, often in a single event, PRAs were designed to follow more the peoples' own concerns and interests; PRA workshops were usually facilitated by a team of trained persons and could take several days (3-6). One of the most important principles in PRA was the sharing of results of analysis, decisions and planning efforts among the community members by open and public presentation during meetings. PRAs strongly supported and facilitated the introduction of more demand-responsive ways of managing development interaction, and process-oriented thinking. The latter led to sequential applications of PRA events and assisted follow-up. Thus, it built up rural people's own capacities for analysing their circumstances of living, their potentials, and their problems in order to actively decide on changes. PRA facilitators accepted more and more the role of learners.

These shifts towards interactive mutual learning were then reflected in the new terminology of Participatory Learning and Action (PLA) in the early 1990s. Since the beginning of the 1990s, extended concepts of participatory processes and interaction have been developed and summarized under the name Participatory and Integrated Development (PID). To overcome the casual application of participatory methods here and there, PID seeks to include workshops and their results in a broader, long-term frame of institutionalized activities. PID means offering facilitation support to locals (such as villages, communities, interest groups, associations, etc.) on demand responsive (i.e., on a reactive) basis, and assisting them in getting their interests represented. For example, for getting grassroots level planning and action integrated into local and regional planning approaches. This leads to a more sustainable and better coordinated way of development. In addition to this vertical integration, PID also tries to enhance horizontal integration, i.e., the collaboration of different agencies, sector organizations and different groups of stakeholders within a region" (UNDP 2012).

First cases of active involvement of citizens in the prevention and preparedness of risk/disasters

In this same perspective, since the second half of the '80s, some experiments of a deep involvement of citizens in the prevention and preparedness of risk/disasters have been
implemented, in particular in crisis mapping through the collection of information from many citizens showing the empirical importance of collecting "popular information" on environmental and social risks. An example among the first is a large project carried out by CERFE on the hydrogeological risk factors, made in Italy between 1986 and 1987, which resulted in an inventory of landslides in all municipalities at risk in this country, making use of knowledge locally available (CERFE 1987). Under several UN projects, a similar mapping of social and environmental risks has been developed in some parts of the world. A prototype of this kind of activity, the PRODERE program (Development Project for displaced, refugees and returnees) was thus applied in Central America by UNDP, UNOPS, PAHO, UNHCR and the ILO\textsuperscript{22}. The interaction between local communities and technicians led to the identification of a set of environmental and social risk factors affecting several communities involved in this program, and to their illustration on maps (UNDP 1996). Similar actions were carried out around the world, including Cambodia, Mozambique, Angola, and the Balkan region. The mapping of the environmental and social risks, therefore, can also rely on the popular information, based on the "somatic" memory (that is on internal and non-verbal), and "extra-somatic" (that is recorded in a document) of the populations inhabiting a given territory. Since then it has emerged, as a key issue, how popular information should be carefully considered by technicians (although it may be biased by their subjectivity). Convergence points can then be observed between "technical knowledge" and "popular knowledge".

However, the cases mentioned above were exceptions. More often, in relation to disaster/risk management (as well as in other sectors), participation issues were considered only because we could not avoid them (due to the fashion-vogue mentioned before) while ultimately retaining a sort of "top-down" approach where public officials, technicians (e.g., flood managers, civil defense specialists, etc.), international experts, etc. think to teach people how to participate.

According to the above mentioned sources (UNDP/Prodere, CERFE, etc.) a real participatory approach starts from recognizing how people already participate or try to participate (it is rare that such participation is completely absent while often public officials and technicians sometimes try to "teach" people what is "participation" without recognizing the participatory processes already active among societal actors) and understanding how to facilitate, to orient, to strengthen this process, adopting, in this way, a real bottom-up approach. Some features could be the following: sharing in decision making with all community’s groups being represented (especially women, disabled, elderly, minorities, etc.), cross-disciplinary collaboration, regular consultations, public hearings, transparency of decisions and actions, getting to know the opinion of people before, during and after actions have been implemented, discarding of coercion in human relations, sharing management of the project with beneficiaries (FAO 2003; WMO 2006).

\textsuperscript{22} An example of maps prepared following the PRODERE approach (but some years later) is available at: http://www.ucl.ac.uk/drrconference/posters/LBowman.pdf
Thanks to a real participatory approach, in the civil defense realm, people can play a key role in the success of measures such as awareness generation, popular knowledge valorisation, information dissemination, organizing people, warning, and evacuation (UNISDR 2009a).

_Empowerment meets disaster/risk management_

It is in this context that the notion of empowerment gains saliency and therefore empowerment meets disaster/risk management. People/communities, indeed, may have a major role to play in the community risk/disaster management programmes and being involved in a more effective way, as critical stakeholders, if they are fully conscious, empowered and trained. Thanks to citizens' empowerment, people can be provided an opportunity to play a more active role, and this aspect is crucial given that many of the disaster management programmes have failed to be sustainable at the local level after their completion and a critical element of sustainable disaster management has been communities' participation in these activities.

2. **Empowerment and Community-based Disaster Management**

_Community-Based Disaster Management_

As stated in the previous paragraph, community empowerment can be a core element for enhancing disaster management.

This assumption is one of the bases of the approach called Community Based Disaster Management (CBDM). CBDM entails a community-based participation in identification, mitigation, preparedness, response and recovery and reconstruction activities related to potential and/or experienced natural hazards. CBDM promotes a bottom-up approach working in harmony with the top-down approach, to address the challenges and difficulties. CBDM tries to integrate disaster risk factors into development planning at all levels so that the disaster management would not stand apart from the development process.

Why should we need a Community-based disaster management? The community is the first to suffer and the first real-time responder in any disaster (Rajeev, M.M. 2013). As a matter of fact:

- It is the ultimate target of any disaster preparedness and mitigation plans
- It provides a reservoir of time-tested indigenous knowledge of coping mechanisms
- It has the most authentic local knowledge on risks and vulnerabilities, facilitating easier identification of vulnerable groups
- It can prepare vulnerability and risk maps by 'default' and those plans are connected with their daily lives and livelihoods
- It is the best assessor of disaster damages
- It can also be the best evaluator of disaster recovery
- It will assume ownership of plans and programmes
- It facilitates social mobilisation.

CBDM doesn't entail emphasizing the community at the expense of the highest levels of responsibility/decision-making or of other actors (such as governments, technicians, etc.).

"In fact, the planning towards management of natural disasters has to combine both the 'top down' approach and the 'bottom up' approach. Among the various measures for disaster mitigation mentioned above there is the need to:

- Ensure that development plans incorporate disaster mitigation norms; catch early warnings
- Predict natural disasters in time, issue warnings from the disaster management authorities
- Ensure the availability of necessary hardware (such as search and rescue equipment, high wind-proof radio masts, emergency communication infrastructure, etc.)
- Have an emergency response plan
- Activate the emergency response plan promptly during a disaster
- Provide comprehensive as well as effective relief and rehabilitation to the people affected.

These actions could be undertaken with a top-down planning approach. However, several important activities also need to be undertaken, such as:

- Creating awareness among people
- Promotion of disaster mitigation and preparedness measures among the local communities
- Dissemination of warning among people in the affected areas
- Evacuation of people to safer places in the event of a disaster
- Taking precautionary measures in the post-disaster situation (such as against epidemics) all need to be undertaken with a bottom-up planning approach.

All aspects of disaster management need to integrate with the normal development planning at all levels" (Rajeev, M.M. 2013).
Empowerment in CBDM

To be as effective as possible, local communities must be supported into analysing their hazardous conditions, their vulnerabilities and capacities as they see themselves and into how to intervene at the different stages (preparedness, response and recovery and reconstruction). Therefore, an empowerment process should be promoted and/or supported.

The linkage among disaster/risks management and community/people empowerment has been developed, mostly, in Asia.

According to the Asian Disaster Preparedness Centre (ADPC 2004), "the community is at the frontier of any kind of natural hazard and disaster. Empowering the community by internalizing the tools and methods of disaster risk reduction is a good way to deal with potential future risks. Community empowerment is a type of capacity development where its members decide on the goals and strategies for disaster risk management, contribute some, if not all, of the resources needed, and monitor their performance". Taking into account a specific case (Chittagon City, Bangladesh), the ADPC specifies: "To help a community face disaster is a challenge that requires empowerment. While relief funds and goods will always alleviate suffering, their effect is temporary. There is also a danger that a community will not learn to help itself. The experience in Chittagong of repeated heavy flooding could have been enough to make people feel helpless. However, the community empowerment approach for disaster management helped create a more proactive stance and attitude among the people. Community empowerment is a type of capacity development where its members decide on the goals and strategies for disaster risk management, contribute some (if not all) of the resources needed, and monitor their performance. Rather than outsiders managing a community’s risk on their behalf, the members instead struggle to understand why they are at risk to flooding disasters, try to build consensus on the ways to reduce their risk, set priorities, and then participate in the measures needed to keep their risk low. Some of the inputs can come from outside donors, including the government. However, the community members should realize that they must put in their own time and money, even to the point of sacrifice.

This process of struggle is what strengthens community, facilitates first-hand learning and understanding about disaster risk management, and promotes confidence that they can help themselves through adversity (...). The community empowerment process instills in all its members the desire and capability to protect each other from future risk. This encourages them to channel the participatory efforts towards responding to the specific problems or natural hazards/disaster. Any assistance coming from people outside the community (such as local and national government agencies, NGOs and humanitarian agencies) cannot be a complete success without the sustainability offered by community empowerment" (ADPC 2008).
According to the UNCRD, "in order to build disaster-resilient communities, they first need to be empowered so that community members can cope with the adverse effects of natural hazards. This is the most effective approach to achieving sustainability in dealing with natural disaster risks. UNCRD is carrying out various community-based programmes to establish disaster prevention as an essential component of sustainable development" (Pandey, B. and Okazaki, K. 2004). Moreover: "the most common elements of community involvement are partnership, participation, empowerment, and ownership by the local people. Unless disaster management efforts are sustainable at individual and community levels, it is difficult to reduce the losses and scale of the tragedy" (UNCRD 2004)\(^2\). Empowerment "induces a sense of ownership for people and can result in their continuous engagement and long-term commitment to these activities (...). Additionally, individual and community ownership, commitment and concerted actions in disaster mitigation, including resource mobilization, produce a wide range of appropriate, innovative and do-able mitigation solutions, which are cost-effective and sustainable" (UNCRD 2004). And finally, because disasters are (often) unpredictable, it is important, thanks to people empowerment in CBDM, to maintain the projects and people's awareness of their likelihood.

Among others, UNCRD reports the Patanka New Life (PNY) Plan (Gujarat, India). "The aim of the initiative was to train and empower local masons and communities with proper earthquake-safer technologies focusing on local tradition and culture. Emphasis was to ensure confidence building and long-term use of traditional technologies. There were two major components of the initiative: one construction and rehabilitation of model village, and training and confidence building of communities through shake table demonstration testing. The characteristic feature of the initiative was to focus on the holistic approach of the rehabilitation including livelihood. The initiative was successful, especially in terms of community involvement and ownership. The initiative was considered a successful model for sustainable community recovery. The PNY was conceived as a model program right from its inception stage. It sought to empower the affected community to the extent that they are sufficiently resilient against future disasters" (Pandey, B. and Okazaki, K. 2004).

Moreover, through the project "Reducing Vulnerability of School Children to Earthquakes" promoted in the Asia-Pacific region by the UNCRD and the UN-Secretariat/Department of Economic and Social Affairs, three major aspects of the community empowerment in community disaster risk management (in the case of earthquakes) are highlighted: a) The projects include seismic vulnerability analysis of some selected schools in a project city of each country and retrofitting of some of them, which cover prominent construction typology in the region. This leads to the development of country-specific guidelines on the earthquake safe construction, which incorporates solutions to the practical problems experienced school retrofitting; b) UNCRD activities include improvement of the safety levels of core community facilities such as schools; the dissemination of best practices in disaster risk management at the community level; and the formulation of integrated programmes for sustainable development through disaster risk management initiatives.

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\(^2\) UNCRD activities include improvement of the safety levels of core community facilities such as schools; the dissemination of best practices in disaster risk management at the community level; and the formulation of integrated programmes for sustainable development through disaster risk management initiatives.
Retrofitting of schools in communities serves as a demonstration of proper earthquake technology to them. Masons in the communities get on-job training during the retrofitting of schools. In addition, technicians in each project cities get training on earthquake design and construction of houses. Consideration is given to the local practice, material availability, indigenous knowledge and affordability in trainings on earthquake technology; c) The project includes development and wide distribution of educational booklets, posters and guidebooks on teachers training and students' drills for earthquake disaster preparedness and response. The guidebooks get verification and are updated through training and mock drills. The projects also develops an interactive educational tool for awareness raising on earthquake disaster and simple seismic risk assessment of buildings aiming to motivate households for planning seismic upgrading of their houses (Pandey B. and Okazaki K. 2004).

Therefore, in this case, the empowerment process involves not only the community-level, but also the higher ones.

In disaster-prone central Vietnam, community-based disaster risk management puts local villages and communities at the center of preparedness efforts. The Government of Vietnam is presently (2016) spending $18.5 million on community empowerment (through community cultural and school activities, workshops and other preparedness training activities), drills and physical infrastructure construction chosen by communities across 100 communes in central Vietnam. The training, infrastructure, and public awareness raising efforts are increasing the resilience of local communities to disaster events such as floods, droughts and typhoons. Moreover, people are involved in the supervision of their construction and are responsible for operating and maintaining these structures. In this way, local ownership is encouraged. The approach taken is unique as it recognizes that communities know best when it comes to living with natural hazards. It takes into account the knowledge and expertise of local villagers, which has proven effective in reducing losses from disasters. "The Community-Based Disaster Risk Management Program, which was launched in 2009, supports Vietnamese communities to reduce the negative impact of disasters at the local level!", Van Phu Chinh, Director of the Disaster Prevention Bureau under Vietnam's Ministry of Agriculture and Rural Development, observed: "In areas where the community is highly involved in disaster risk reduction activities, losses from disasters are significantly lowered". 10.600 persons have been directly involved until now.24

In Tamilnadu and Kerala (India) many of the leading international agencies, including UN bodies, were keen on teaching the community or specific targeted groups to understand and practice various technologies related to the disaster preparedness programme. In Kerala where health systems are comparatively well established compared to other Indian States, it would be possible

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to integrate disaster management programmes through Primary Health Centres and Community Health Centres. The changes should come within the self, groups, and in the community itself. Same concepts on empowering local communities expressed after the 2004 Indian Ocean earthquake and tsunami in 2004. "Disasters can be mitigated if local communities and Government are adequately equipped to handle them. While appreciating the overwhelming solidarity with the victims of the Tsunami, the participants asserted that local communities must be made capable to spearhead any relief and rehabilitation operation in the wake of a disaster in a participatory manner. What is needed is the creation of "hazard-resilient bio-regional communities" with emergency reshuffle plans handled by fully-equipped and well-prepared Disaster Prevention and Preparedness Committees of village clusters (...) it is not out of place for each Panchayat Raj to create some kind of emergency corpus funds so that people can have immediate access to relief. This would enhance their self-esteem and make them proactive in times of disaster. In addition, identifying the immediate needs to combat any further deterioration in disaster management and effective reconstruction, such as the installation of early warning systems; streamlining of relief distribution systems; launching public awareness campaigns, and issuing guidelines to relief workers all aid in effective disaster management" (Karunakaran, T. 2006).

The World Bank too is promoting disaster management in Asia through community empowerment25 (e.g., in Indonesia, the third national programme for community empowerment in rural areas – disaster management support started in March 2011).

Finally, in a case study on earthquake at Tehran districts' level. The relationship between community empowerment and citizens' interest in participation in natural disaster management is shown. The variables of empowerment considered were information dissemination and awareness raising; training; sensitization; fatalism and social trust; highlighting:

(i) a strong positive correlation between training and citizens interest in participation in disaster management;

(ii) positive correlation between information dissemination and public awareness;

(iii) a positive correlation between sensitization and social trust with citizens interest in participation in disaster management cycle;

(iv) a negative correlation between fatalism and citizens interest in participation in disaster management (citizens interest in participation in natural disaster management decreases with high degrees of fatalism) (Vazirpour, S. and Rezaei, A.A. 2012).

A shift in disaster management

An empowerment approach entails a shift in disaster management strategies that could be represented as follow (Laurie, P. 2003):

<table>
<thead>
<tr>
<th>Hazard as &quot;core&quot;</th>
<th>Vulnerability (including property concerns) as &quot;core&quot;</th>
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</thead>
<tbody>
<tr>
<td>Reactive approach</td>
<td>Proactive approach</td>
</tr>
<tr>
<td>Single agency/actor</td>
<td>Partnerships among all the concerned actors</td>
</tr>
<tr>
<td>Science drives</td>
<td>Multidisciplinary approach</td>
</tr>
<tr>
<td>Response management</td>
<td>Risk management</td>
</tr>
<tr>
<td>Planning for communities</td>
<td>Planning with communities</td>
</tr>
<tr>
<td>Communicating in communities</td>
<td>Communicating with communities</td>
</tr>
</tbody>
</table>

About the latter, a communication with communities strategy requires an in-depth knowledge and understanding of: (1) the key features of the relevant natural hazards and disaster risks; (2) the behaviour and perception changes that the strategy is aimed at inducing in the target audiences (e.g., the type of risk reduction measures that can be adopted at different levels of government and society); and, (3) the most appropriate tools and methods to convey the information and to educate stakeholders and induce action. Since vulnerability to hazards can vary across populations, education efforts should find effective dissemination avenues for vulnerable sub-populations and reach the greatest number of at-risk individuals. These efforts must consider the specific needs, languages, cultures, as well as vulnerabilities and capacities of each audience. With diverse populations exposed to natural hazards, successful risk awareness programs should repeat their messages to each audience for maximum impact (OECD 2010).

3. Empowerment, CBDM, and Vulnerable Groups

Linkage between empowerment notion and vulnerable groups has been already highlighted in the previous chapter (§2 and §5).

Taking now into account CBDM too, it can be noticed that, while everyone living in disaster-prone areas is vulnerable, some groups such as children, the elderly, and people with disabilities are
more vulnerable than others. Therefore, empowerment of vulnerable groups should be crucial specifically in preparedness and relief operations.

In Sri Lanka, district committees and NGOs have prepared lists of the elderly and disabled people in their areas, and some NGOs have formed groups of volunteers who are responsible for caring for the elderly during emergencies. The Department of Meteorology is conducting several programs to improve disaster preparedness in coastal schools from Panadura to Hambantota\textsuperscript{26}. These programs teach children how to identify evacuation routes and prepare for disasters. Children then share this information with their families (OXFAM 2006). While the occurrence of these natural disasters cannot be prevented altogether, their adverse impact can be reduced substantially by undertaking various preparedness and mitigation measures by community involvement. Minimizing the loss of precious human life is the first priority in disaster management. Therefore, efforts should be made to minimize the vulnerability of disadvantaged groups like women, children, elders, physically and mentally challenged, and other marginalized groups.

In Bangladesh, in the already mentioned case of Chittagong City, the communities were assisted to adopt a proactive approach in taking decisions and action, with the active participation of all the stakeholders, especially the vulnerable individuals, involved in training activities. Moreover, information, education and communication material was developed to disseminate the standing orders on an early warning system to the community including the most vulnerable citizens.

In the case mentioned above in central Vietnam, among the 10,600 persons involved, mostly have been vulnerable groups that included women and children\textsuperscript{27}.

\section*{4. Empowerment, Disaster/Risk Management and Resilience}

\textit{The concept of resiliency}

Several studies discuss the relationship between community empowerment and community resiliency. To understand the relation among the notions of empowerment and resilience we firstly need to briefly address the meaning of the latter.

\textsuperscript{26} Building and Enabling Disaster Resilience of Coastal Communities (BEDROC), Reports, and Humanitarian field studies, 2004, Annie George, Nagapattinam, South India.

The concept of resilience is used in a wide number of disciplines and has been associated with the ability of communities to cope with shocks and stress (such as natural disasters).

Rooted in the Latin terms *resilire* (jump back, bounce), resilience was first used in physics of materials and later applied in ecology, developmental psychology, and psychiatry. Looking at this starting point, it has been observed that "In materials science, resilience refers to the ability of something to return to its original form after having been bent or compressed" (Kirmayer, L.J., Sehdev, M. & Isaac, C. 2009).

In ecology, resilience refers to the capacity of an ecosystem to recover from environmental stresses like fires, drought, climate change, or pollution (Holling, C.S. 1973). Ecological views of resilience emphasize the ability of natural systems to respond to stress or challenge by self-correcting processes that restore pre-existing patterns and populations of plants and animals. Kirmayer et al. (2009) have argued that "often, however, ecological recovery does not involve a return to precisely the same original state but to a new configuration in which the types of plants and animals and their relative numbers are changed to fit the new environment. In many ecological systems, therefore, resilience involves transformation: the system responds to a challenge not simply by restoring its usual form but by changing in ways that better fit the new environmental constraints".

As it is possible to see these two different concepts generates two different interpretation of resilience: the first one stresses the capacity to maintain the system functions; the second foresees the possibility of generating a new state of equilibrium as the output of the resilience capacity of a given system.

Moving from materials, and ecosystem toward humans, we may observe that "In psychology, resiliency is generally defined as an individual's ability to overcome stress and adversity. Personality psychologists have usually studied resilience in terms of individual traits or characteristics" (Kirmayer, L.J., Sehdev, M. & Isaac, C. 2009).

However, like empowerment studied started framing individuals in the context of a community, the same is happening for resilience: "researchers have critiqued these individual-centred models because they tend to ignore the larger social and cultural context in which individual development and adaptation takes place. A new body of literature is moving beyond the focus on individuals to consider the importance of social and cultural dimensions of resilience" (Kirmayer, L.J., Sehdev, M. & Isaac, C. 2009). It is in this context that is important to talk about community resiliency. This concept may have two different interpretations. On the one side "It may look at how people overcome stress, trauma, and other life challenges by drawing from social networks and cultural resources embedded in communities" (Kirmayer, L.J., Sehdev, M. & Isaac, C. 2009). On the other side: "It may consider the ways in which communities themselves exhibit resilience, responding to stresses and challenges in ways that tend to restore their functioning" (Kirmayer, L.J., Sehdev, M. & Isaac, C. 2009).
To appreciate the difference between these two concepts, it is important to highlight that "a collection of resilient people may not necessarily mean that communities are able to respond to the challenges of their environment" (Pulla, V. & Mamidi, B.B. 2015).

**Resilience, disasters, and empowerment**

Resilience, albeit in the opposite direction, is related to the concept of vulnerability. Therefore, vulnerability and resiliency have a lot of commonalities. "Both concepts focus on understanding adaptive capacities, which can be viewed as a set of socio-economic, natural and institutional resources and capacities that allow systems (e.g., communities) to be better prepared and capable of mitigating negative impacts. However, while vulnerability focuses more on stressors, such as the hazard characteristics and the exposure, sensitivity and risks related to particular hazards, resilience adds to this concept by introducing empowering and/or potentially system-transformative factors, such as learning, critical reflection, and reorganisation. Thus, resilience can be understood as a process that can open pathways to transformation as well as being simply restorative" (EC – EmBRACE 2015).

This perspective, crucial in disasters/hazards management, that consider resilience as an empowering factor, is confirmed by a shift in the definition of community resiliency that is happening in this moment from the idea of restoration of the previous situation, to the possibility of a transformative effect in the community.

In this frame, resilience is traditionally understood as "the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions" (UNISDR 2009b).

This interpretation, as many others that are in the same direction, "tends to suggest the 'bounce back', or ability to maintain the 'business as usual' understanding, which deemphasizes its capacity as this important trigger for change and reorganisation" (EC – EmBRACA 2015). It is for this reason that a new definition arises in a way to be more able to catch the transformative effects of recovery from disasters and to recognise empowerment as one of the main effects of resiliency. A first example of this kind of definition is the one provided by IPCC, for which resiliency can be defined as "the capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation" (IPCC 2014).

It is clear how this new interpretation of resilience "moves the concept beyond simply one of 'bouncing back', to encompass an interpretation that suggests that, following a disaster,
community resilience can result in change and improvement, rather than a return to the status quo" (EC – emBRACE 2015).

If on the one side empowerment has been considered as a result of resilience, there are a lot of studies that consider community empowerment as one of the main factors that can make a community resilient. In the European Project emBRACE28, it has been stated that "the learning and innovation that can take place following the physical experience of a hazard event, together with the availability and mobilisation of resources and capacities, are important components of community resilience and can determine a community's ability to regenerate, adapt, or transform" (EC – emBRACE 2015).

The Oxfam recommended "adaptive, flexible approach to resilience building with a respectable, bottom-up empowerment approach" (OXFAM 2013). Also, Pulla and Mamidi that studied Indian experience of the forest preservation actions undertaken by inhabitants of the forest explained how "empowered communities became resilient and moved towards developing sustainable strategies" (Pulla, V. & Mamidi, B.B. 2015).

Furthermore, Backer et al. (2015) on the basis of a large set of empirical research identified a model of community resilience based on three different areas, one of which is dedicated to participation and empowerment:

1. **Making a difference**, where people need to know that the small things they can do can make a difference for themselves, their families and their neighbours

2. **Participation and empowerment**, where communities are directly involved in identifying their risks and determining solutions for themselves

3. **Leadership and trust**, where communities are supported by institutions that encourage community-led initiatives and where mutual trust and respect exist.

Finally, it is important to notice that if empowerment may be considered as one of the main components to achieve resilience, "It is quite evident that empowerment and resilience have some commonalities but are not the same" (Pulla, V. & Mamidi, B.B. 2015). Therefore we cannot merge resilience and empowerment concepts but at the same time it is useful to analyse resilience in the empowerment context.

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28 http://www.embrace-eu.org/
5. Crowdsourcing in Disaster/Risk Management and Empowerment

What crowdsourcing is?

The term "crowdsourcing" was coined in 2005 by Jeff Howe and Mark Robinson, editors at Wired Magazine, to indicate the act of obtaining information, ideas, and services from a large group of people. The notion of crowdsourcing is now closely linked to the potential and developments of information and communications technology, and in particular the Internet and the social media (Howe, J. 2008).

An overall definition of crowdsourcing can be the following "Crowdsourcing is a type of participative online activity in which an individual, organization, or company with enough means proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task. The undertaking of the task, of variable complexity and modularity, and in which the crowd should participate bringing their work, money, knowledge and/or experience, always entails mutual benefit. The user will receive the satisfaction of a given type of need, be it economic, social recognition, self-esteem, or the development of individual skills, while the crowdsourcer will obtain and utilize to their advantage that what the user has brought to the venture, whose form will depend on the type of activity undertaken" (Estelles Arolas, E. and González-Ladrón-De-Guevara, F. 2012).

Crowdsourcing in crisis mapping

Crowdsourcing is a useful approach (and even more today thanks to the wide spread of ICT – especially mobile phones – in developing countries too) in the frame of the disasters/risks management in all the phases of the related cycle (prevention and preparedness, response, recovery) thanks to the facts (among others) that nowadays people from all over the world want to participate in helping people suffering from disasters. Moreover, most societal actors are organized and communicate via the internet.

Crowdsourcing is particularly useful in crisis mapping of natural hazards/disasters. Of course, "popular" (or "volunteered geographic") information coming, thanks to crowdsourcing, from citizens/societal actors in the field should be filtered and merged with technical information coming from other sources (GIS, etc.) (WMO 2016).

Since we need to develop more and more citizens' contributions through crowdsourcing to crisis mapping and, more generally, to crisis management, many capacity building tools have been developed in the last years for volunteer and community-based organizations, as well as citizen
responders, including sensitization to issues such as protection vis-à-vis to natural hazards. For capacity building, it could be useful to consider partnering with small firms already working in developing countries or other vulnerable places that have experienced consulting with the international community and government using GIS and mapping for development or recovery activities.

_De facto_, sensitization (and capacity building even more) contributes to the awareness and, therefore, to the empowerment of citizens/communities, making stronger communities and improving the sustainability of the crisis disasters management.

Empowerment of citizens/communities in crisis mapping is also enhanced by the strong links that platforms such Ushahidi and the crisis mappers have established with scientific community, and, as underlined in an evaluation of the Ushahidi platform "it should also be noted that a Standby Volunteer Task Force was launched at the International Conference on Crisis mapping 2010 precisely to aid in sustainability and preparedness" (Morrow, N., Mock, N., Papendieck, A. and Kocmich, N. 2011).

We can quote the example of the City of Boulder (Colorado, US) that has launched in September 2013a "Community Flood Assessment" crowdsourcing map to capture flood data and stories from Boulder residents and businesses. In this case29, the Boulder citizens have been empowered to contribute to a shared learning experience in order to document the September 2013 flood event. On community submittals (called reports), citizens shared data/information and attached photos or videos to enhance their story (how they lived the event). Geo-located pins associated with specific date-and-time categories like Flooding; Road damage; Path Damage; Property Damage; Debris; and overflows, allowed the creation of maps that are "easy-to-use". Once posted, all data, photos, and videos became public domain and have been used by all site users including the City of Boulder30. Thus, this information on place-and-time flooding activities helped the city in assessing the entire flood event and helped to inform future planning efforts (generating a learning process). Boulder people, therefore, have been empowered in crisis management through crowdsourcing.

In a certain sense, crowdsourcing is more important in crisis mapping during the emergency event than before. Before, during the prevention and preparedness phase(s), there is time to collect, interpret and exploit all the kinds of existing information (sometimes abundant) and, therefore, crowdsourcing plays a "complementary" role (valorising first-hand experience and traditional knowledge, providing a different idea of what is taking place, etc.). Conversely, in the emergency


phase, on the one hand there is no time and, on the other, the situation can change very quickly. Therefore, the role of citizens as human sensors, providing information is "central".

Popular knowledge (or Volunteered Geographic Information) can be characterized by a lack of reliability and, more generally, its quality can be poor (as already stated). This is especially true for information/data collected in an emergency situation and quickly. Therefore, data/information from people on the ground should be "translated" into reliable information (grabbed, filtered, sorted) and, therefore mapped. During this process, some (or a lot of) information is dropped. Nevertheless, much information is sufficiently reliable and, above all, provided early (often before information coming from other sources). This "translation", sometimes, is carried out through procedures sui generis when there is no system, in line with what has just been said, to monitor and to approve information posted by people. It is based on people's honour to put out real information with a 'vote' system in addition; information with a lot of 'no' votes is considered as not reliable and is deleted. Therefore, the system is based on a social checking. This is a way for not just filtering information provided by the crowd, but actually to include the crowd into the filter itself, contributing, further, to citizens' empowerment.

For contributing (as citizens/volunteers) to crisis mapping that redraws or updates online maps of disaster-stricken areas, little or no technical expertise is needed (Meier, P. 2015). However, awareness raising is needed, entailing the acquisition of certain skills, an increased attention to the issue, and providing some of one's own time and resources (e.g., is part of an empowerment process).

Moreover, citizens can also cooperate in the development of software platforms that contribute voluntary information. In this case, technical expertise is required that should be acquired at the preparedness stage. This can be done at the local level (mainly based on tools developed during previous disasters) and at upper levels too. Networks such as the International Network of Crisis Mappers or Humanitarian Open Street Map Team, as well as international programmes such

32 The International Network of Crisis Mappers (Crisis Mappers Net) is the largest and most active international community of experts, practitioners, policymakers, technologists, researchers, journalists, scholars, hackers and skilled volunteers engaged at the intersection of humanitarian crises, new technology, crowd-sourcing, and crisis-mapping. Crisis Mappers Net was launched at the first International Conference on Crisis-mapping (ICCM) in 2009. Crisis Mappers Networks with data from diverse sources leverage mobile and Web-based applications, participatory maps and crowdsourced event data, aerial and satellite imagery, geospatial platforms, advanced visualization, live simulation and computational and statistical models that are used to power effective early warning for rapid response to complex humanitarian emergencies. Cfr. Ziemki, J., 2011: The International Network of Crisis Mappers. UN-SPIDER Knowledge Portal. Available at: http://www.un-spider.org/book/5099/4c-challenge-communication-coordination-cooperation-capacity-development (last accessed: 4 September 2016).
33 Established in 2010, the Humanitarian Open Street Map Team (HOT) provides "free, up-to-date maps" as a "critical resource when relief organizations are responding to disasters or political crises" (cfr. See https://hotsosm.org). It aims "to apply the principles and activities of open-source and open-data sharing to humanitarian response and economic development and support the growth of the Open Street Map
as the Integrated Drought Management Program or the Associated Program on Flood Management, play an important citizens empowerment role in this regard through webinars, help desks, online forums, Google groups, specific training courses (e.g., training of amateurs – i.e., students – to use mapping tools such as GPS) and international conferences.

An example at the local level is the innovating technologies for the monitoring, modeling and managing water (IMoMo) approach developed under the leadership of a consortium of international partners34 since 2012, which achieved proof of concept in both the United Republic of Tanzania and Central Asia. Part of this approach – the IMoMo discharge mobile application – enables local stakeholders (especially farmers) to collect and transmit water-related information. Through this application – using a camera-based runoff measurement – operators can measure water level, surface velocity, and discharge. Users need to establish geo-localized benchmarks and then take a short video, which incorporates these benchmarks. The app processes measurement and results can be shared via SMS and USSD35. This information can be useful in areas where there is a lack of data for flood forecasting systems. Through this application water-related data production is increased and shared between local people and National Meteorological and Hydrological Service (NMHS) staffs to ensure availability and relevance of climate information and a better understanding by NMHS staffs of the needs of the local people. Whenever possible, citizen’s observations must be completed with other data sources (i.e., provided by NMHSs, regional and local media). However, through this exercise, farmers strengthen their competencies as well as their knowledge of the territory where they live and their capacities to control related natural risks (floods in this case).

**Crowdsourcing is disaster detection**

The EMSC (Euro-Mediterranean Seismological Centre) has developed a system to detect earthquakes thanks to crowdsourcing. The EMSC engagement strategy is based on meeting earthquake witnesses' immediate information needs after a felt earthquake. The EMSC information system, which involves websites, social media and a smartphone app, functions along a positive feedback loop. EMSC offers rapid information to engage with earthquake eyewitnesses, project". The Humanitarian Open Street Map Team coordinates the creation, production and distribution of free mapping resources to support humanitarian relief efforts in many places around the world.

34 Partners are: Hydrosolutions Ltd (Switzerland), Haute Ecole Arc - HE-Arc (Switzerland), Photrack AG (Switzerland), International Office for Water (France), Ministry of Water (United Republic of Tanzania), Zurich University of Arts - ZHdK (Switzerland), Institute of Environmental Engineering - IfU Zurich (Switzerland), Swiss Development Cooperation - SDC (Switzerland), BGW Management Advisory Group (Switzerland), University of Zurich Department of Geography (Switzerland) and the Centre for Development and Environment - CDE in Bern (Switzerland). This consortium has been funded by the Swiss Agency for Development and Cooperation (SDC) and WMO.

35 More information is available at http://www.imomohub.org/?id=1-1027-1093-1107
who are then invited to share their testimonies; testimonies are automatically processed and the resulting map of earthquake effects is automatically published, which in turn attract more eyewitnesses and improve testimony collection. In practice, EMSC's engagement strategy is based on three main principles:

- it focuses on felt and damaging earthquakes, the only earthquakes which matter to the public (Bossu, R., Laurin, M. et al. 2015)
- it provides very rapid information, typically within few tens of seconds of earthquake occurrence to meet eyewitnesses' information needs
- and finally, in order to be readily identifiable by new comers, beyond the websites and smartphone app, a presence is maintained on the main social networks Facebook and Twitter; as soon as an eyewitness gets information from one of the information tools he is invited to share his testimony and observations.

As soon as people experience shaking from earthquakes, they begin a rapid search for information in order to establish what is happening/has happened, and many turn to the Internet (Bossu, R. & Earle, P.S. 2012). Flash-sourcing, or real-time monitoring of website traffic, can be used to provide rapid information on the local effects of earthquakes due to this natural convergence of eyewitness looking for earthquake information on the EMSC website, mobile site, and/or app, LastQuake. Citizens can be considered as real time sensors. People often start arriving on the EMSC website less than 90 seconds after shaking, as was the case for a recent Virginia earthquake.

Not only do eyewitnesses search for information, but they also provide information quickly and in mass. They turn to social media, generating, in a very similar way, a surge in published tweets related to shaking experiences (Earle, P.S. et al. 2010; 2011). EMSC uses Twitter earthquake Detection (TED), an approach that applies place, time, and key word filtering to detect felt earthquakes through the surge in published tweets (Earle, P.S. et al. 2010; 2011). Using TED, EMSC found a magnitude 5.1 earthquake that struck Japan the 16th May 2016 in just 32 seconds. EMSC uses both flash-sourcing and TED to provide rapid felt earthquake information as these methods prove to be complementary with only 10% of felt earthquakes being detected by both (Bossu, R., Laurin, M. et al. 2015). These detections allow for EMSC to state simply that shaking has been reported in a given region and do not include any information about the earthquake itself, such as magnitude for example.

As well as in crisis mapping, also in disaster detection, people engagement entails the acquisition of certain skills, an increased attention to the issue, and providing some of one's own time and resources Therefore here too it is part of an empowerment process. Once arrived on the websites or the LastQuake app, EMSC asks witnesses to be information providers themselves by providing testimonies, comments, and geo-located pics. EMSC then uses this crowdsourced information to
further inform the public on where the earthquake was felt and the felt intensity of shaking. In the first 30 minutes after an earthquake strikes, for example, EMSC collected 2,400 testimonies for an earthquake in Arizona, 700 testimonies for an earthquake in England, and 160 for an earthquake in Malaysia.

The combination of flash-sourcing and crowdsourcing has proven efficient to detect felt earthquakes and to contribute to Disaster Risk reduction

**Citizens Observatories**

Another relevant case of crowdsourcing in disaster/risks management is represented by the Citizens Observatories (COs) that enable the collection and utilization of volunteer information from citizens. Through this exercise, citizens are empowered to better control their environment first by acquiring the capacity to recognize signals of danger and to transmit these signals to the relevant authorities/experts and, then, by being involved in the management of the related risks. COs main objective is to obtain useful volunteer information related to risk management (e.g., on floods, more specifically about flooded areas and water level in the river bed), in order to provide that information for decision-making. In COs, citizens-volunteers are considered as "human sensors" "since (in the case of floods) they can observe important parameters of flood risk management in a local environment. To facilitate the information provision about flood risk, the interpretation mechanisms are represented by different categories, whereas the tags for each mechanism are represented by subcategories. Thus, the volunteer can identify, more easily, the category that best represents the observed scenario. To send a report, volunteers can use both a mobile application and a Web site" (Castro Degrossi, L., Porto de Albuquerque, J., Fava, M.C. and Mediondo, E.M. 2014). Sending a report requires that volunteers provide information such as their observation (for example, the water level or flooded area), the mechanism used to interpret the environmental variable, which provides information about the water level in the river bed and the place from where the information is sent. Due to the uncertainty about the credibility of this information, reports are checked by the emergency agencies involved in risk management before they are made available on line. Moreover, this type of information is integrated, as far as possible, with data from other sources, such as (in the case of floods) sensors and rain gauges, among others. This use of volunteer information in flood risk prevention has been experimentally validated, e.g., in Brazil (De Brito Moreira, R., Castro Degrossi, L. and Porto de Albuquerque, J. 2015). It has been found that this exercise is effective in obtaining useful and accurate volunteer information since volunteers can easily provide information about the water level in the riverbed. This is an important step since in certain regions of Brazil there are no water gauges to perform such measurement in real time. In this specific case, citizens are trained on three points: the mechanisms used to interpret environmental variables (see the three scenarios mentioned
above); the crowdsourcing platform used to obtain volunteered information; and instructions about how to insert a report in the platform.

The METAGRI Project implemented by WMO in collaboration with the National Meteorological Services of Benin, Burkina Faso, Cape Verde, Chad, Côte d’Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo in West Africa provides another example of citizens’ empowerment through the citizens' observatory tool (and the case of Tanzania and Central Asia mentioned above can be assimilated to COs too). Developed in a region affected by both extreme droughts and floods, this project aims at increasing the self-reliance of rural farmers by raising their awareness about effective weather and climate risk management and the sustainable use of weather and climate information and services for agricultural production. Between 2012 and 2015, 12,499 persons (mostly subsistence farmers) were trained, through roving seminars, by multidisciplinary teams (including NMHS staff) in how to access and use weather and climate information to maximize yields and minimize risks (WMO 2015). In this project, farmers became key partners in collecting and managing climate information. National Meteorological and Hydrological Services involved in the project distributed 3,095 rain gauges to farmers who were trained in their use in conjunction with sowing calendars, which indicate suitable planting dates and appropriate crop varieties in the different locations, depending on the rainfall measurements obtained. Moreover, the interaction between NMHSs, other institutional partners, and farmers whose livelihoods depend on weather and climate increased, including more farmers in decision-making processes. The project team is currently working on the improvement of communication channels which would enable farmers to directly transmit field data to NMHSs (SMS, mobile application, etc.). Benefits would include increased availability and relevance of climate information and a better understanding by NMHSs of the needs of the farmers.

Citizens' observatories are also at the core of European Commission interest. A specific topic "Coordination of citizens' observatories initiatives" will be funded by the DG Research in the frame of H2020 Societal Challenge n. 5 "Climate action, environment, resource efficiency, and raw materials". Citizens' observatories are intended to be community-based environmental monitoring and information systems which build on innovative and novel earth observation applications embedded in portable or mobile personal devices. Thanks to the vast array of ubiquitous information and data they can provide, citizens' observatories can enable authorities to obtain evidence and inform environmental policy making, complementing more authoritative in-situ observation and monitoring networks and systems with a very positive cost-benefit ratio\(^\text{36}\). Data and information collected through Citizens' Observatories help empower societies, enabling citizens to play an active role in community decision-making and planning, in partnership with

governments and local authorities. In the recent past two workshops on this issue, hosted by the European Commission, were held in Brussels on January, 29-30 2013, and December, 3 2014. The day later, an open conference "The Citizens Observatories: Empowering European Society" was organized in order to provide an opportunity for citizens to engage with experts and practitioners working across a range of European citizen science initiatives and policy making bodies (all that reflects the fact that the EC considers the citizens' observatories as an empowerment tool).

The EC funded Citi-Sense project should be quoted, related to "Environmental Citizens' Observatories" understood as "Communities of users who share technological solutions of information and community participation methods using appropriate communication solutions, complemented with data and information systems to improve decision-making process related to environmental policies". The development of these observatories rests on three pillars: technological platforms for distributed monitoring of environmental quality by sensors (people participate by collecting objective information – environmental data such as temperature, the wind, noise, humidity, water level, etc. – and subjective – their wellbeing – in the areas analysed; thus, they understand the necessary balance between perception and objective information, being both true and important); information and communication technologies through web, apps and social networks; and tools to involve citizens and social actors in decision-making processes. Therefore, citizens' observatories are tools "to empower citizenship involving them in the decision making about environmental management in the city".

Citi-Sense aims to empower citizens to both contribute towards and participate in environmental governance by developing up to 30 Citizens' Observatories supporting a range of services related to environmental issues of societal concern with participatory sensing tools and methods being central.

Other relevant EC funded projects on Citizens' Observatories (in relation to hazard management) are:

- WeSenSeit (the Citizens' Observatory of Water) enables citizens to become active stakeholders in information capturing, evaluation and communication for the water environment including flood risk; this project captures data from innovative sensor devices developed within the project used by the citizens; relies on citizens' collective intelligence via

37 http://ec.europa.eu/research/environment/index.cfm?pg=earth
39 http://www.citi-sense.eu/
41 http://www.wesenseit.eu/
social media (e.g., Twitter, Facebook, etc.); and enables communities to upload key information to the observatory via its mobile app. In addition, WeSenSeit has created a network of professional hydrological sensors. These sensors inform its modeling work.

- COBWEB\(^{42}\) (Citizens Observatory Web) seeks to design, develop and validate the necessary software infrastructure to facilitate and make possible the opportunistic harvesting and quality control of crowdsourced environmental data within the context of the UNESCO World Network of Biosphere Reserves; COBWEB is focused, among others, on flooding.

\(^{42}\) http://cobwebproject.eu/
CHAPTER THREE: Community/Citizens Empowerment Practices in Disasters/Risks Management

International organisations (such as UNISDR, UNCRD, UN-OCHA, WMO or World Bank), as well as international literature, document many empowerment practices related to disaster/risk management at different stages (from preparedness to recovery) identified mostly in Asia (with the exception of Citizens Observatories on environmental risks, which are diffused in Europe as well). Short descriptions of some of these practices have been provided in the previous chapter.

This chapter is devoted to community/citizens’ empowerment practices in disasters/risks management located in Europe which were found in the literature review (beyond this literature review, a field work is foreseen on subsequent tasks of the WP7). European cases, in the literature, seem much less frequent, than cases in other continents. It could later be checked if this corresponds to reality or whether it depends on the greater attention paid, particularly by international organizations, but also by scholars in the field, for non-European contexts. It could also be assumed that the greater solidity of the civil defense systems in many European countries could lead to underestimating the relevance of citizens' empowerment in disasters/risks management (as it could partially also emerge from the two Citizens’ Summits held in the frame of the CARISMAND project). For example, in the documents of the Italian civil protection (at central level), while considerable importance is attached to the consultation, information and also the involvement of local communities in decision-making processes in relation to disaster management, citizens’ empowerment is not mentioned.

Nevertheless, some cases in disaster/risks management that entails empowerment practices have also been identified in Europe and are reported below. These cases have been identified in the Czech Republic, France, Germany, Hungary, Italy, Norway, Poland, Portugal, Slovenia, Spain, Sweden, the Netherlands and the UK. Moreover, a last practice identified involves four other countries (Bulgaria, Romania, Ukraine and Moldova).

In the following paragraphs, practices identification criteria are specified. In the second paragraph (dedicating one subparagraph for each country mentioned), these practices are described (in order to describe the cases selected, we have relied largely on the documentation available for

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43 CARISMAND, deliverables D5.2. and D5.3.
each of them from which ample passages were utilized). Lessons learned, and main findings from the case studies are summarised and highlighted at the end of this chapter.

1. How European Empowerment Practices Have Been Identified

Research, at this first phase (field work will be implemented in the frame of tasks 7.2 and 7.3) focuses on a group of initiatives undertaken in Europe (the whole Continent and not only EC member countries) on disaster/risk management at different stages (from preparedness to recovery). We considered hazards such as the so-called natural ones (flood, landslide, earthquake, volcanic eruption, avalanches, extreme temperature and drought, huge storm, wildfire, tsunami, atmospheric pollution increase, etc.) and some of the so-called man-made non-intentional hazards (industrial and nuclear, transport, non-industrial explosions, etc.). The so-called man-made intentional hazards (famine, displacement of population, civil disobedience, terrorism and conflicts, weapons of mass destruction, cyber-attacks, etc.) have not been considered, not so much as to limit the scope of investigation, but because this last category of hazards, are usually managed by institutional actors different from those managing the previous ones, which are commonly managed by the civil defense and similar institutions.

The initiatives considered in task 7.1 were selected according to the following four fundamental characteristics (in our assumption – as discussed in the two previous chapters – there cannot be empowerment if these characteristics are not present).

- **Sociality.** Compared to others, the identified initiatives involve a significant set of actors (a whole local community or, at least, groups of citizens as well as institutional actors and/or scientific community).

- **Social impact.** Moreover, these initiatives should have a significant social impact in empowerment terms (producing, for example, changes in common behaviours, the introduction of new rules or regulations, changes in the way people or organizations use resources, capacity building, more awareness, broader involvement in decision-making, etc.).

- **Transparency.** These initiatives are also distinguished by their transparency, having a "communicative" propensity, providing access to information about the results achieved and entering relationships of interaction and exchange with other initiatives.

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44 We have adopted the same typology proposed in CARISMAND, deliverable D2.1
2. Some European Empowerment Practices

2.1. Czech Republic

Citizens’ Observatories and bio-monitoring campaign in Ostrava

Ostrava/Silesia is one of the most air polluted areas in the Czech Republic due to its density of heavy industry. Over the last decades, high concentrations of PM2.5 (particles smaller than 2.5 \( \mu \)m) and B(a)P (benzo(a)pyrene), both proven human carcinogens, have been measured in the air continuously, exceeding the limits for human health protection. The CITI-SENSE\(^{45}\) Empowerment Initiative (EI) in Ostrava aimed to answer some of the citizen concerns. Air quality measurements between winter 2013 and winter 2016 have been carried out. Usually, in winter time, air pollution in this location reaches high concentrations well above the limit values. The measured concentrations during the period of the Ostrava EI exceeded the limits for health protection 25 \( \mu \)g/m\(^3\) PM2.5 and 1 ng/m\(^3\) B(a)P several folds. Part of the EI was also a bio-monitoring campaign\(^{46}\). Volunteers have kept a time-location-activity diary and answered a questionnaire about their lifestyle and an air quality perception questionnaire. They also could try out the ATEKNEA personal sensor (LEO) and use the mobile application CityAir. The Citi-Sense static sensors and the compliance air quality monitoring network were providing background data about PM2.5, B(a)P and NOx. Citizens and NGOs also had a chance to cooperate closely with scientists and ask questions about air quality. The bio-monitoring campaign has been accompanied by an awareness raising initiative. In the air quality perception questionnaire, 94% of the volunteers described the air quality in their city as bad, associated with frequent inversion episodes, smog, breathing problems, bad smell, dust, smoke, dirt, an industry with a terrible smoke, and home heating. Asthma was mentioned as a predominant health problem. The residents underlined their feeling of having a reduced life quality as the air pollution limits their outdoor activities. About 96% of the respondents said that air pollution affects their health. Young

\(^{45}\) Citizens’ empowerment practices from Czech Republic, Slovenia and Spain are reported in this chapter. However Citi-Sense 7\(^{th}\) FP EU funded project involves many other countries: Austria, Belgium, Germany, Israel, Italy, Norway, The Netherlands, Serbia, South Korea, UK - http://www.citi-sense.eu/Project/Consortium.aspx. Pilot cases are developed in 9 cities (Barcelona, Belgrade, Edinburgh, Haifa, Ljubljana, Oslo, Ostrava, Vienna and Vitoria-Gasteiz).

people identified air pollution as a reason for leaving the region. Cooperation with the city authorities unveiled a demand for raising children's awareness of air pollution. Subsequently, educational programs about air, air pollution, and its prevention have been carried out in kindergartens and primary schools with great success. At the end of all empowerment initiatives, a public seminar was organized in Ostrava for all stakeholders presenting the project results and enabling a discussion about air pollution problems in the region and potential solutions.

**Regional floods 2013**

Media can play an important role in empowering citizens with respect to natural hazards. The Crisis map of Czech Republic had been deployed during regional floods in May 2013 by the Czech public television. It brought some practical lessons on the use of social media to crowdsource crisis data from the citizens as well as on the use of traditional TV broadcasting to feed curated citizen reports back to public. As a context element, we have to consider that Czech Republic is a mid-size country with standard emergency response mechanisms in place and working. Therefore, normally, disasters usually do not cause the whole system to collapse.

Having received feedback that such project did help to save property, it has been an opportunity to test the hypothesis of the need to close one of the gaps in emergency reporting and information sharing. In the summer of 2012, the Czech television's (public broadcaster) new media division team met with official responders and humanitarian organizations for the first time. The aim was to explore the possibility of collaboration on a crisis mapping project where public plays critical role in reporting.

In this case, it has been clear from the very beginning that the map prepared with an active citizens' role was not a replacement but a complement for the emergency system or any other official mechanism, on the basis of the following assumptions:

- People share and will share pictures, videos, on an increasing level. Crisis map can become the interface, where such information will be curated and verified to the possible extent. Through intense social media monitoring, we can manage to catch emerging hoax faster and therefore use the power of TV broadcasting to disperse it from the very beginning

- People are not addressed as victims but as partners in reporting. It is clearly stated on the map itself – “Become a crisis-reporter, tell us what you see around you” – and TV emergency broadcast is repeatedly used to explain what the map is for and what it means to be a reporter. This improves the situational awareness of population given that media crews cannot be everywhere, official responders make only part of information public and responsible authorities don't use all possible channels to inform citizens in an effective manner
– The map is a first go-to place for wannabe volunteers to go if they want to help effectively. By displaying the locations of volunteer coordination centres, contact info as well as actual material needs of humanitarian responders we streamline the process into coordinated manner.

The feedback was rather cold and negative from expert/authorities, who thought to have already reliable systems in place. The feeling was that maps of that kind would just add unreliable noise, spread hoaxes and induce volunteers to show up in an uncoordinated manner. As responders simply put it: "The second disaster that comes after the first one are volunteers".

This negative example has not been considered as a surprise by the crowdsourcing community going beyond the "tech can save everything" mindset already. According to them, the key was to identify the added value this empowerment practice could potentially have for improved situational awareness and citizen response coordination in a disaster management. "We simply believe that there is a great need for a communication channel where citizen crisis reporting can be leveraged to fill some cracks in the system and brings additional value through information curation process"47.

2.2. France

South-Eastern floods 201448

Created in January 2014 but already (informally) active since 2012, the VISOV49 association has twenty digital Francophone volunteers that are multidisciplinary, such as firefighters, rescue workers, crisis managers and consultants in communication. During disasters or major events (flood, earthquake, tsunami, terrorist attacks or train accidents), VISOV may support technical and methodological reinforcement for Internet monitoring (crowdsourcing) collaborative

47 https://www.ushahidi.com/blog/2013/08/12/power-of-crisis-crowdsourcing-media-broadcasting-3-key-roles-for-mapping-emergencies-live
48 http://vosg.us/blog/2015/05/12/french-vost-association-visov-publishes-new-smem-guide-in-french-and-launches-new-msgu-website/ - Virtual Operations Support Teams (VOST) as applied to emergency management and disaster recovery is an effort to make use of new communication technologies and social media tools so that a team of trusted agents can lend support via the internet to those on-site who may otherwise be overwhelmed by the volume of data generated during a disaster. VOS Teams (VOST) are activated to perform specific functions in support of affected organizations & jurisdictions. Each VOST has a Team Leader that reports directly to the affected organization/jurisdiction. As additional VOSTs are established, a VOS Group (VOSG) may be established to coordinate the work of the VOSTs to maintain an effective span of control. The VOSG has a Group Supervisor that reports to the affected organization/jurisdiction. The VOST Leaders report to the Group Supervisor.
49 Internationally, VISOV is recognized as a VOST – Virtual Operations Support Team (list available on http://vosg.us/). In recent months, members of the association provided assistance during weather disasters in the Philippines. Assistance in Internet mapping and monitoring is underway following the tragic earthquake in Nepal.
mapping (crowd mapping) and broadcast messages on social media, such as precautionary and public safety advice.

In coordination with the authorities (fire departments, prefectures, etc.) or NGOs and other operators who apply to the association for assistance, VIS OV members act from the heart. They support the actions of the emergency forces to locate and assist people in a disaster, to identify those on social media asking for help before, during and after a crisis and to achieve a wider dissemination of messages and advices related to civil security.

In 2014, VIS OV was particularly active during the floods in south-eastern France, an annual predicament lasting several days (sometimes involving VOST support every day, every hour), with hundreds of volunteer hours accumulated.

VIS OV advocates for a useful and practical solidarity of the digital presence for each volunteer.

With their good knowledge and thanks to their high level of availability and involvement (related to capacity-building and awareness raising actions), digital volunteers in emergency management:

- Contribute to save lives (geo-location, prevention messages, accelerating research and detection of affected/missing persons, etc.), considered to be the ultimate mission
- Gain faster access to information in real time and benefit from a better understanding of the current event
- Assist and guide both protection / civil security authorities and citizens in difficulty
- Participate in the dissemination of alert messages and relaying communications from public authorities to citizens
- Interact with people in distress or present at impacted places
- Verify, correct information, or even cut short the rumors
- Relay critical information about the crisis upstream to official allies/partners.

Through their presence on social media, the web in general and more through their mobile phone, citizens become actors of their own safety. VIS OV is positioned as a relay and an interface between the public and civil security authorities such as firefighters, government crisis units, and NGOs.

**Multifunctional water management in Rouen**

The former industrial area "Luciline" in Rouen, along the river Seine, has been re-designed profoundly into an Eco district (9 hectares in total), including both climate change adaptation and
mitigation solutions\textsuperscript{50}. Sustainable living is the principle core of the neighbourhood re-design. Sustainability aspects are implemented by means of energy, water, biodiversity, transport and planning solutions that in most cases play an important role in climate change adaption or mitigation. Measures include: a system of small canals connected to the river Seine improving drainage of water from buildings (rooftops in particular) and open spaces, green areas and tree corridors, heating and cooling systems using ground water (prior to its release to the river Seine), energy saving in buildings, good access to public transport, easy accessibility of the area by foot and bicycle and compact building planning.

One of the main challenges of this case is increased frequency and intensity of heavy rain water events and related impacts on storm water drainage and management.

The dialogue with the population of the city has been explicitly obliged by the framework of the "urban development zone" procedure. Therefore, public consultations have been organised in order to involve the civil society, i.e. citizens and their associations.

A wide number of actors have been involved in the realisation of the project. Users have been involved in the development process in order to create public awareness and commitment. The neighbourhood has been subdivided into 13 building blocks ("ilots" – small islands), which are developed by different developers and architects cooperating (and, in this way, empowering) people. Citizens also cooperated with entities such as ADEME (the Environment and energy management agency), advising on environmental and energy matters, for example in the development of a "heat fund" (Fonds Chaleur) to save money for future investments on the heat network. Advice has also been given by EPF Normandie (Institution for public space development), CAUE (Architectural, urbanism and environmental consulting), OGI (Research & development of public space) and H. Pénicaud (Environmental research).

2.3. Germany

Saxonian river floods

In 2002, Saxony experienced a major flood event resulting in 8.7 Billion euros. The 2002 flood was followed by series of smaller, regional but still devastating flood events such as the 2006 flood at the upper parts of the Elbe River and the 2010 flood at the Neiße River and finally the 2013 flood resulting again in approx. €1.9 Billion of financial damages. Because of the 2002 flood and

subsequent repeated smaller flood events, Saxony started to rethink its approach to flood management\textsuperscript{51}.

In many communities, learning processes were triggered by the 2002 flood, processes that resulted in an increased preparedness in subsequent flood events. However, learning was clearly concentrated on improving the operational and technical procedures within existing institutional structures and hence on incremental changes.

After the 2013 flood, more fundamental learning processes happened. In general, the perception of the threat potential of the flood risk has changed considerably as a consequence of the 2013 flood. While after 2002 the focus was on improving the existing flood management systems (e.g., new and better dikes, improved warning systems, improved emergency management), the 2013 flood shattered the idea quite substantially that increased effectiveness and efficiency will reduce the risk of flooding, at least on the local level. People considered that the risk of flooding is not reducible to zero through improving the established approach. On the contrary, flood events, such as the ones in 2002 or 2013, can happen on a quite regular basis. In this sense, the reflection and learning processes as a consequence of the 2013 floods are more fundamental and they question, to a certain extent, not only the dominant, institutionalized way of how floods are managed, but also the very relation between settled/urbanized areas, the way such areas are protected and the role and prospective "behaviour" of the river and its surrounding floodplain.

Learning from previous floods can be considered to be a basis for empowerment. Many households in the exposed areas have experienced multiple flood events since 2002, some of them up to three or even four floods in 11 years. Households that were strongly affected by the floods also report more often to have implemented private mitigation and/or purchased an insurance against natural hazards. They also feel better prepared with each flood event. As a matter of fact, households that took private mitigation measures since they experienced multiple flood events have also experienced highly negative consequences, have taken longer to return to normality and are worse off than those who have taken no measures. Therefore, there is a positive relation between high impact and active engagement regarding preventive activities. The feeling of protection is important too. People that perceive the implementation of private mitigations as a serious issue, of course, have also more often taken actions both before and during flood events. Self-efficacy has also generated attitudes towards responsibility. Therefore, a decisive factor shaping attitudes towards responsibilities has been the actual flood experience (however, such a responsibility overwhelms people; not everyone is convinced that private actions can make a difference).

Inclusion in decision-making processes has also been important. Included people are more willing to take the time and would like to contribute with their knowledge and personal experience to

participatory processes and have taken actions in order to prevent future floods. This created a virtuous cycle: people that took actions before the event to mitigate impacts, either through private mitigation measures or through purchasing insurance against natural hazards, were more likely to believe that they have the appropriate knowledge required to take part in such process and were also more likely to take the time to become involved.

In sum, it is to be underlined that civil volunteers need to be incorporated into future planning for disaster management. However, a more detailed analysis is needed to obtain a clearer picture.

**Timmendorfer Strand coastal protection strategy**

From 1999 to 2011, the municipality of Timmendorfer Strand in Germany developed and implemented a coastal protection strategy using a participatory process. In 1999 (initiated by the Schleswig-Holstein State Ministry for the Rural Areas, State Regional Planning, Agriculture and Tourism -MLR, now MELUR), a first discussion about an integrated flood protection concept for the community of Timmendorfer Strand started. It was agreed that the concept should be accepted by a large number of stakeholders. Therefore, an innovative method for active public participation including an analysis of social and economic parameters was used in the process of selecting the coastal defence measures to be applied. The selected coastal defence measure was a new dike with some parts that were similar to a seawall, which was integrated in the existing infrastructure and landscape. The realisation of the dike was completed by 2011. The coastal protection measure was adjusted to the needs of a touristic beach city, e.g. the height allows the sea to be viewed from the beach promenade. Furthermore, glazed retention walls were built close to cafes. The coastal protection measure was combined with architectural finishing and landscaping which included, for example, the reconstruction of the beach promenade.

The main outstanding aspect of the implementation of the coastal protection in Timmendorfer Strand is the participatory approach. During the participatory approach, nine working group meetings and two public meetings were held. At the nine working group meetings, more than 50 local stakeholders (coastal protection authorities, fishermen, tourism representatives, residents, and community authorities) participated. The focus of these meetings was the analysis of how different coastal protection measures would affect the community with the assumption of increasing risks of flooding due to climate change. Thematically, these nine meetings were split into two steps. The first step included five meetings, where the "system" Timmendorfer Strand was defined by the participants. Variables were collected, and relationships between these variables were disclosed. The second step, including four meetings, was aimed at specific aspects concerning sustainable solutions in coastal protection measures. For example, it was discussed

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how flood protection measures affect key variables (elaborated in step 1) in Timmendorfer Strand. As a result of this approach, the participants supported the results of the sensitivity analysis and recommended a combination of coastal protection and flood defence measures. They also agreed upon being further involved in the process of the implementation of the coastal defence measure. The coastal defence administration valued this approach very positively because the participants recognized the long-term risk for the coastal area, they accepted responsibility, and they "evolved from sceptics to advocates of an integrated coastal defence concept".

During the participation process, different versions of the proposed coastal protection measure were discussed (especially differing in the height of the dike). The compromise to build a dike but lower than the one proposed by the regional government (of the federal state of Schlwesig-Holstein) was found together with the stakeholder and citizens; lower height enables tourists and citizens to walk still behind the dike and see the sea. The participative process had a strong component of awareness rising and avowal of proposed coastal defence measures.

For the cost-benefit analyses of the measures, a limited number of local stakeholders were interviewed. Some of them were part of the local parliament or active members of the community and were interviewed to gather information about perceptions on effects after implementation of the measure. Other local stakeholders that were contacted were restaurant owners. They were interviewed to gather data on changes of restaurant incomes. Furthermore, the local tourism office and the city council were also contacted.

2.4. Hungary

Urban heatwave and forest fire in Tatabanya

The City of Tatabánya has faced and will continue to face two major climate-related risks for which adaptation measures are required: heat waves (urban heat island effect in Tatabánya) and wildfires threatening the surrounding region and the health of the population (air pollution) caused by extreme temperatures and droughts. Tatabánya established a mix of soft measures to deal with the impacts of heat waves as well as wildfires\textsuperscript{53}.

Tatabánya has an approved comprehensive adaptation strategy, the Local Climate Change Action Plan that is in its implementation stage. This Plan is based upon a comprehensive approach taking into consideration both mitigation and adaptation, incorporating climate considerations into decision-making, and including adaptation concerns in municipal processes. Now, three measures

have been implemented: (i) a local heat alert system; (ii) the Smart Sun Educational Programme; and (iii) building capacity of the fire brigade.

The Tatabánya Plan is the result of the integration of top-down and bottom-up approaches. The plan was prepared with the assistance of the Sociological Research Institute of the Hungarian Academy of Sciences. The City of Tatabanya has been supporting the initiatives proposed by the Academy and, by using the support of civil society, the problems of environmental protection and specifically those associated with climate change risks were addressed.

During the preparation of the Plan, extensive stakeholder consultations took place. All relevant municipal bodies were involved: the department of education within the Municipality of Tatabánya, the National Public Health Institute, schools (teachers and students), nursery homes, local hospitals, engineers, utility providers (electric company, industrial enterprises, the transport managing company, waste managing companies, etc.).

Moreover, the heat and ultraviolet radiations (UV) warning system is based on close cooperation and participation of 22 different organizations, such as local police, local ambulance service, local civil defense, local fire department, local disaster recovery, hospitals, water utilities, and schools. The residents of Tatabanya formed three groups, each involved in promoting local sustainability. Among their many accomplishments, they have implemented a heat and UV alert program, organized teams to assist in the development of a local climate strategy, initiated a call for tenders to achieve more energy efficient housing, established emissions reduction targets, and implemented educational and information programmes (the city has an annual budget for its housing program, which includes energy saving). The three groups and their goals are as follows:

a) The focus of the Inhabitants Group is to develop a new vision for the future of the city: they serve in a representative capacity in public decision making and through their efforts have helped to promote communication between residents and public officials by ensuring that local interests are known

b) The second group is the Local Council of Pupils that is composed of student representatives who engage in a variety of tasks, including participating in local decision-making

c) The third group is the Local Climate Group that is composed of individuals from all walks of life including students, pensioners, doctors, nurses, teachers, engineers, scientists, public officials, heads of companies, and inhabitants.

2.5. Italy
Potenza territorial coordination master plan

Province of Potenza adopted in 2013 the Territorial Coordination Master Plan (TCP) that draws the local governmental proposals for the development of the provincial territory and provides tools to the local actors for the correct land use and management. Province of Potenza has territorial coordination competencies over 100 municipalities and is mostly characterized by all the major natural risks whose impacts are potentially very serious in the case of disasters. For this reason, an important section of the TCP is dedicated to the risk assessment/management and to the mitigation activities as important actions to be performed also at the urban level.

An innovative aspect developed in the TCP is the implementation of the "resilience of communities" policy in territorial planning, by introducing risks-mitigation measures to be applied to the urban planning and strategic actions in order to involve the local actors, the private sector, and the community in the resilience's implementation processes. The TCP provides municipalities with inputs and recommendations to be followed in urban planning aimed at implementing resilience in land-use government policies. For risks mitigation at the local level, the Province contributes in seeking to promote or facilitate programs of extraordinary territorial maintenance to be implemented by the local governments, through the identification of possible financial mechanisms and procedural facilitation. The resilience implementation process is accompanied by other territorial policy actions on the natural and built systems, such as strategies for adaptation to climate change and environmental protection54.

Florence civil protection system

The city of Florence, through the Civil Protection System, has developed the "Emergency Municipal Plan of Civil Protection – General Plan" (Municipality of Florence 2015) which is adopted for its management in case of each type of disaster. The City of Florence activates the emergency plan (even as an alarm) on the basis of a set of scientific data coming from certified entities such as Lamma (for meteorology), University of Firenze, specialised authorities in hydrogeology and geology, etc. Depending on the critical issues arising from these data, the city of Florence emits an alarm code, expressed in colours: yellow, orange or red (in criticality ascending order). In case of sudden events (e.g., earthquakes or events, such as the one occurred on May 25th 2016 – Road surface subsidence caused by water piping, resulting in landslide collapse and Arno Embankment's parapet rupture), the alarm time is missed and the "Emergency Municipal Plans of Civil Protection – General Plan" is activated directly.

The term "empowerment" is never mentioned in this Plan, or in related documents. However, citizens' empowerment actions are provided. First, through communication/information to citizens.

a) A safe and reliable information to media (radio, television, newspapers, etc.) that can work in emergency and, if it is possible, on websites and Facebook and Municipality and of the Civil Protection of Florence Twitter accounts. All kinds of communication competence during a disaster concern the Mayor who, through the Office of Communication Channels, studies and may decide the contents.

b) Telephone voice warning system with the Mayor or his designee recorded voice to fixed or mobile telephone numbers collected. These messages are sent automatically to all land lines present in the public Florence directories. Otherwise citizens can ask to subscribe to this service through the Civil Protection website or by telephoning the Florence Civil Protection Operations Room (CeSi). This system is useful because it can reach the so-called "fragile subjects" (invalids, older people). The system identifies and locates the citizens in need and puts them in touch with the emergency response teams.

c) The so-called "Messaging on the road" through the following channels:
   - Digital Signage: advertising panels in museums, libraries, and offices where the stream of Twitter and Facebook are also conveyed
   - Variable Message Panels/buses Poles: panels along the roads where it is possible to pass information
   - Tramway Poles: panels along the roads where it is possible to pass information.

d) Using the Municipality and of the Civil Protection of Florence app to revive a posting on Facebook and Twitter (e.g., APP INFOSOC: APP on Android and Apple Store pass information and related content, alerting the population with custom notifications).

e) A leaflet translated in the English language in order to be able to secure foreign nationals has been produced.

Moreover, the Civil Protection Service arranges meetings, at least on an annual basis, organizes information and training sessions for the population through decentralised structures (Boroughs, Municipalities, etc.). The goal is to help to enhance the community in relation with an emergency and to facilitate the mobilisation of volunteers in case of emergencies. They started these meetings organization for a long time involving citizens, institutions, Voluntary Associations, etc. as well as awareness campaigns to explain better the risks posed by floods and the correct behaviour to adopt in case of flooding. Civil Protection Service has also produced a leaflet that was translated in the English language in order to be able to secure foreign nationals.
Finally, during the year, in order to verify the plan effectiveness, drills are organized in collaboration with decentralized locations (Wards) and Civil Protection System with the citizen involvement through the simulation of possible risk scenarios (see Box).

Text of the leaflet distributed for the drill for civil protection in the zone Romito-Statuto-Vittoria

Dear residents of the zone Romito-Vittoria-Statuto, on Saturday, May 28th, we ask you to share in a practice drill and to assume on this occasion a dimension of civil protection. On that day, there will be a simulated emergency related to the stream, Mugnone. This is not at random as this zone experienced a severe flood in 1992 which brought serious damages to basements, wine cellars, garages, and commercial businesses. The Mugnone is a fundamental resource in Florence’s urban fabric but remains always flowing and thus is subject to sudden increases in water level. A major reason for this is that we are in the midst of devastating weather events caused by climate change. The drill serves to practice the appropriate conduct when responding to a possible critical situation.

For this purpose, there will be: Posto Comando Avanzato (command center) and an informative campus in piazza Leopoldo (safe area), from 9 a.m. – 1 p.m. Rescue tests in piazzadella Vittoria from 9 a.m. - 12 p.m.

We restate our invitation to the active participation of you all by appealing to your patience and thanking you in advance for dealing with any inconvenience that this event may bring.

For info 055 78 90

Alto Adriatico civil protection exercise

The high plain areas of the river network draining to the cities of Padua and Vicenza (Alto Adriatico) are characterized by an extraordinary wealth of water resources, due to their geological formation and a very close relationship between surface water and groundwater feeding regional aquifers. The area supports industrial, agricultural, and hydroelectric activities but its rivers present flood risk. Droughts have also occurred during recent years, highlighting intensive and often conflicting usage of the resources (irrigation and hydroelectric uses in contrast to recreational use, tourism, natural, and environmental aspects).

In this context, the project WeSenseIt is providing a vital contribution to the water resources planning and management, and flood and drought forecasting, involving the community and promoting concerted and coordinated actions in order to empower citizens to observe and understand water-related risks and contribute to/adopt appropriate policies.

A civil protection exercise was organised on March 30th 2014 by the Alto Adriatico Water Authority and the Municipality of Vicenza, with the involvement of 134 volunteers and 50

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56 http://wesenseit.eu/
This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 653748.
Alpine Hazards in South Tyrol

In December 2012, the small alpine community of Badia was hit by an exceptionally big landslide. The municipality being located in a very landslide-prone area has experienced several events in the past; in 1821, a big landslide event happened in exactly the same area. Citizens are aware of living in an area of high risk, and they know about past hazard events. Nevertheless, before 2012 they did not expect a real event happening and consequently did not actively prepare for it by undertaking preparedness measures. Moreover, people did not perceive themselves, as individuals, responsible for the mitigation and protection against natural hazards and the knowledge about existing mitigation and protection measures was quite low. The event experienced in 2012 had a huge impact on peoples’ risk perception, showing an increase, especially for people that were affected directly by the landslide and for people that live in close proximity to the landslide area.

People still have a high trust in authorities and civil protection actors and perceive them as responsible for mitigation and protection measures. However, after the 2012 event, local and traditional knowledge for resilience building is now valorised (most important information are sources for past hazard knowledge are other village members and family). Being part of the community and having a strong family network, as well as with the other members of the community, and therefore having access to information coming from "real faces", resulted in being very important for forming community identity. The feeling of community belonging and the strong presence of social networks proved to be very important as a crucial support to deal with the impacts of natural hazard events and to contribute positively to community resilience.

After the landslide event in 2012, there were a high connectivity between the geographical community of Badia and the community of supporters, thanks to social networks. Organised citizens people, in the case of an event, are supposed to play a coherent role (with regard to the event in question) foreseen inside the existing local emergency plans. The two most important actors are the volunteer fire brigade and the municipality of Badia. Both of them are locally based, and people working for them are not only members of the community of supporters but also members of the community they support. In terms of resilience, this confirms the importance of the local presence on the territory and the interconnection between the geographical community and the community of supporters: knowing people working in the organization increases trust, and being part of the community people support leads to a better understanding of their needs and perceptions.

The organizational network carried out with key actors of the community of supporters show a highly interlinked core network involving actors from different organizational scales (local, provincial, and national). The individually drafted maps show a high level of coherence, revealing that the actors have a similar view of the network, which is very important in a crises or disaster situation. Additional key factors for resilience turned out to be the existence of a local civil protection plan and regular emergency exercises, the fact that the core network needs a little time to become active and fully operative, as well as the personal knowledge and trust in the other members of the network. Thanks to these characteristics, the network resulted in being very resilient with no missing links or marginalized members. However, the network is "highly personalized" and actors know and trust each other; and this could become critical for the network if one or more of the actors is not available or has to change.

2.6. Norway

Multi-Hazard Approach to Early Warning System in Sogn og Fjordane⁵⁸

Sogn og Fjordane is a coastal, mountainous region of Norway that boasts hundreds of thousands of tourist visits annually. Several communities in Sogn og Fjordane are facing numerous hazards such as flooding, avalanches, rock slides, and other extreme weather events, which might be exacerbated by climate change. Great distances between peripheral communities and transport and communication infrastructure not accessible or available at times can make accessibility poor, thus making communities more vulnerable to extreme weather events. To respond to the above challenge, an early warning multi-hazard system was set and tested in Aurland municipality, part of the Sogn og Fjordane county. This system utilises various media and communication tools to inform the public about impending hazards and provide guidance on the precautions to take. As far as possible and appropriate, the system is based on already available modern technology and infrastructure, and anchored to existing legislative and institutional frameworks.

Four reference group meetings were held between 2008 and 2010 to set objectives and discuss the best methods and approaches to be used in the early warning system, including setting system specifications for the trial message. The telephone was recognised to be the most important medium for distributing warnings (a combination of fixed and mobile phone lines). Text messages (SMS) and spoken messages alerting the public to a natural hazard or disaster are distributed to all phones within a certain distance from the natural hazard or disaster in question. Having defined the criteria for the phone-based population warning system, the next step was to

identify potential system suppliers and forwarding the system criteria for feedback as regards their interest and ability to comply with the criteria and take part in the project. After the presentation of the two potential companies, the reference group concluded that technological aspects did not seem to represent a major challenge in respect to the population warning exercise.

Before carrying out the population warning exercise, several dissemination activities were undertaken by the County Governor’s Office. Information about the exercise was published on the County Governor’s website, Twitter profile and Facebook account, as well as being promoted through the local newspaper and the county-wide district radio station. The warning exercise on the 10 June 2010 was held in parallel with a table-top exercise focusing on local authorities’ ability to respond to extreme weather events. Several of the reference group members attended the exercise as observers. During the test, 2,500 mobile phones received the alert as a text message, 322 fixed line phones in Aurland received the alert as a voice message. The warning exercise was visible on Facebook for 2 hours and received 201,849 viewings. A post-exercise survey was carried out online, and a door-to-door survey was conducted in the area of Høydalen to assess the public’s thoughts on the exercise.

The project reference group played a key role in defining a system specification that enabled efficient and reliable issuing of multi-hazard warnings.

2.7. Poland

Lodz Learning Alliance

The 19th-century industrialisation in Lodz heavily affected the city’s rivers altering their ecosystems and hydrology. Many rivers in the densely built-up city were canalized. This resulted in a higher flood risk from runoff during heavy rain periods. Low water retention also implies a reduction of soil moisture during dry spells, contributing to a higher temperature and reduced air humidity (urban heat island). Given that projections suggest that the intensity of heavy rain periods and higher temperatures are likely to increase, these problems are likely to be exacerbated by climate change. In response, Lodz carried out several activities, such as (i) demonstration project of river restoration using natural processes, and (ii) development of a new concept for the city planning, i.e. Blue-Green Network Concept. The developed strategy aims to improve urban ecosystem health, reduce flood risk, and ameliorate the microclimate, thereby contributing to better quality of life.

Two major activities were undertaken in Lodz: (i) elaboration and demonstration of the strategy and technology for restoration of municipal rivers based on natural processes, aiming at improved storm-water management, increased water retention, and better water quality supporting higher biodiversity and improvement of the quality of life; (ii) development of the system-wide approach to the city adaptation strategy based on the Blue-Green Network Concept. This assumes that river valleys and green spaces are connected in the city planning and development process to create a framework for a friendly city, which retains water, supports green infrastructure, encourages healthy society lifestyles, attracts business, and become resilient to global climate change.

The close links between the researchers from the University of Lodz and the City of Lodz, in existence since the 1990s, provided a good basis for the collaboration. The cooperation was substantially enhanced and widened to include other relevant stakeholders through the establishment of the SWITCH Learning Alliance in Lodz – a stakeholder forum for exchanging ideas, plans, and interests (with allocated European Union funds for its activities in the frame of the SWITCH project[^60]). This process started in March 2006, initially involving the stakeholders perceived to have the most critical roles in water management. Over time, additional important actors were identified and involved. The key stakeholders in the Lodz Learning Alliance at its peak included partners from 25 different organisations, the most important being:

- City of Lodz departments: Municipal Management, Environment and Agriculture, Strategic Planning
- Waterworks and Sewage Company, which operates the treatment plants and water supply and sewerage networks in Lodz
- Lodz Infrastructure Company, which owns the treatment plants and water supply and sewerage networks in Lodz
- Lodz Wastewater Treatment Plant
- Research institutes (i. Department of Applied Ecology of the University of Lodz; ii. European Regional Centre for Eco-hydrology under the auspices of UNESCO – the International Institute of the Polish Academy of Sciences; iii. Technical University of Lodz; iv. Medical University of Lodz; v. Institute of Occupational Medicine in Lodz
- Several NGOs, which joined the Lodz Learning Alliance in 2009 at the Blue-Green Network development launch.

The learning Alliance built and trained a facilitation team, developed a website and communication strategy, and hosted several meetings, trainings, and workshops on different urban water management issues. Each workshop expanded the membership of the Alliance. The

[^60]: http://www.switchproject.eu/
SWITCH team in Lodz undertook a wide range of awareness-raising and advocacy activities. These included engaging young people to raise their awareness of environmental issues and to create interest in the city's hidden rivers. The mass media, especially radio and newspapers, were also engaged.

2.8. Portugal

Civil protection drills and capacity-building

The Portuguese National Authority for Civil Protection is keen on people's empowerment in regards to the risks they're vulnerable to. For the most part of the last decade, regular short messages (SMS) have been sent to local authorities and other stakeholders informing about not only civil protection events in progress, but also about expected conditions for hazardous phenomena and probable outcomes in the hope that dissemination by contagion would get citizens to be better prepared to face the expected phenomena. A close loop has also been maintained with the media, under the assumption that the better way to get to people would not be to expect citizens to actively consult with a state organization, but to feed the media with relevant information that citizens would therefore consume.

As earthquakes are a real threat to Portugal, considering its geographic context and neotectonics, the Portuguese Civil Protection has conducted several exercises where the focus was not only preparing responders but also to empower communities in better preparing themselves and responding within their own grasps, understanding that under a major episode, the first coordinated response would always be local. One of the examples Portugal has imported is the equivalent to the international ShakeOut drills, locally named "A Terra Treme", where the focus is not on responders but on people, regardless of their operative connection with civil protection (http://www.aterratreme.pt/). Those drills are, once again, aimed at empowering citizens through a better response and improving their odds of surviving a major earthquake.

In recent months, the National Authority for Civil Protection's website (http://www.prociv.pt) has been redesigned from the ground up, focusing on information about civil protection events and warnings, again trying to convey information on what is going on but also on what is expected to happen on a short notice time (mostly meteorological driven phenomena as other risks are extremely difficult or impossible to predict). With a new presence on the web, it has been possible to reach a vast audience, captured by the added interest of geo-referenced events which gives people the newly acquired notion of what is happening and above all, where it is. As communities become informed about the location of different hazardous events, they become motivated to plan and prepare, and Civil Protection wishes to take a step further, going direct to people's
smartphones with an App that could disseminate geographically relevant warnings and best practices in the presence of any given known risk.

Also in recent months, several sessions have been conducted targeting local political authorities – at the parish level – on aspects as civil protection organization, incident command systems, resources for response and risk management among other themes, so that local communities can act with better information as hazards materialize. Those sessions are ongoing as of December 2016

2.9. Slovenia

*Ljubljana citizen scientists*61

In the frame of already mentioned the 7th FP EU funded Citi-Sense project, in the city of Ljubljana a portal has been designed to enable citizens to not only have access to real-time environmental information provided by a wealth of sensors, including portable sensors and static stations, but also to provide a forum for discussion, debate and sharing their own personal observations. Volunteers have been involved in carrying our personal air quality units. The idea is that people can become "citizen scientists" and carry on environment observations during their daily activities. If people notice any specific location, which is problematic in the city, they should report their observations through the portal and describe the problems shortly. In this case, attention is focused on air quality. Citizens have been mobilized through awareness messages such as "This will benefit not just you, but all others as well, since together we can make a difference!".

2.10. Spain

*Barcelona citizens' observatory*62

Citi-Sense, as already stated, has developed "citizens' observatories" to empower citizens to contribute to and participate in environmental governance, to enable them to support and influence community and societal priorities and associated decision making. Citi-Sense develops, tests, demonstrates, and validates a community-based environmental monitoring and

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62 http://barcelona.citi-sense.eu/
information system using innovative and novel Earth Observation applications. Among others, Citi-Sense team has developed an application "City-Air" for citizens to help to colour the air pollution applied in Barcelona. Air pollution is invisible but affects the health of people. With this application, one can help to colour the air pollution by rating the air quality where he/she is: green if air quality is very good, yellow if air quality is good, orange is air quality is poor and red if air quality is very poor. The source of the pollution (i.e., traffic, wood burning, industry, etc.) can also be indicated, and a written comment added. In this way, people help create a citizens' air quality map. Other users will be able to see registered air quality rates and comments in real-time.

Although the idea is simple and the method is fun, several challenges were presented for the recruitment of participants. The first main challenge was that the associated iSPEX-EU smartphone application and add-on were only compatible with iPhone 4/4s/5/5s, and at the time CityAir only worked for Android. The second was that roaming internet connection was needed for the engaged participants to download the apps. These challenges meant that Citi-Sense team was not able to recruit as many participants as hoped. A lesson learned was that more inter-compatible products should be considered and developed if possible to allow the maximum participation potential of citizens. This has been addressed in part with CityAir being now also available for use on iPhones. Nevertheless, through exercises like this, Citi-Sense is continuously learning and improving its products and services for engagement and empowerment of citizens.

63 http://www.citi-sense.eu/Project.aspx
Vitoria-Gasteiz citizens' observatory

The general objective of Vitoria’s empowerment initiative in the already mentioned Citi-Sense project has been to empower citizens in designing public places from an environmental point of view. This goal is specified as follows:

- Allow citizens to collect and share quantitative and qualitative information related to the environment of existing public places as well as their well-being in those places. Attention is paid, among other things, to thermal and acoustic comfort, ultraviolet radiation, urban landscape, cleanliness and general satisfaction

- Allow stakeholders (i.e., public authorities, citizens, associations, etc.) to view and analyse this information, which should reflect citizens' opinions and perceptions as well as objective measurements of environmental aspects

- Support communication between citizens and local authorities to enable authorities to integrate citizens' preferences into their strategic planning.

First observations were made over a two-week period in April 2015. Four different public spaces in the city have been selected in cooperation with the CEA (Center for Environmental Studies), following criteria on the diversity of space types. For each selected area, several observation points have been defined so to get more reliable results by evaluating a larger area of each zone. To involve people, a list of organizations in the city has been prepared, based on geographical plurality criteria and the potential interest of those entities in environmental and urban environment matters. Forty-nine entities were invited to the project presentation meetings. Thus, a group of more than 40 volunteers accepted to participate. In addition, a secondary school in the city, with a small group of students of "environmental instructor" grade, has been contacted. This center has actively participated in the project with a group of 9 instructors. Each volunteer received a kit, consisting of a portable sensor and a smartphone to measure acoustic and thermal comfort. In addition, a comprehensive questionnaire was developed to collect information about subjective perception of thermal comfort, acoustic comfort, landscape perception and other variables to provide more accurate comfort data according to each observer’s profile. At the end of two weeks, more than 200 observations of 9 points have been made. In order to visualize the obtained data in the best way and to make them more understandable and easier to use by all citizens, a group of volunteers has been participating in a workshop about co-design of displaying the observations. One of the objectives of this empowerment initiative seeks to increase the social impact of the project to expand the user community. To reach a wider audience, several tools such as Facebook pages, a

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questionnaire, a brochure for dissemination and recruitment, a website, a press event, and workshops for the volunteers have been used. During these two weeks, Citi-Sense team worked with all volunteers, both in groups and individually. While recording observations in the city, people that were not involved have also been engaged, contributing with their personal observations.

**Vulnerability to drought in Segura and Tagus basins**

The Segura River Basin in the south-east of Spain suffers from a structural condition of water scarcity and drought occurrence. For decades, the focus for dealing with this condition has been placed on instrumental objectives such as increasing water transfer facilities (i.e., Tagus Segura Water Transfer, a major diversion project), developing alternative sources (i.e., desalination and reuse) or making use of water in a more technically efficient way (i.e., irrigation modernization). So far, mainly the highly disputed water resources transferred from the Tagus basin have satisfied water demand. The changing climate is increasing drought frequency in both basins; requiring the implementation of additional strategies to adapt. A recent strategy, currently under implementation, is to introduce a set of economic policy instruments aimed at addressing structural modifications of the long-term water demand in the Segura basin to achieve efficient use of the limited water resources available.

In combination with the infrastructural measures already in place, the current strategy consists of the design and implementation of a set of incentives (i.e., economic policy instruments), as part of an overall policy mix. The strategy also includes supply approaches, in such a way that decisions adopted by individual water users are compatible with the overall objectives of water policy, which, in this case, is intended to reverse current water scarcity trends, and reduce drought risk so that water security and resilience are enhanced while improving the long-term sustainability of water management. The aims of these incentives are to reduce vulnerability to extreme weather events and to cope with drought risk and water scarcity in the face of projected climate change that suggests worsening of the current situation.

The Segura river basin authority adopted an approach aimed at enhancing public participation, especially regarding the planning activities. For the specific discussion on the introduction of economic policy instruments for water demand management, facilitated stakeholder consultations were carried out through a series of meetings with selected stakeholder groups and complemented with telephone and web conferences. More than 100 stakeholders were actively engaged in the process aimed at designing the economic policy instruments. The main actors involved were: national authorities, river basin authorities, members of the academia, irrigators, 

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consumers’ associations, insurance companies, NGOs, and international experts. Meetings were held in Madrid in April 2012, November 2012, April 2013, and June 2013, and were focused on the assessment of the three economic policy instruments considered.

2.11. Sweden

-Augustenborg, Malmö, floods-

"Ekostaden Augustenborg" is the name for the regeneration initiative of Augustenborg neighbourhood in Malmö. The key aim of the initiative was to create a more socially, economically, and environmentally sustainable neighbourhood. The City of Malmö and MKB set the initial scope of the Ekostaden Augustenborg project, which focused on combating flooding, waste management, and enhancing biodiversity. In order to minimise flood risk, rainwater from rooftops and other impervious surfaces is now collected and channeled through canals, ditches, ponds, and wetlands before finally draining into a traditional closed sub-surface storm water system. The main driver behind the initiative was the regeneration of the neighbourhood with a firm focus on innovative environmental improvements, including a reduction in flooding, improved waste management, and biodiversity enhancement. The direction and focus of the urban regeneration initiative were partly dictated by the changes at the city level, which was pursuing policies relating to moving from post-industrial to the environmentally sustainable city.

While adaptation to climate change was not an explicit driver, the project aimed to address the issue of urban flooding, which is one of the climate change effects that is likely to be exacerbated in the future in this area. Measures addressing urban flooding were combined with those aiming at a reduction in CO₂ emissions and at improved waste management. The project was started in 1997 and ran between 1998 and 2002. The work on the SUDS infrastructure began in December 1999 and finished in the summer of 2000. The system has been operational since May 2001. The implementation of the initiative was co-managed by the City of Malmö and the MKB social housing company.

Empowerment of the local community has resulted in Augustenborg, enabling residents to play a significant role in the planning and implementation of the initiative. The Augustenborg project incorporated extensive public consultation. This included regular meetings, community workshops, and informal gatherings at sports and cultural events. The approach became increasingly open and consultative. While some claim that involvement of local residents was low for a variety of reasons ranging from apathy to language barriers, approximately one-fifth of the

68 https://www.mkbfastighet.se/hyresgast/omraden/soder/augustenborg/
tenants in the area have participated in dialogue meetings about the project, and some have become very active in the development of the area. Residents and people working in Augustenborg were involved in the design of the outdoor environment. A special needs advisor and local access and mobility group worked with the design team throughout the project. Constant communication and in-depth community involvement enabled the project to accommodate residents’ concerns and preferences regarding the design of the stormwater system. Consequently, the project encountered little opposition. Augustenborg school pupils were involved in a number of local developments, for example with the planning of a new community/school garden, rainwater collection pond/ice rink, a musical playground, and sustainable building projects incorporating green roofs and solar energy panels. The greatest challenge in involving the public was maintaining continuity, which involved keeping a steady focus on the environmental awareness of the residents and informing the newcomers to the area about what had been done. It has also been observed that in order for people to become involved, they need to have more control over the project outcomes, and the authorities, therefore, have to accept that things do not always happen exactly as they were planned.

Involvement of the residents in the design phase meant that there was little opposition to the project, and resulted in the sense of ownership, empowerment, and raised awareness among the residents. Moreover, the participatory character of the project sparked interest in renewable energy and sustainable transport among residents, after they heard about similar plans for other areas (and participation in elections increased from 54% to 79%).

2.12. The Netherlands

Delft monitoring network

The surface water system in and around the city of Delft receives excess water several times a year during intensive rainfall events (pluvial flooding). The general public, industry, and farmers are affected locally by water in cellars, on the streets, in greenhouses, and on the fields. In dry summer months, they are affected by water quality problems through eutrophication. The water board needs to gather more real-time information on the state of the water system than it currently receives from the in-situ monitoring network. All stakeholders need more timely and local warnings for short-term event management and more and easier exchange of information about the operation of the water system for developing and deciding on long-term policies. The water board has developed a new policy – Digital Delfland – in which they provide the 40,000 km² highly industrialised and highly controlled area as a test bed for monitoring and feedback.

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69 http://wensent.eu/?page_id=17.
experiments. The area includes Westland region, which is almost fully covered with greenhouses producing a significant portion of the nation's agricultural needs as well as high-level agricultural products for export. The current extensive hard monitoring network of the water board can be used for this purpose, which presents information on precipitation, water quality, water levels, pump operation, and system performance.

WeSenselt is the first Digital Delfland project providing monitoring information to all, including citizen information in the digital hydrological cycle information system of Delft. First experiments of public participation in water monitoring have been performed in recent research studies.

2.13. United Kingdom

Doncaster flooding networks

The County of South Yorkshire in England has a history of significant flooding events. The flood risk arises from distinct aspects of the county's topography and its network of river catchments: in its Western half, parts of the district rise to 500 meters above sea level. Its Eastern half is predominantly very low lying with an extensive area of floodplain and tidal influences. In addition, valleys to the North and West of the county contain 17 major reservoir dams, which feed into the major watercourse of the River Don. This makes the county liable to fluvial (river), pluvial (rain-induced) and marine (sea) flooding caused by heavy rainfall in the catchment and tidal fluctuations and potential floods from dam failure. The Town of Doncaster has the largest flood risk of all the communities in South Yorkshire, with records of flood events dating back to 1,536. Currently, 25,000 properties in Doncaster are at risk from River Don flooding. This flood risk has had a large economic, social, physical, and psychological impact on citizens, especially following a large-scale flood event in 2007.

A series of citizens' flooding networks have been established. These networks aim to increase citizen understanding of flood monitoring and defence mechanisms and communicate flood warning messages to the emergency responders and other citizens. WeSenselt will support these communities, networks, and emergency services by enabling new forms of citizen participation and by enabling a more timely and effective reaction to adverse events.

The Doncaster area is in between two catchments: The River Don and River Trent catchments. In addition to this geographical complexity, it is managed by two Environment Agency regions: the Yorkshire and the Midlands region. The management by the formal institutions is further divided between three Water Authorities, namely Yorkshire, Severn Trent, and Anglian water authorities.

http://wesenseit.eu/?page_id=15.
It should be noted that the Anglian Water Authority only serves a very small area. The Doncaster area is further broken down into two Regional Flood and Coastal Committees (RFCCs), which are Yorkshire RFCC and Midlands RFCC and eleven internal drainage boards. The Environment Agency manages water resources and enforces water quality standards at the national level. The Environment Agency is mandated to develop and coordinate the implementation of the national flood and coastal erosion risk management strategy while Doncaster Metropolitan Borough Council is charged with the responsibility of developing and coordinating implementation of the local flood and coastal erosion risk management strategy as stipulated in the Floods and Water Management Act 2010 (FWMA). Doncaster Metropolitan Borough Council is the largest metropolitan borough in England and covers the area of approximately 56,000 hectares.

East Salford floods

The BIG Lottery Fund has awarded, in the frame of 'The Irwell Valley Sustainable Communities Project', the Broughton Trust almost £1 million to support residents in East Salford to adapt to the effects of climate change and help them to live more sustainably. A partnership of twelve local groups from the voluntary, public, and private sectors has been formed to deliver the project over five years covering the wards of Broughton, Irwell Riverside and Kersal in East Salford. The Project is supporting households who wish to make greener choices and reduce household bills, by growing their own food and becoming more energy efficient. Residents living alongside the river are supported to look at ways to increase their preparedness for future flooding events. Community groups and residents, who are interested in getting involved in the project, are invited to join four community-led task groups who meet regularly to develop projects around flood awareness and river usage, energy efficiency, food growing, and recycling. The Broughton Trust is one of twelve organizations across England to receive funding from the BIG Lottery’s Fund’s Communities Living Sustainably programme. To find out more about the project follow the project’s blog at www.greenmyvalley.com and find the project on Facebook and Twitter.

London – Heat waves

Local heat wave plans in London were modeled on the National Heat wave Plan. They framed heat wave risk through a focus on public health and emphasised preparedness and response, rather than prevention. A shift towards preventive risk management strategies that acknowledge

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social, environmental, and technical dimension of heat wave risk was identified as an opportunity for deep social learning. Such a learning process emerged gradually.

Learning in organisational heat wave planning in London unfolded as the incremental change in established risk management approaches. Learning consolidated existing heat wave plans at the local level, reinforced the status-quo and can thus be associated with rigidity, rather than with change. Social learning was constrained by the interaction of formal and informal institutions (by low risk perception, organisational cultures of fire-fighting, and a reliance on events as catalysts for change; this role of events suggests an element of uncertainty and randomness in transformation, and highlights limited agency in deep social learning processes in disaster risk management). Shadow institutions such as trust relationships and networks supported formal risk planning arrangements to function. In the short-run, this added flexibility to disaster risk planning because it provided opportunities to deliver risk management even if formal strategies were dysfunctional or failed. However, support from trust relationships and informal networks seemed to consolidate existing heat wave planning strategies in the long-run and thus stabilised, rather than challenged them. Informal institutions of the shadow system thus were not used to innovate local risk planning, explore alternatives to existing strategies and to propose paradigm shifts in heat wave risk management.

Most citizens are aware of what to do during a period of heat wave and tend to develop their own coping strategies, independent of others. There is also a sense of resilience, very well ingrained in the generation that was surveyed, whereby people have generally developed their own way of coping with problems; they deal well with tensions and stresses and have developed a particular relation to time that seems to take them closer to a philosophy of "take it as it comes" which contradicts the preparedness logic normally prioritised by the state.

Humber coastal flood risk management strategy

The Humber flood risk strategy is a holistic project with the primary aim to protect people and industries situated in low-lying land around the Humber Estuary from tidal flooding risks associated with sea level rise, whilst protecting the landscape and wildlife. The project involved employing a combination of traditional – hard defence measures, as well ecosystem based adaptation approaches, such as managed realignment to protect against sea level rise, and the creation of washland, wetland, and salt marsh habitat to buffer the force of incoming waves and tides. Before the launch of the strategy in 2008, the coastal futures Humber community project was undertaken between 2005 and 2008 to engage communities on the north bank of the outer estuary affected by the coastal change.

73 www2.eastriding.gov.uk/EasySiteWeb/GatewayLink.aspx?alId=592095.
Before the launch of the strategy, extensive stakeholder and community engagement was undertaken, with one of the elements a collaborative partnership, developed by the RSPB, Environment Agency, and Natural England. A variety of methods, such as workshops, presentations and public consultation days will be used to full effect, along with web-based methods of eliciting feedback from residents, businesses, and stakeholders. Updates on how the feedback is being used and further opportunity to engage will be explored.

Work thus far under the strategy has resulted in the completion of realignment and new habitat creation in several areas along the Estuary (four new intertidal wetlands have so far been created, more are planned). The project implementation phase involved an environmental impact assessment, adaptive management, and monitoring of topographic, avifauna, benthic and salt marsh communities. Work will continue along the estuary, with a number of collaborative/independent projects also taking place. The aim of the strategy is to ensure sustainable flood risk management for the next 25 years, which includes traditional flood risk management options but also considers ecosystem-based approaches, such as managed realignment and flood storage.

The project has also provided many benefits in addition to its primary adaptation goals. Creation of new habitat to buffer the force of incoming waves and tides has contributed to conservation adaptation goals, in particular, increasing wildlife habitats lost to climate change. Other benefits include those to the community (e.g., increase of cultural services in terms of new walks in new habitats, and income associated with that recreation from people visiting, income from recreation), water retention and carbon sequestration service through restoration of wetlands.

**Northern England (Cumbria) – floods**

The floods that occurred in January 2005 and November 2009 are the most recent examples of extreme flooding in Cumbria. Several towns, villages and rural areas were affected in 2005, with Carlisle experiencing ~3,500 homes flooded and considerable disruption to energy and communications infrastructure.

During these events, civil protection officials remain key facilitators. However, they were not able to effect fully resilient outcomes unless developed in concert with the broader formal social protection objectives and alongside a cohort of engaged community members. Even in the close spatial confines of a short river catchment, different geographical communities need to access and utilise different resource sets and capacities to maintain their resilience to hazards.

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Formal agencies (e.g., civil protection) understood and supported their roles, in deliberating and delivering a full range of capacity-building civil and social protection solutions. A strong advocacy centered mode of social-networking led campaigning was also evident in terms of the communities' capacity to achieve effective actions (in preparedness, response, recovery, and mitigation), within a complex and largely complementary mix of approaches to flood risk mitigation, even if those actions are more effective for some than for others. Furthermore, and revealed through social network maps, the complex lateral bonding and bridging nature of key individuals' social networks within a geographically hazard-exposed community were valorised as a key resource/capacity. It can be shown how effective some people are at linking hierarchically into power relationships; often on first-name terms via key boundary actors and brokers within formal governance institutions. The potential role of people like this, in both the community and within the civil protection, in facilitating concerted community engagement with risk mitigation and resilience building has been valorised. However, the evidence also shows that this engagement can come at a considerable personal cost to these people, especially if they have been directly hazarding affected themselves.

Social and organisational learning has been a key element of the empowerment process. The natural-hazard governance context was shifting in Cumbria prior to 2009 event. An earlier wide-area flood in 2005 had already exposed many in the county to high-consequence flood effects, and the social and organisational learning this experience had precipitated was already leading to close collaborations between the previously hazard affected and still exposed population and the risk-managing authorities. After the January 2005 event, several Flood Action Groups (FAGs) had already started to develop effective response measures in close collaboration with the emergency services.

Austerity and the intense competition for the financial resources in the UK Government's Flood Risk Management budget provided a backdrop against which many smaller communities were being encouraged to do what they could for themselves. This was achieved through concerted efforts by the town's FAG, enabled and facilitated by the local authority and other floodmanagement agencies. In terms of resilience, however, it remained the presence or lack of engineered solutions that went furthest toward underpinning people's psychological ability to manage the risks to which they remain exposed.

A full range of resources and capacities were mobilised by the flood-affected population, with different resources being vital in the development of action-based responses that reduced the risk of disaster. Whether such disaster threatened at the scale of a household or a community, the "resourcefulness" exhibited by many community members, as well as people in governance positions, illustrated an admirable capacity for civil protection, but also concern over more the time-extended well-being (i.e., social protection) of this population; as was evidenced by the local authority staff's brokering role in coordinating the 3rd Sector activities during the long months of the recovery period.
That the population affected by the 2009 flood has visibly "recovered" can, to a large extent, be attributed to the hard work of individuals as well as groups and networks operating in a range of institutions at a number of scales. Individual 'Floodees' have laboured to return their own properties to functionality. The FAGs have worked closely with the formal agencies in 'Communities of Resilience Practice', which have grown and developed through processes of social learning. They have done this in ways that have built both their own capacities to respond to a future event, but also enabled and encouraged them to advocate – often vociferously – for mitigation measures to be developed to protect them. The personnel and staff of the civil protection agencies and statutory and third sector social protection practitioners have been stretched, during a period of concurrent financial austerity, to assist their communities to get back to "normal". Part of this assistance has required them to encourage and/or to compel communities to take responsibility for their own resilience.

2.14. Regional (Bulgaria, Romania, Ukraine, and Moldova)

*Lower Danube Green Corridor: floodplain restoration for flood protection*\(^7^{5}\)

In recent years (e.g., 2005 and 2006), severe floods occurred along the Lower Danube River. Even more frequent flooding is anticipated with climate change. A large part – about 80% – of Danube’s wetlands has been lost in the past century because of human intervention. The construction of dikes reduced the size of the river’s floodplains considerably. Also, large parts of the Danube are experiencing river bed erosion due to gravel extraction, dredging, and dams, contributing to a lowering of water tables on adjacent agricultural lands.

In 2000, the governments of Bulgaria, Romania, Ukraine, and Moldova pledged to work together – with the signing of the Lower Danube Green Corridor Agreement – to establish a green corridor along the entire length of the Lower Danube River (~1,000 km). All partners recognized a need and shared responsibility to protect and manage the Lower Danube in a sustainable way. The Lower Danube Green Corridor Agreement aims to protect and restore wetlands along the river and reconnect the river to its natural flooding areas, reducing the risks of major flooding in areas with human settlements and offering benefits both for local economies – e.g., through fisheries, tourism – and for the ecosystems along the river. To achieve this, sections of dikes have been removed, and isolated river meanders have been reconnected to the river.

In relation to the Lower Danube Green Corridor Agreement, as of 2012, 600 km² of floodplain has been restored or is undergoing restoration. During the 2013 flood in the Danube along the lower Danube, there was no flooding, although the water level was above average.

Strong stakeholder engagement, entailing (also) active citizens’ empowerment has been crucial. More in detail, WWF\textsuperscript{76} has taken responsibility for the Lower Danube Green Corridor initiative. To achieve the objectives, each country prepared an action plan in which additional areas of floodplain were designated for protection and restoration. These action plans described for each designated area specific measures needed and steps that had to be taken to carry out these measures.

All stakeholders supported a regular exchange of information – through meetings and by establishing contact points at the Ministries of Environment in the four participating countries – in order to achieve effective protection of the Lower Danube Green Corridor. WWF played a facilitator role to increase communication and cooperation between the Lower Danube Green Corridor countries and supported the implementation of concrete restoration projects, such as models to be scaled up. Recent political changes, however, resulted in the termination of the contact points; hence currently WWF has substantial difficulty in communicating with the Ministries.

Both citizens and environmental NGOs are playing an active role in decision-making processes. WWF has conducted awareness raising campaigns and also directly engaged the general public and NGOs in the decision-making process in the project area. Active lobbying has been done at national and international levels to boost implementation of the Lower Danube Green Corridor.

\textsuperscript{76} WWF is a global conservation organisation which aims to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature. In the Lower Danube Green Corridor project, WWF works closely with the governments of the countries - Bulgaria, Romania, Moldova and Ukraine - that signed the Agreement, as well as local stakeholders. WWF has taken responsibility for the Lower Danube Green Corridor initiative as part of the WWF Living Planet Programme which is aimed to secure the conservation of the world’s most important biological resources and ecosystems into the next millennium. Furthermore, partners were sought locally and nationally as well as internationally, i.e. GEF, UNDP, UNEP, World Bank, EU, WWF, IUCN, Ramsar Convention and Governments (i.e. Austria, Germany, Denmark, Netherlands), to solicit their co-operation and assistance in the creation and maintenance of a Lower Danube Green Corridor. The main funding sources came from WWF, national governments, EU and the corporate sector. The International Commission for the Protection of Danube River strongly supported the implementation of the Lower Danube Green Corridor, the 10 years anniversary of Lower Danube Green Corridor being celebrated on the occasion of the endorsement of the Danube River Basin Management Plan by Danube countries governments. The first assessment of the potential for restoration of the Lower Danube Floodplain was funded by UNDP and set the basis for the Lower Danube Green Corridor agreement.
3. Main Findings

Although the work is still at the level of a literature review and bearing in mind that the cases described above are not a statistical sample, we can present a cross-reading of these 26 practices, according to some parameters.

Hazard involved

Few among the above-mentioned practices have a general scope, encompassing all the actual and potential hazards (mainly the natural ones) in a given territory, they are:

- Potenza territorial coordination master plan
- Florence civil protection system
- Tatabánya Plan
- Civil protection drills and capacity-building in Portugal
- Ljubljana citizen scientists.

All the others are related to specific hazards such as:

i. River flood
   a. Regional floods in the Czech Republic
   b. South-Eastern floods in France
   c. Saxony river floods
   d. Alto Adriatico civil protection exercise
   e. Lodz Learning Alliance
   f. Doncaster flooding networks
   g. East Salford floods
   h. Northern England (Cumbria) – floods
   i. Lower Danube Green Corridor: floodplain restoration for flood protection

ii. Coastal flood
   a. Timmendorfer Strand coastal protection strategy
   b. Multi-Hazard Approach to Early Warning System in Sogn og Fjordane
c. Augustenborg, Malmö, floods  
d. Doncaster flooding networks  
e. Humber coastal flood risk management strategy  

iii. Atmospheric pollution increase  
a. Citizens’ Observatories and bio-monitoring campaign in Ostrava  
b. Barcelona citizens’ observatory  

iv. Heat-waves/Extreme temperatures/drought/wildfire  
a. Urban heatwave and forest fire in Tatabanya  
b. Alto Adriatico civil protection exercise  
c. Vulnerability to drought in Segura and Tagus basins  
d. London – Heat waves  

v. Huge storm  
a. Multifunctional water management in Rouen  
b. Delft monitoring network  

vi. Ultraviolet radiations  
a. Vitoria-Gasteiz citizens’ observatory  

vii. Landslide  
a. Alpine Hazards in South Tyrol  

viii. Avalanches  

Moreover the general Portuguese case has a specific focus on earthquake too.

As we can see, most of the analysed practices of citizens’ empowerment are related to flood (river and/or coastal flood). And, as we have seen in chapter two, this is also the case for the mentioned citizens’ empowerment practices outside Europe. However, some European practices are related to other natural hazards, such as heat wave, forest fire, landslide, avalanche, heavy storm, atmospheric pollution increase, earthquake, and civil protection in general (plans, practical exercises, etc.).
Actors involved
The types of actors involved are the following ones (for each type of actor we specify the number of interesting cases):

- Common citizens/common volunteers 24
- Vulnerable actors
  - Children 3
  - Youth 2
  - Elders 0
  - Disabled people 0
- NGOs/environmental movements/organised groups/civil society leaders 12
- Business/private sector 9
- Disaster/hazard managers and other technicians 13
- University and scientific community 8
- Local authorities 15
- National authorities (civil defence included) representatives at the local level 3
- Media operators 5
- Others
  - International experts 2
  - Insurance companies 2
  - Trusts 1.

Therefore, the actors involved, beyond local authorities and disaster/hazard managers (national civil defense and other technicians), are mainly "common" citizens, NGOs and other organized groups, business and private sector and scientific community (conversely, there is no evidence – except in rare cases – of an active involvement of media and specific vulnerable groups – the most considered are children).

Empowerment actions considered
Several kinds of empowerment care taken into account, such as:
- Construction of partnership/alliances among the actors mentioned above and, more specifically, among civil protection and/or other relevant authorities and citizens (e.g., for the design/preparation of emergency plans) and other networking activities (12 practices)
- ICT capacity-building (4 practices)
- Hazard observation/monitoring in the frame of crisis mapping and/or citizens' observatories (and related capacity-building and/or crowdsourcing activities) (9 practices)
- Emergency management capacity-building (5 practices)
- Learning exercises/processes (5 practices)
- Implementation of simulations/drills (4 practices)
- Awareness campaigns, also through "discussion forums", "stakeholders forums", public seminars, etc. (16 practices)
- Educational and advocacy programs on hazards (4 practices)
- Involvement/stronger involvement in decision-making processes (10 practices)
- Involvement in technologic solutions (for hazard management) set up (2 practices).

Globally, 71 "empowerment actions" have been identified, corresponding to an average of almost 3 actions in each case/practice.

Social media are considered (one way or another) in the majority of the identified empowerment practices (15 cases; among these all the cases of citizens' observatories/crisis mapping).

Registered impacts

Registered impacts are, of course, correlated with the implemented empowerment actions. It is important to specify that these are, for the most part, prima facie impacts that are not necessarily going to be retained permanently (as an impact, normally, should be). But in few cases, these impacts can be considered already consolidated (e.g., the changes in common behaviours, thanks to strong learning processes in Badia or the Saxony region).

As main impacts, we can report:
- Increased skills among citizens (12 practices)
- Increased awareness (17 practices)
- Changes in citizens' common behaviours (in relation to hazards management/preparedness) (5 practices)
– Changes in the use of resources (in relation to hazards management/preparedness) (3 practices)
– Broader involvement of citizens' and their organizations in decision-making (9 practices)
– New rules/regulations (beyond the issue mentioned above) (2 practices)
– Resilience increase) (6 practices).

4. Concluding Remarks

This document is just the first deliverable of the CARISMAND work package on citizens' empowerment but it provides already a large review on the notions of empowerment and, more specifically, those concerning citizens' empowerment (communities, but also individuals belonging to these communities) in the management of hazard/disasters from preparedness to reconstruction). Empowerment, beyond the many definitions that have been presented, should be considered as a complex process that entails an societal actors' increase of skills, awareness, involvement in the decision-making process, etc., in synthesis an increase of their capacities to control their own environment and therefore to be active in such environment. Therefore, empowered people, as also shown in many of the illustrated practices (in Europe and elsewhere), can contribute to the management of hazards at any stage (preparedness, response, recovery, and reconstruction).

Citizens' summits held in Malta and in Bucharest have shown that participants (218 citizens in total) showed a significant lack of knowledge about the guidelines and procedures their local disaster management authorities are following. Indeed, 55% of respondents in Bucharest and 73% in Malta indicated that they know little or nothing at all about such provisions. In addition, they also indicated that they feel even less informed about what to do with themselves in the case of a disaster, with 59% of respondents in Bucharest and 91% in Malta feeling scarcely informed or not informed at all about what to do in a disaster.

On the other hand, participants expressed their considerable interest in information about disaster preparedness, with 97% of participants in Bucharest and 85% in Malta indicating they were quite or strongly interested. Additionally, 76% in Bucharest and 71% in Malta indicated strong intentions to prepare for disasters (prepare quite a lot or a lot).

Citizens' summit participants cannot be considered a statistical sample of the population of these cities, even less of their respective countries, even less of European citizens. However, in one

77 See CARISMAND deliverables D5.3 and D5.4.
sense and in the other, these percentages are so "strong" that we can have the impression that, at least in Malta and in Bucharest and perhaps elsewhere in Europe, if we wish to involve citizens in hazards/disasters management, there could be a need of empowerment (due to their lack of ability and awareness, as well as, their unfamiliarity with it); and, at the same time, they manifest their availability (or willingness) to be involved in related empowerment practices.

Moreover, almost 9 out of 10 participants (in Bucharest) and more than 4 out of 5 participants (in Malta) indicated that they would be likely or very likely to use social media to stay in contact with others, and about 4 out of 5 in Bucharest and 3/4 in Malta would inform themselves via social media, warn or inform others or family and friends, and provide help to others through social media. The likelihood of submitting information to local authorities was slightly lower. Nevertheless, 71% of respondents in Bucharest and 47% in Malta indicated it as likely or very likely that they would use social media to submit information about disasters to the authorities. With all possible caveats, these data seem to confirm the availability (and/or the willingness) of citizens to be involved and their readiness to use social media in that regard.

Thus, we can imagine that empowerment practices in hazard/disaster management may be much more widespread in Europe. The analysed practices (§2 of this chapter) show that the citizen engagement following empowerment practices can be useful; while, at the same time, the citizens' summits lead us to imagine that for being engaged citizens should be empowered (through an increase of their capacity and awareness; through a stronger involvement, etc.).

It is, therefore, mandatory to better understand how citizens' empowerment works or can work in hazards/disasters management. And this will be done through tasks 7.2 and 7.3 that will investigate the socio-economic and cultural aspects of empowerment.

Finally, in the frame of the task 7.4, specific recommendations will inform the CARISMAND toolkit, as well as other final outputs to be disseminated among practitioners (as well as other involved actors) and to be taken into account to guarantee a better disaster management, able to fully take into account cultural and socio-economic issues.
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This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 653748.


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