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Comparison of national strategies in France, Germany and Switzerland for DRR and cross-border crisis management.

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Abstract

The ESPREssO project (funded by the European Union's Horizon 2020 research and innovation programme, under Grant Agreement No. 700342) prioritises the need for overcoming barriers to disaster risk reduction (DRR) in Europe, with cross-border crisis management identified as one of its three central challenges. In this paper, we present a synthesis of the different legal, policy and scientific approaches to DRR in France, Germany and Switzerland, through work carried out for the ESPREssO project on the basis of stakeholder interviews and an analysis of legal and policy references. A comparison of these three differing DRR strategies is then carried out, focusing specifically on resulting impacts for cross-border crisis management, capitalizing on lessons learned from the tri-national border region Upper Rhine Valley to complete the analysis.

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Keywords: ESPREssO, Disaster Risk Reduction, Transboundary, Upper Rhine.

1. The ESPREssO project

ESPREssO (Enhancing Synergies for disaster PRevention in the EurOpean Union) elicits the needs, perspectives and opinions of stakeholders operating within and between the spheres of Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) in Europe. It intends to analyze, synthesize and compare existing knowledge of

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legal, policy and science approaches to CCA and DRR; identify gaps and current challenges by asking the opinions of those at either end of the policy-practice spectra and, finally, explore ways in which ESPREssO's 3 challenges are addressed in practice, by policy makers, researchers and practitioners, at various levels of governance. ESPREssO is funded under Grant Agreement No. 700342 of the European Union's Horizon 2020 research and innovation program. The project invites stakeholder participation, not only from the six European countries represented on the project board (UK, Switzerland, Italy, France, Germany and Denmark), but from a global community of practitioners within CCA and DRR. Three core challenges form the backbone of the ESPREssO project:

- Challenge 1: To propose ways to create more coherent national and European approaches on Disaster Risk Reduction, Climate Change Adaptation and resilience strengthening;
- Challenge 2: To enhance risk management capabilities by bridging the gap between science and legal/policy issues at local and national levels;
- Challenge 3: To increase efficient management of transboundary crises.

The current paper focuses on Challenge 3, summarizing key results of a study on the current state of transboundary crisis management in Europe. The national reports on DRR and CCA strategies developed for Switzerland [1], Germany [2] and France [3] constitute the basis for this paper.

2. Transboundary crises

Disaster risk reduction (DRR) policies in recent years have led to improvements in the way crises are anticipated and managed, achieving important reductions in the extent of the sustained losses. An oft-quoted statistic, issued from the INSPIRE initiative is that, in the European Union, 115 million people are estimated to live within 50 km of a border, accounting for 20% of the European population. River basins which are susceptible to flooding often serve as natural borders in Europe, or otherwise cross two or more national boundaries, with the risk that any catastrophic flood event may propagate across borders exacerbated by future climatic changes [4].

Inside the European Union, European integration has not yet effected harmonization of civil protection systems. DRR as a whole has a tendency to advance in leaps and bounds in the immediate to short-term aftermath of a crisis. Similarly, European integration on matters of national security and civil protection has also taken place in the aftermath of crises, such as terrorist attacks or health scares [5]. As memory of disasters fades, so too does momentum. This has been highlighted by ESPREssO stakeholders as a key challenge to be addressed in the project.

Natural hazards do not care for human borders. Instead, borders can hinder DRR, leading to higher levels of impact or more recurrent crises in border zones. Fragmented or differing cultural policies on either side of the geographical/political border can contribute to vulnerability. [6[1] L. Booth: 2017. ESPREssO Deliverable 2.1: Synthesis report of legal, policy and science approaches within the frame of Disaster Risk Reduction and Climate Change Adaptation – Swiss National Report, 2017.

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] and [7] outline three main factors why transboundary crises present a higher difficulty to manage than other crises:

- Making sense of the crisis is harder: As crises are periods of uncertainty, information is a key resource. However, it is often gathered piecemeal by many different actors and communicated following structures that may not be analogous to the hierarchies of decision-making. In a cross-border crisis, relevant information may be scattered across the border, and the different information-gathering actors may have trouble interfacing, e.g. due to lack of previous contact, incompatible data formats or mismatches in governance.
- Gathering crisis management resources is more difficult: Crises require a surge of resources, in terms of logistics and personnel, to be pooled together and coordinated. This requires identifying where resources may be available, and accessing and mobilizing them across institutional boundaries. For similar reasons to those pertaining to knowledge-sharing, this is far more difficult to do across national borders.
- Problems in making legitimate crisis management decisions: Many countries have developed civil protection structures that serve as chains of command, to ensure that decisions are made at the appropriate level by legitimate decision-makers so that they can be reliably implemented. When it comes to transboundary crises, the question of "ownership" can severely affect coordination: It becomes more difficult to outline the responsibilities or remit of each actor and to establish an effective decision-making structure. This can lead to decisions being undermined by questions of legitimacy or becoming lost due to miscommunication.

3. Current European policy on transboundary crises

Although civil protection remains a responsibility of the states, the European Union has in recent years strengthened its role in this domain. This was made most explicit with the Solidarity Clause in the Lisbon Treaty (Article 222 TFEU) of 2007, whereby the states agree to assist each other in case of a major emergency. The process can be shown to have begun in 2001, with the Council Decision 2001/792/EC to adopt a Civil Protection Mechanism (CPM) after the 11th of September terrorist attacks in New York, and the subsequent decision 2004/277/EC on how to implement this mechanism, made in the wake of 2004 South Asia tsunami. The CPM extends to 30 countries, including the 27 member states as well as Liechtenstein, Iceland and Norway [8]. The European CPM operates using pre-allocated resources from the states, rather than using specific resources at the EU level [7], [9]. This has led to the CPM focusing less on making decisions and more on aiding with the other two problem areas that concern transboundary disasters:

- In the sense-making phase, the Emergency Response Coordination Centre (ERCC) monitors emergencies around the world and channels information during a crisis and helps information flow for coordination

purposes. The European Union has also set up a multitude of risk observatories for different types of risks, such as food safety and terrorism and can contact experts quickly.

- For the mobilization phase, the CPM has set up the European Emergency Response Capacity (EERC), which is a voluntary pool of resources, including the European Medical Corps, from 10 member states that the CPM can mobilize quickly under the coordination of the ERCC.

The CPM has acquired a lot of experience since its inception, having monitored more than 300 disasters and successfully intervened in crises such as the 2010 Haiti earthquake, but it has less experience working within the boundaries of the EU. For the foreseeable future, the European Union will retain its networking function, connecting information and experts to decision-makers and delivering personnel and resources. Outside of these tools, it is up to border regions to establish cooperation agreements, for which there is no formalized legal framework. When these are absent, informal cooperation sometimes takes place based on existing relationships [10].

4. Analysis of transboundary crisis management from a national perspective

4.1. Swiss transboundary crisis management

Protection of the Swiss population and important assets against natural hazards is provided as a public service by the Swiss state. In the federal state of Switzerland, it is the joint task of the Confederation, cantons and municipalities and all three levels work closely with each other in this area. The 26 cantons are responsible for the maintenance and protection of forests and water bodies, hazard mapping and the planning, construction and maintenance of protective structures, with federal authorities providing financial and expert support [11]. The Federal Office for the Environment (FOEN) is responsible for the strategic management of these tasks and guarantees safety at the national level upholding a basis of uniform standards. It is up to the 26 cantons to decide whether to organize these tasks centrally or to delegate some of them to the 2,324 political municipalities (status: 1.1.2015). Thus, the system accommodates the cultures of political cohabitation that vary from region to region. The Insurance industry has also emerged as an instrumental actor in raising awareness among the population.

Switzerland is a member of the Alpine Convention, an international treaty between eight Alpine countries (Austria, France, Germany, Italy, Liechtenstein, Monaco, Slovenia and Switzerland) and the European Union to ensure protection of the Alps and sustainable development of the region [12] FOEN, Adaptation to climate change in Switzerland: Goals, challenges and fields of action. Federal Council Strategy, adopted on 2 March 2012. Federal Office for the Environment.

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[14]. Switzerland is also part of PLANALP through PLANAT and is a member of several transboundary river commissions. Current cross-border dialogue on the management of the Rhône may also lead to the creation of a coordinating body administered together with France. At an international level, Switzerland cooperates with UNISDR, to implement international frameworks. PLANAT has a small working group on international affairs and a number of federal offices, including FOEN, maintain collaborations with neighbouring and overseas countries. Moreover, scientific institutions e.g. ETH Zurich foster collaboration with other global research institutions [12] FOEN, Adaptation to climate change in Switzerland: Goals, challenges and fields of action. Federal Council Strategy, adopted on 2 March 2012. Federal Office for the Environment.

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[14], [13].

In the Swiss case, not all trans-boundary issues may exist at national borders. Some lie within country, one example being various inter-cantonal issues due to different approaches to decision-making. This can potentially lead to a jigsaw approach to either CCA or DRR within a nation: “Cantons are working together but often in a very informal way”, (Kantonalen Krisenorganisation Basel-Stadt, pers. comm, 2017). Flow of information back up from the municipal level, via Cantons to the Federal level is however sometimes not always efficient or uniform. More proactivity at both Cantonal and Federal level to communicate more readily with each other is required.

One example is management of another major trans-boundary river, the Upper Rhone, flowing between Switzerland and France. The Canton of Geneva is engaged with the French on the other side of the border, due to

proximity and daily interaction within the city and environs. However, the Swiss Federal level and French Government do not always display the same familiarity with the competing priorities that exist between sectors which rely on the trans-boundary water source, e.g. the cooling technology of the nuclear power plants on the Rhone, and associated water extraction requirements [15].

4.2. French transboundary crisis management

The French public system for the management of major natural and technological risks involves different levels of decision and intervention. At the national level, DRR responsibilities are split among three main Ministries [3]: The Ministry in charge of Environment is responsible for risk prevention plans and providing safety information. The Ministry of Interior is responsible for civil protection, including the planning and implementation of crisis management. Finally, the Ministry of Economy handles the economic risk transfer system, which relies on the insurance sector: France has a national mutualised natural catastrophe reinsurance system where all properties are insured against disaster risk with the State acting as the financial guarantor.

The exact names of these three key ministries have changed many times with recent government changes, particularly the Ministry of the Environment, but the role split has remained largely the same despite the name changes. Besides these three key Ministries, any Ministry dealing with issues of scientific research, food and health, foreign affairs and national education contribute in their respective areas to the prevention of disaster risks.

The French civil protection system was conceived to accommodate crises that surpass internal boundaries: a pyramidal organization is in place to ensure that, if a crisis is too big for the local level to handle with their local resources or if it affects multiple areas, the response can be escalated together with the decision-making level. Crisis management can therefore escalate from municipal to departmental to "zonal" to national, with the crisis management leader being accordingly the mayor, the prefect, the zonal prefect or the Minister of the Interior. "Zonal" refers to a specific French administrative division: Defense and Security Zones are supra-regional structures that exist for coordination of military operations, but which have been identified as a useful scale for the mobilization of civil protection resources. Interestingly, the regions, the intermediary administrative level between departments and zones are not considered in the system.

When it comes to crises that require international cross-border assistance, it is the prefect who has the authority to activate transboundary cooperation, meaning a crisis must first escalate to departmental level. When activating this power, the prefect is expected to act in agreement with municipal and border authorities, while the zonal and national levels must be kept informed. However, practice has shown that in many cases it is not the prefect who has requested cross-border assistance, but rather the departmental service of firefighting and rescue (SDIS), which then informs the prefect. This mismatch between theory and practice, with first responders taking the lead over crisis coordinators, is particularly prevalent in areas where no formal cross-border assistance agreements are in place [16]: For France, the Oriental Pyrenees region is a recurrent case where a formal agreement has so far been frustrated. On the French side, the region has sufficient authority, but on the Spanish side, regions such as Catalonia do not have foreign policy authority and thus involvement from the central government is required. This type of conflicting legitimacy in cross-boundary DRR is an aspect of preparedness that can be overlooked when the focus relies on coordinated response.

4.3. German transboundary crisis management

While often used as synonyms in public debates and media, the German terminology regarding DRR has legal implications that need to be understood when talking about German DRR policy. The nuances between the terms are "civil protection" (*Zivilschutz*), "disaster control" (*Katastrophenschutz*) and the "protection of the population" (*Bevölkerungsschutz*) are often lost in English translations (which favor "civil protection"), but the distinction reflects the distribution of tasks between different governance levels. In Germany "civil protection" is strictly understood as part of national defense policies, for which the Federation is responsible (Article 73, paragraph 1, German Constitution), whereas "disaster control" is under the responsibility of the federal states (*Länder*) (Article 30, and 70, paragraph 1, GG). However, both are interlinked and – under certain conditions – can call upon each

other's resources. When talking about both, "*Bevölkerungsschutz*" is the official term [17], referring to the general protection of the population regardless of the administrative level of responsibility. It includes all non-military and non-police measures taken by any administrative level to protect the population from disasters and other severe crises including armed conflict. It also includes measures to prevent, reduce and manage such events.

As a reaction to the terrorist attacks of 9/11 and the massive Elbe flood in 2002, the Standing Conference of the federal and state interior ministers adopted the "New Strategy for Protecting the Population" the same year, seeking to optimize collaboration between federation and federal states in dealing with significant threats – including climate change (BMI 2015: 5). *Länder* thereby receive more assistance in dealing with disasters in times of peace while the federal level focuses on defense (BBK & DKKV, 2009, p. 122). By setting up the Federal Office of Civil Protection and Disaster Assistance in 2004, federal focus shifted towards administrative assistance in disaster management.

The responsibilities at federal level have since been constantly revised and were formalized in the Federal Civil Protection and Disaster Assistance Act (2009) which for the first time established a legal basis for the fact that the whole of society shares responsibility in case of large-scale damage that crosses the borders of federal states [18].

A study by the German Red Cross [20] provides a comprehensive overview of the laws and regulations as well as the operational practicalities of transboundary crisis management from a German perspective. Germany has signed bilateral agreements on mutual disaster assistance with all its neighbor states as well as with Russia, Hungary and Lithuania. Besides bilateral agreements of the federation, the *Länder* have also entered into agreements with other countries, as is their right according to Art. 32, paragraph 3 of the Basic Constitutional Law ([20], p. 7). Also, both official and unofficial agreements exist at the local level, e.g. between German municipalities and direct neighbors.

Any request for German assistance in the CPM is passed on by the Federal Ministry of the Interior to the Joint Information and Situation Centre (GMLZ) of the Federal Office of Civil Protection and Disaster Assistance (BBK). A criticism regarding the German system for transboundary disaster management in the past was the lack of a National Contact Point [20] but since June 2010 the GMLZ at the BBK has taken over this role. However, since the bilaterally agreements have precedence over the CPM, foreign countries that have concluded bilateral agreements have to address the contact point designated within the respective agreement ([20], p. 11), typically the Federal Ministry of the Interior, but often also the Ministries of the Interior of the federal state(s) that are located at the border to the requesting country.

5. Case study: The Upper Rhine Valley

The Upper Rhine Valley is a tri-national border region between France, Germany and Switzerland spanning 350km of the course of the Rhine, from the tri-national point in Basel in Switzerland to Gemersheim in Germany. For more than half of this length, the Rhine acts as a natural border between France and Germany. Nearly 100 000 inhabitants cross a national border daily for work, proof of the active links that tie the region together [21]. However, the Upper Rhine Valley is also prone to natural hazards such as floods and earthquakes: The southern half of the River Rhine lies in a region of moderate seismicity, from Upper Rhine Graben taking in Basel in Switzerland to Frankfurt am Main, and the Lower Rhine Embayment which includes Cologne, and continues to the Netherlands and Belgium [23].

The Upper Rhine Valley is peculiar in that it owes much of its flood risk to human intervention on the river basin [21]: Over the course of the 19th century, in order to improve navigation and make more land accessible to agriculture, the riverbed was altered, straightening its course and surrounding it with dykes, intended to prevent floods. This later paved the way for hydroelectrical installations along the Franco-German border, interrupting the ecological continuity along the river. Eliminating the natural meanders significantly reduced the flood retention area while increasing the speed at which flood waves propagate outwards from the river channel. Flooding in the Upper Rhine Valley most often happens between May and July, coinciding with Alpine snowmelt, although this regime is likely to change due to climate change, leading to the snowmelt season starting sooner [22].

A tri-national commission has been in place since the Bonn Agreement in 1976 to handle "the study and solution of problems related to the vicinity" of the component regions, an accord which was reiterated in 2000 while at the same time increasing the area concerned to its current size. The initial agreement already mentioned "mutual assistance in case of emergency" as one of its focus areas and the executive body of the agreement. The Upper

Rhine Conference (URC) or – more correctly – the Franco-German-Swiss Conference of the Upper Rhine, created in 1991, has had an active working group dealing with mutual assistance in case of catastrophe in place since 1999.

At a higher geographical scale, we also find the International Commission for the Protection of the Rhine (ICPR), which concerns itself with the Rhine as a whole, but has made substantial contributions to DRR in the area through a concerted multilateral action. The ICPR has been at the foreground of river basin management since 1950, both from an ecological and a DRR point of view. The Action Plan Against Floods developed by the ICPR in 1998, motivated by the catastrophic floods in 1993 and 1995, constituted the basis of European Parliament Directive 2007/06/CE, better known as the Flood Directive. The current incarnation of the ICPR Action Plan against Floods, which is part of the "Rhine 2020" initiative constitutes a series of basin management actions with a budget of 12 billion Euros, aiming to reduce potential damages by 25% and reduce extreme flood levels. The program also seeks to increase awareness through maps of flood-prone zones, such as the Rhine Atlas 2015, and increase the capacity to raise alert by establishing collaborations between upstream and downstream observatories. The ICPR has also developed a tool to assess the efficacy of its basin management actions, expressing confidence in their achievement [24].

5.1. Analysis of border zone collaboration in case of emergency

A simplistic way to summarize DRR in the Upper Rhine Valley would be to say that the ICPR has led initiatives focusing on prevention and mitigation of floods, whereas the URC has focused on preparedness and crisis management, with local governments and local actors contributing to both areas, often in a concerted manner. Furthermore, both international and local bodies have put forward multiple initiatives to increase risk awareness.

The Upper Rhine Valley presents many examples of effective transboundary collaboration, such as the ongoing collaboration of firefighting services in Strasbourg and Kehl, who train together and regularly exchange experiences. [16] lists a number of collaboration initiatives in the region. Other examples include deployment of the Europa 1 firefighting vessel under the management of a local cross-border cooperation group. The vessel is manned by French firemen during the day and German firemen at night and during the weekend. Joint intervention capacities have generally ensured that transboundary intervention in the region is quick and agile.

The Conference working group for disaster mutual assistance has also developed interesting tools, such as an illustrated French-German dictionary of emergency response vocabulary [26], [27]. The Red Cross points out that in many cases, due to the way first responder teams are usually organized with a clearly designated team leader, interpreters can also be deployed effectively if they're targeted at team leaders. Furthermore, the Red Cross points out [16] that joint training exercises greatly help to overcome language issues. Since 2015, thanks to the INTERREG CRERF-MÜB project, a joint River Risk Control Training Center has been set up, training specialists from both sides of the border both in classic response techniques and specific intervention types for dealing with emergencies on the Rhine. Transboundary exercises have been identified as an excellent opportunity to make the obstacles immediately clear. This has been highlighted in the early stages of the ESPREssO project and will form one of the interactive Think Tanks carried out by the project, in testing cross-border response and seeing where lessons can be learned.

However, some problems persist. Most of the work carried out so far has focused on the firefighting forces, leaving out other first responders, such as NGOs. The latter may encounter problems when transporting special equipment through the border or when personnel qualifications are not recognized (this is still the case despite efforts for European harmonization). In times of crisis, a degree of improvisation may partially waive these problems, but it would be better to clarify these situations in advance, so to alleviate any delay at times when rapid response is crucial.

Communication between the neighbouring countries of France, Germany and Switzerland in the tri-national Swiss Canton of Basel Stadt is good. Meeting approximately six times yearly with their foreign counterparts, there is generally a good relationship and understanding of mutual cooperation put in place by the Upper Rhine Conference. What seems to be more of a priority, perhaps is better vertical integration with the state, or Federal level. This is sometimes often assumed, or indicated in policy documents but not necessarily acted out in practice, e.g. regular proactive state or Federal attendance at regional (or multi-regional) working group meetings for instance

would be beneficial. Practitioners feel that for the federal level to have a better grasp on the practicalities would add another dimension to policy-making. This echoes the point that not all trans-boundary issues exist between national borders. Often within a country, there is work to be done on bringing together the two ends of the policy-practice spectra. This is certainly found to be the case with all three of our comparison countries, France, Switzerland and Germany, and doubtless other countries besides.

6. Discussion

According to experts interviewed in the context of the ESPREssO project, procedural and legal frameworks on flood management have substantially improved within the last 15 years in particular in terms of flood warning, where clear regulations and agreements are in place in most of the regions. The Floods Directive and the Water Framework Directive were decisive for improved transboundary management of natural hazards. As a legal act, mandatory for EU members, the directive has been a crucial step towards cooperation and joint objective-setting across national borders. This is why most initiatives mentioned by experts as best practices in transboundary disaster management were related to riverine and coastal risks, such as the ICPR.

Every border region is different, however, and in many ways unique, in terms of how best to bring actors together in compromise and in planning for potential disasters or "tests" to the system of their shared resources, be that an alpine lake, trans-boundary river or otherwise. This will depend largely on the historical interactions between the regions and their governments, and can either provide many avenues for mutual benefit and positive opportunities, or it can become strained, if for example, communication is not readily upheld on both sides, and supported by a two-way flow of information (top-down and bottom-up).

At a national level, often the perspective is holistic, forward-looking and policy-driven. Whilst this strategic overview is important, regional areas feel that sometimes the current mechanisms, issues and processes of implementation that drive their daily work plans, might be overlooked somewhat, and a dis-joint emerges between practice and policy, or practitioners and policy-makers, perhaps creating something of a divide, between an ideological DRR plan, against what in reality is something quite different. This does not always imply a negative reality, however: Often, "on the ground" action functions perfectly well, with actors knowing exactly who to contact in times of emergency. The plans and structures are in place and preparations are made as best as possible. Contacts change of course, in such a structure ("The higher up in the system they are, the more they change" -Cantonal rep, Basel Stadt, 2017), but it is the local knowledge that allows gaps to be filled when staff changes inevitably happen, so that the organisational links remain strong. This is where the efficacy of a DRR plan lies, knowing the communication channels to use, and keeping them open at all times. Where DRR is concerned, there is real opportunity to align practice and policy in a border region, towards a common goal. Improved collaboration in DRR is also likely to lead to improved collaboration in Climate Change Adaptation.

The ESPREssO project is mobilizing a network of stakeholders and partners involved in disaster risk reduction and climate change adaptation. As part of the first ESPREssO Stakeholder Forum, several of these stakeholders were invited to express their views on the topic of transboundary crisis management. The following topics were recurring in these discussions, which has led to us to include them in our review:

The first is the necessity to be proactive rather than reactive. Many of the above-mentioned points are exacerbated by the need for improvisation and could be rendered less challenging if structures and methods are in place well in advance and regularly tested, via trans-boundary crises exercises.

The second is the problem of communication. Consistent language can be a hindrance which complicates mismatches in messaging channels and delayed response: it is very important that the right stakeholders receive the information they need in a way that they can understand it and act upon it. Visualization and mapping can help to alleviate language barriers but, as a medium, they pose their own challenges (data formats, digitisation, scale, etc.).

The final topic relates to specific problems with legitimacy and decision-making: As seen in the case of the Franco-Spanish border, transboundary crisis response can be perceived as a high-stakes political issue, impinging on foreign policy. As a result, many countries prefer to assign higher-level decision-makers and spokespeople to lead a transboundary crisis and handle communications with "the other side". However, these decisions are perceived by ESPREssO stakeholders as not properly capitalizing on the knowledge of local DRR practitioners, who often

already have a transboundary contact network and could act as more efficient interfaces. Partnership working is recommended to be explored in these cases.

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