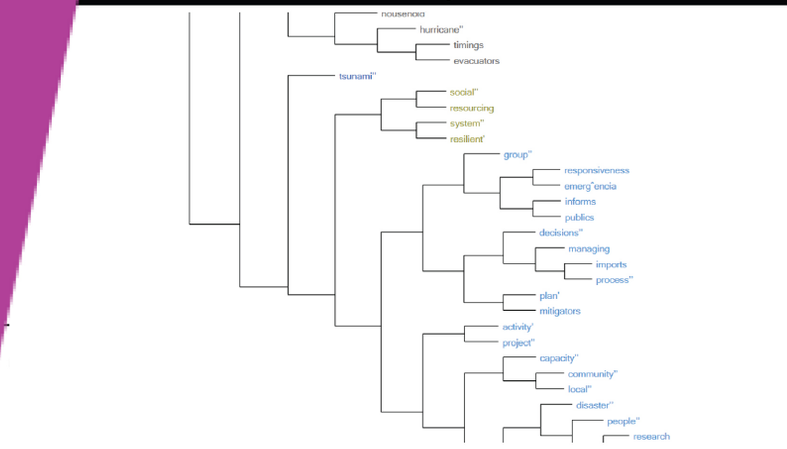
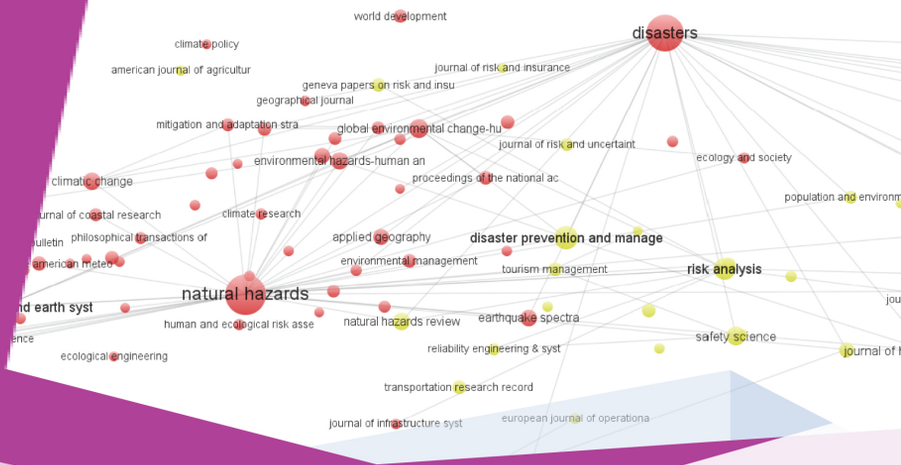
Integrated Research on Disaster Risk (IRDR)

Governance in Disaster Risk Management

AIRDR Project Report No. 3





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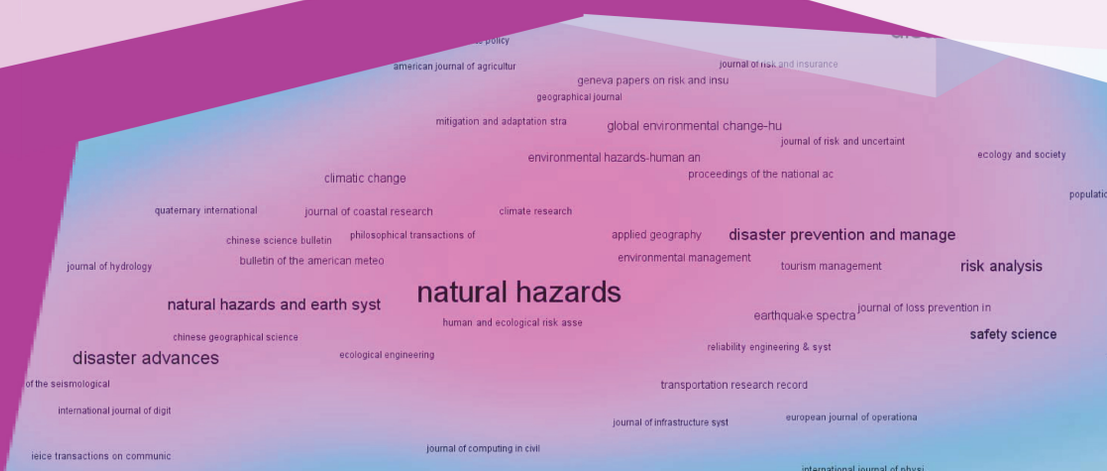

IRDR

IRDR was established by the International Council for Science (ICSU) in 2010, in co-operation with the International Social Science Council (ISSC) and the United Nations International Strategy for Disaster Reduction (UNISDR). IRDR's main legacy will be an enhanced capacity around the world to address hazards and make informed decisions on actions to reduce their impacts. This will include a shift in focus from response–recovery towards prevention–mitigation strategies, and the building of resilience and reduction of risk through learning from experience and the avoidance of past mistakes.

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Governance in Disaster Risk Management

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Contents

1. Introduction

Disaster governance has emerged in recent years as a potential avenue for risk reduction (Ammann et al. 2006; Renn 2008) and has also been enshrined in the five key priority areas of the Hyogo Framework for Action (HFA) (UNISDR 2005). However, the 2011 Global Assessment Report (UNISDR 2011, 116) concluded that "aside from reducing disaster mortality, existing risk governance capacities and arrangements generally fail to achieve their aims. " This statement coupled with escalating losses driven by increases in exposure and vulnerability reveals shortcoming in current disaster governance. Such failures in governance structures point to the need for reflecting on the range of currently available institutional, policy, administrative and regulatory mechanisms for managing risks.

According to Tierney (2012, 344), "disaster governance consists of the interrelated sets of norms, organisational and institutional actors, and practices (spanning pre-disaster, trans-disaster, and post-disaster periods) that are designed to reduce the impacts and losses associated with disasters arising from natural and technological agents and from intentional acts of terrorism." Disaster governance goes beyond governmental settings, powers, processes and tools by encouraging collective actions through the engagement of all stakeholders (e.g., governmental, private businesses, non-governmental entities, academia) operating at all scales—from local to global.

Disaster risk governance has traditionally been fragmented between local, state, and national entities and between sectors, and compartmentalised in highly variable bureaucratic structures. Risk governance is mostly viewed through the lens of disaster or emergency management departments, agencies, or organisations, which often have little interaction among other governmental, civil society, or corporate entities. Visible in times of crises, risk governance is rarely seen as part of everyday public or private functions such as planning, social welfare, investments or fiscal responsibilities.

This literature review summarises our current scientific knowledge on the emerging field of disaster governance: what we know about governance and disaster risk management; how it has evolved over the past years; and where the research gaps are in our present knowledge. This overview builds on the efforts by the IRDR working group on the Assessment of Integrated Research on Disaster Risk (AIRDR) to provide the science-based evidence for the development of the post-2015 framework for disaster risk reduction (IRDR 2013).

Three key policy questions are addressed in this review:

1. What are the principal drivers of changes in disaster risk governance characteristics at national and local scales over the last decade?
2. Is disaster risk governance a separate and autonomous concern/theme or is it a component of sustainable development at local to national scales, and how do international governance frameworks influence it?
3. How is the linkage between climate change adaptation and disaster risk management established and how does this influence the present governance of risk?

2. Methods

This literature review summarises the current state of research based on original studies published in peer-reviewed journals. Its methodology replicates the approach developed by the IRDR AIRDR working group (Gall et al. 2014). The original AIRDR database contains 1,069 peer-reviewed, academic, English-language journal articles culled from 39 journals published between 1999 and 2013. For the purpose of this review, a subset of 39 governance-related articles within the AIRDR database were supplemented with 138 additional articles based on a keyword search (disaster AND governance), utilising the academic citation indexing and search service *Web of Science*. See the *Annex* for a complete listing of all reviewed publications.

By using this combined approach it was possible to minimise two biases: focusing solely on indexed journals and analysing only journals that publish specifically on disaster risk. Some challenges remain and could not be overcome. Those are the exclusion of monographs, edited books, grey literature and non-English language publications. Books, reports, and so forth were excluded because a) the quality of the peer-review process is not transparent, and b) the review and classification criteria (see below) could not be transferred. Furthermore, research on war or civil unrest, technological hazards (e.g., oil spills, nuclear accidents), climate (e.g., carbon dioxide concentration, El Niño), and diseases (e.g., HIV/AIDS, malaria) were also excluded to keep the focus on natural hazards.

The methodology and literature analytics involved content and cluster analysis. The goal was to identify key topics, study areas, methodological approaches, authorship, and changes in publication output over time. To do so, each article was reviewed and classified based on: study area, number of authors, authors' disciplinary backgrounds, number of disciplines, authors' countries of affiliation, and the type of research partnership (e.g., academic, academic-governmental). Information on disciplinary background and type of partnership was confirmed through internet research. In addition, publication content was reviewed and classified using keywords capturing research topic, hazard type, major disasters and methodology. A publication's original keywords were dismissed to ensure uniform classification across all works by the research team.

A word count analysis (based on stemmed words, e.g. government, govern, governance) was performed on the full texts of all 177 publications to identify central themes in research on disaster governance (see cover for visual of word cloud). To group and classify similar research, publications were coded using 48 keywords derived from the initial content analysis as well as the word count analysis. Subsequent cluster analyses on these coded publications provided the quantitative results (Pearson correlation coefficient) resulting in grouping the publications into prevalent knowledge domains on disaster governance discussed in the results section. All content analysis was performed in EndNote X5 and NVivo 10.

To set the findings into a broader context, additional literature was cited in the background paper but did not undergo the rigorous methodological steps outlined above. These references are listed in the reference section of the report. To reiterate, all reviewed publications upon which the results are based are found in the *Annex* section.

The results section is divided into four central research themes that emerged from the reviewed literature. Each research theme—called a knowledge cluster—begins with a brief summary of the current state of knowledge and then moves to remaining challenges within the specific research domain. The results section concludes with a detailed knowledge gaps and systemic shortcomings in disaster risk governance research.

3. Results

Governance-related research in the area of disaster risk management is in its infancy but has grown exponentially in recent years (Figure 1). The primary focus of this new research field remains largely conceptual, driven by theoretical discussions on what constitutes good disaster governance. Broadly speaking, there are four research clusters constituting the current knowledge on disaster governance: 1) elements of disaster governance; 2) measures of the effectiveness of disaster governance; 3) governance lessons learned from past disasters; and 4) connections to climate adaptation and sustainability governance. These will be explained in more detail in the following sections.

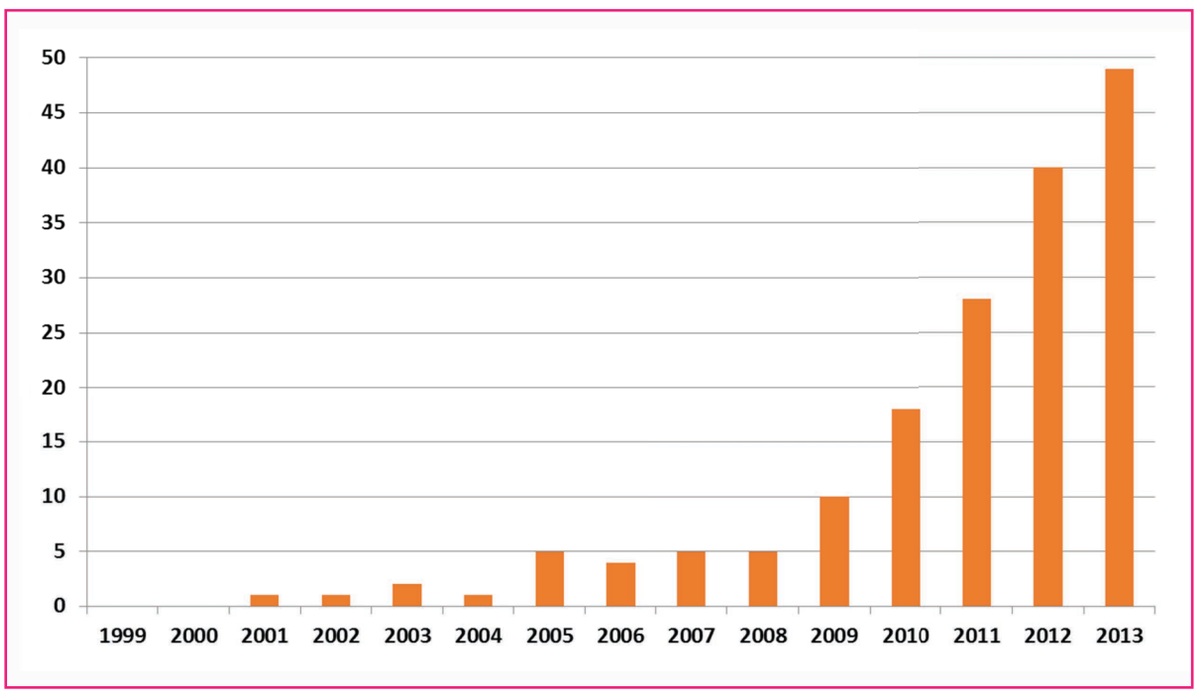

Figure 1: **The number of peer-reviewed, governance-related journal publications per year shows a significant upward trend.**

Knowledge Clusters

1. Elements of Disaster Governance

Disaster governances– ometimes also called adaptive (disaster) governance or disaster risk governancee– merged as a theme related to the management of complex social-environmental problems and associated risks. It is situated within the broader context of risk governance (Renn 2008) considering all types of risks, not just disasters. It also includes institutions, organisations, laws, regulations and contributions from civil society and private sector actors that influence risk management (Brunner et al. 2005; Holley et al. 2011).

Disaster governance often is characterised as a risk management system, which is collaborative, multi-party, and multi-level. Risk governance is seen as a more innovative and accountable approach in dealing with complex environmental problems because of its flexible, adaptive, and learning-based orientation to problem solving (Holley et al. 2011). Given the broadening notion of governance, considerable research effort has focused on characteristics defining governance.

What is Known

There are many characteristics described in the literature that influence governance, but the most recognised are: stakeholder involvement, cooperation and collaboration, and flexibility.

The importance of stakeholder involvement is widely recognised and considered essential to disaster governance (IPCC 2012; UNISDR 2005; UNISDR 2011). The peer-reviewed literature supports this finding extensively (Boyer-Villemaire et al. 2014; Pelling 2011; Warner 2008). Early on UNISDR published guidelines for the establishment of national platforms for disaster risk reduction to serve as "advocates of disaster risk reduction" and "provide coordination, analysis and advice on areas of priority requiring concerted action through a coordinated and participatory process" (UNISDR 2007, 4). Since 2005, regional platforms have formed for Africa, the Americas, Asia, Arab States, Europe, and the Pacific region (PreventionWeb 2014a), as well as 80 national multi-stakeholder platforms (PreventionWeb 2014b) with some of the latter being government-led while others are not. Non-governmental entities play a viable role particularly at the international and local levels (Djalante 2012).

A second characteristic is cooperation and collaboration at a variety of scales. For example, the distribution of government functions (e.g., administrative, managerial, regulatory) across a variety of state and non-state actors facilitates vertical as well as horizontal disaster risk management and creates local capacities, establishes trust, and enhances cooperation (Boyer-Villemaire et al. 2014; Djalante et al. 2011; Tompkins et al. 2008).

Flexibility is the third major characteristic. The creation of ad-hoc groups and networks, community self-organisation, or the adjustment of policies, regulations, etc. are widely perceived as essential and important components of disaster governance (Cosens 2013; Hilde 2012; van Koppen et al. 2010). Conclusions on the beneficial effects of flexible governance structures are largely drawn from disaster response and recovery experiences (Aldrich 2010; Goldstein 2008; Samaratunge et al. 2012; Shaw and Goda 2004; Tompkins et al. 2008).

Remaining Challenges

International and regional multi-stakeholder platforms, which are largely supported and/or organised through UN and other international organisations, tend to possess greater financial and technical capabilities and capacities than national or local platforms (Djalante 2012). The effectiveness of national as well as those at local levels tends to be hampered by the lack of resources, responsibilities, and political legitimacy/recognition as well as inadequate stakeholder representation, and/or missing linkages to established networks. This limits national and local platforms to focusing on coordination during emergencies rather than long-term risk reduction (Djalante 2012; UNISDR 2009). It also reduces the effectiveness of multi-layered institutions and can create unnecessary overlaps making coordination difficult (Djalante et al. 2011). Non-traditional stakeholders such as the private sector or academia are frequently absent and NGOs (e.g., urban or climate adaptation initiatives) are not necessarily adequately represented or involved at the local levels (Djalante 2012). A long-term engagement is particularly challenging for volunteer, non-governmental actors due to a lack of resources. Some suggest that the use of economic and legal incentives could motivate local stakeholders and institutions to establish a more engaged governance system (Holley et al. 2011; for more information on incentives see also IRDR AIRDR Publication No. 2).

Claims regarding the importance of flexible governance structures that are capable of learning and innovating are abundant (Cosens 2013; Hilde 2012; van Koppen et al. 2010). While most research on flexibility centres on emergency situations, i.e. response and recovery, very little is known about the ability of flexibility, learning and innovation in a governance system to generate and implement transformative, systemic changes that reduce disaster risk or adapt to climate change over the long run. Learning and innovation starts not only after a disaster but also requires learning how to

incorporate local and indigenous knowledge to develop socially accepted solutions for disaster risk reduction (Ikeda and Nagasaka 2011; Mercer et al. 2009). It is important to distinguish between disaster awareness acquired through experience and true learning. Although past experiences increase people's awareness and willingness to prepare, it does not automatically equate to willingness to change behaviour towards long-term disaster risk reduction. Changing attitudes and behaviour requires public education and leadership (Tompkins and Adger 2005).

2. Measures of Effectiveness of Disaster Governance

Determining the effectiveness of disaster governance relates to two other central elements of disaster governance: accountability and transparency (Ahrens and Rudolph 2006). Without the ability to monitor and measure the beneficial (or adverse) effects of disaster governance, it is impossible to assess the system's transparency or accountability. Monitoring the effectiveness of governance systems in reducing disaster risk requires data on the state of society, the environment, and human actions as well as the development of benchmarks and measures such as indicators or composite indicators (indices).

What is Known

Effective disaster governance produces resilience (Djalante et al. 2011). Using resilience as an outcome measure of disaster governance is an appealing idea since there are close conceptual ties between both frameworks. Depending on its disciplinary roots, resilience is defined as the ability to self-organise, learn, and adapt (Carpenter et al. 2001); "the ability to prepare and plan for, absorb, recover from, or more successfully adapt to actual or potential adverse events" (NRC 2012, 1); or even as an indicator of stability meaning the ability to resist disturbance by quickly returning to its original equilibrium (Pimm 1984). The Intergovernmental Panel on Climate Change (IPCC 2012, 563) defines resilience as "the ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions."

Remaining Challenges

Developing sound and robust measures of resilience is challenging. Numerous approaches to measuring resilience have emerged in recent years with significant variation in terminology, methodology and ability to capture resilience as an outcome and/or process (Cutter et al. 2010; Gall 2013; Twigg 2009). At present, there is no standard methodology that would enable internal stakeholders to conduct routine progress assessments or evaluations of progress towards disaster resilience.

Adding to the problem is the lack of resilience-specific data. As a result, the construction of resilience measures relies heavily on census data despite its varied quality and accuracy across space and time. National censuses though tend to focus on traditional assessments of demographics, economic conditions, not necessarily governmental performance, which makes it challenging to move from static resilience snapshots to more dynamic assessments of resilience that incorporates social capital, adaptive capacity, accountability and other attributes.

Direct measures of disaster governance could be pursued where such data are available as an alternative to only measuring resilience. Examples are either outcome measures such as disaster losses or input measures such as the enforcement of regulations. The drawback of outcome measures is that they require longitudinal research. For example, the benefits of strengthened resilience (e.g., more adaptable institutions, speedier recovery) manifest themselves over time and are generally not immediately assessable at the end of a project, election cycle, etc. (Djalante et al. 2011). Input measures such as the enforcement of laws and the use of risk maps (Wilkinson 2012) are more easily assessable, however the causal relationship to reducing disaster risk requires

further investigation.

While quantitative information on the status and progress of governance is important, so is information on uncertainty contained in the measurement of resilience or any other measure of governance. "Decision makers need information that characterises the types and magnitudes of this uncertainty, as well as the nature and extent of scientific ignorance and disagreement" (Dietz et al. 2003, 1908).

3. Governance Lessons Learned from Past Disasters

Accounts of governance lessons learned from disasters are plentiful ranging from scientific research to forensic analyses to descriptive after-action reports issued by governmental organisations. While understanding what went wrong after a disaster and compiling lessons learned improves transparency, it does not automatically translate into remedying those shortcomings. Identifying disaster governance failures is particularly challenging due to issues of accountability (blame game) and the need for systematic and comprehensive analyses that go beyond the scope of organisational after-action reports. Subsequently addressing those governance failures requires a concerted effort across all stakeholders and scales.

What is Known

Catastrophic failures such as the 1995 Kobe earthquake, the 2004 Indian Ocean tsunami, the 2008 Sichuan earthquake, Hurricane Katrina in 2005, or the 2010 Haiti earthquake draw humanitarian, political and scientific attention resulting in extensive post-event investigations. Although each disaster is unique in its failures, impacts, recovery trajectory and governance networks, these examples illustrate the distinctiveness of and differences in governance structures and actions related to catastrophic disasters occurring in poorer versus richer countries.

In poor countries fundamental and systemic limitations, such as ineffective governments, inequality, and a lack of resources, particularly at local levels, along with a lack of trust impede effective disaster governance (Djalante et al. 2011; H Li et al. 2013; Nolte and Boenigk 2011; Zanotti 2010). Lessons learned therefore commonly call for better stakeholder involvement, capacity building, decentralisation and devolution or the transfer of power and authority to local levels (Dahiya 2012; Samaratunge et al. 2012; Wilkinson 2012).

In more developed countries, on the other hand, disaster governance failures are generally rooted in ineffective or inadequate constitutions of the disaster governance network itself such as lack of representation, collaboration, coordination or inflexibility (Gotham and Campanella 2011; Kapucu et al. 2010; Shadrina 2012). Examples of weak civil societies that limit the effectiveness of disaster governance, however, can be found in both rich and poor countries as was the case in Japan after the Kobe earthquake (Shaw and Goda 2004) or in Haiti after the 2010 disaster (Pelling 2011).

Remaining Challenges

Centralised repositories of lessons learned such as the U.S. Federal Emergency Management Agency's Lessons Learned Information Sharing database (llis.gov) are rare. Overall "little progress has been made in documenting systematically how and what organisations and nations have learned from past disasters, what innovations have resulted from them, and how learning can be better monitored and evaluated" (Djalante et al. 2011, 11). In addition, published material on lessons learned from major disasters is frequently not accessible to local decision-makers (Djalante 2012). Failure to share information and valuable lessons curbs a collective gain in resilience and adaptation.

Furthermore, the focus on low frequency, high-impact disasters leads to many instances where communities have failed to learn from past disasters altogether, particularly from less catastrophic

ones. Voss and Wagner (2010) attribute this trend to the fact that smaller events tend to remain on a singular governance level and do not foster vertical collaboration.

Understanding the complexities, responsibilities, and authorities of governance stakeholders and processes requires time and access to all governance actors. This poses three challenges for both investigating governance bottlenecks as well as implementing solutions. First, access to governance stakeholders tends to be easier when it comes to non-profits or community organisations, but becomes increasingly more difficult in regard to government or for-profit entities (Alpaslan et al. 2009)—even more so in countries with highly centralised government structures or limited freedom of press (Yin and Wang 2010).

Second, there is a need to more strongly explore the polycentricity of disaster governance. Existing research proposing solutions to failed disaster governance systems exhibit a monocentric focus on government as the key organisation in disaster governance and overly rely on legal and regulatory solutions (Bosher 2014; Hao Li et al. 2012) or modifications to governmental disaster management structures (Liotine et al. 2013; MacManus and Caruson 2011; Mallick et al. 2005). Concentrating on government failures alone though creates "accountability pressures" that governments cannot or may not be able to address on their own or which may not be possible to implement based on the existing polity structures (Krieger 2013).

And third, gaining a comprehensive picture of the roles and responsibilities of governance stakeholders after a disaster is both time- and resource-intensive. This often results in a time lag between the publication of lessons learned and the "window of opportunity" immediately following a disaster during which change/improvements have more support politically and in the general public than when people and organisations are more removed from the event.

4. Connections to Climate Adaptation and Sustainability Governance

Disaster governance and climate adaptation/sustainability governance can create synergies in areas where there are commonalities such as a) the management of climate-sensitive hazards (e.g., droughts, floods); b) thematically on issues like resilience or vulnerability; or c) spatially like fragile human-environment systems (e.g., coastal zones, small islands).

What is Known

Successful disaster risk reduction and climate adaptation require a change in the status quo. While in both instances of governance, stakeholder involvement and representation is important, research indicates that successful climate adaptation governance depends more heavily on local stakeholder participation to implement transformative changes and reforms (Gero et al. 2011; Tompkins et al. 2008). This includes the recognition of the importance of culture (Adhikari and Taylor 2012), social capital (Duxbury and Dickinson 2007), local as well as indigenous knowledge, and self-governance (Veland et al. 2013). While these elements are also beneficial for disaster risk reduction (Fleischhauer et al. 2012; Gupta and Sharma 2006; Ikeda and Nagasaka 2011; Kruks-Wisner 2011), they tend to receive less recognition in disaster governance.

As outlined in this review, governments are still considered key actors in disaster governance. Plus many citizens delegate risk reduction efforts to governmental organisations and reject any notion of personal responsibility. "Disasters are seen as the implicit breach of a social contract where states should protect their citizens from vulnerability to disasters" (Hilhorst 2003, 45f).

Remaining Challenges

Researchers are calling for an integration of climate change adaptation, sustainable development, and disaster governance into so-called "adaptive and integrated risk governance" (Klinke and Renn 2012), "adaptive and integrated disaster resilience" (Djalante et al. 2013), or "integrated disaster risk governance (Shi et al. 2012). At present, these calls remain in the academic realm at a very abstract level without a clear understanding on how to implement or pursue it.

Today, the terms "integrated" and "integration" have become ubiquitous in the disaster risk reduction community with neither having a clear understanding of their meaning and practical implementation (Wisner 2011). The Hyogo Framework for Action and its goal of integrating disaster risk reduction and sustainable development has not (yet) been able to curb loss trajectories and reduce the placement of people and assets into risk zones (Enia 2013). Society remains focused on immediate emergency response rather than long-term risk management. It is therefore doubtful that the proposition of adding another layer—climate change adaptation—to the integration process will be successful.

4. Knowledge Gaps

1. Evaluation of Performance, Accountability, and Effectiveness of Governance

At present, assessing the effectiveness of governance is restricted to measuring outcomes such as resilience and even these are limited. Input measures of governance are largely absent and as a result frequently substituted by government actions such as regulations, budget allocations, etc. (Adikari et al. 2013; Akter 2012; Uddin 2013). Although government performance affects disaster governance, a comprehensive assessment of the effectiveness of governance systems requires more detailed understanding of the entire inter-organisational and intergovernmental governance network. It also requires an assessment of all stakeholders, their involvement, cooperation, collaboration and flexibility from local to global scales. Judging the effectiveness of disaster governance networks solely based on government actions is insufficient given the shift away from government—and authority—towards governance and its cross-sector and cross-jurisdictional collaboration.

Accountability within and across various stakeholders and organisations, however, is a challenging and complex endeavor and touches on issues of authority (e.g., jurisdictional powers), epresentation (e.g., elected officials, stakeholder participation), and administration (e.g., bureaucratic processes, collaborative arrangements). As Koliba et al. (2011, 211) point out "challenges arise when states are displaced as central actors, when market forces are considered, and when cooperation and collaboration is recognized as an integral administrative activity." Consequently, new accountability structures and frameworks in the context of disaster governance are necessary, particularly those that go beyond explicit measures such as laws, regulations, or procedures. Questions such as accountability "to whom" and "from whom" need to be re-defined in order to assess performance and effectiveness of policies and programmes.

2. Determinants of Good Disaster Governance

According to Koliba et al. (2011, 210) "failures of accountability lead to failures in performance." To avoid failure and go beyond the analysis of disaster governance breakdowns it is imperative to identify the drivers and pre-requisites of good disaster governance.

Case studies of good disaster governance or comparative research on disaster governance are sparse. Pelling (2011), among others, highlights the importance of a strong civil society indicated by a pre-existing local network of local community-based organisations. These findings are not unique to disaster governance and instead resonate in the general governance literature. It remains to be seen if the determinants of good disaster governance are any different from good governance in general.

The difficulties associated with identifying determinants of good disaster governance may lie in the fact that they appear to vary by local context, risk management phase, or type of disaster - sometimes causing research to arrive at divergent conclusions. Following the lessons learned from Hurricane Katrina, for example, some suggest that a centralisation of command may be beneficial during the preparedness and response phase (Moynihan 2009) whereas others note that the recovery and disaster risk reduction phase calls for a more collaborative and decentralised a pproach (Dahiya 2012; Gupta and Sharma 2006). This contrasts findings generated from research in developing countries where decentralisation and devolution, i.e. the transfer of power and authority to local levels, is usually considered desirable (Uddin 2013).

In sum, a common set of indicators of good governance has yet to emerge. Some even suggest that forms and implements of good governance vary from place to place based on local context, including cultural and historical conditions (Dahiya 2012; Krieger 2013), making generalisations on the determinants of good governance difficult across broad geographic areas.

In the absence of understanding what facilitates good governance, some researchers presume that the general mechanisms of governance—stakeholder participation, collaboration, flexibility, learning, accountability and transparency—are indicative of good governance (Tompkins et al. 2008) and conducive to long-term disaster risk reduction and adaptation. However, this remains another largely unexplored area of research: are governance networks really learning and adapting after major disasters? For example, Koliba et al. (2011: 210) consider Hurricane Katrina "the biggest breakdowns of governance networks in modern history" and, while in the case of the U.S., significant improvements have been made since Hurricane Katrina (Rubin 2012), some argue (Frazier et al. 2013; Gall et al. 2011; Highfield and Brody 2013) that little has changed in regard to long-term disaster risk reduction, even less so in regard to climate change adaptation (Bierbaum et al. 2012).

3. Urban Disaster Governance

Despite its inherent cross-sectoral approach, some disaster governance research focus more specifically on urban settings (Bull-Kamanga et al. 2003; Fatti and Patel 2013; Kapucu 2012; Pelling 2011; Uddin 2013). The confluence of assets at risk, vulnerable populations, infrastructure pressures, (unmanaged) development demands, and the increased density of poverty in urban areas tend to exacerbate impacts from environmental hazards with the potential to generate extensive economic and human losses. To strengthen the linkage between urban development and risk reduction, a focus on urban (disaster) governance has emerged particularly in developing countries (Bull-Kamanga et al. 2003; Kapucu 2012).

However, evidence of the effectiveness of urban disaster governance systems remains as elusive as is the case for more generic governance systems. While researchers of urban disaster governance (Bull-Kamanga et al. 2003) purport potential benefits such as loss and poverty reduction, the empirical evidence to support such statements is lacking. The same holds true for other attributes of governance addressed in this literature review (e.g., accountability, measures of effectiveness, examples of good governance, etc.).

In fact, the pervasiveness of urban governments lacking authority, funding, knowledge and capacities limit the success of urban governance as long as national organisations/government do not participate. Pelling calls it the "power-participation gap," which he found "prevent[s] root causes in the wider urban and regional environment or political economy to be tackled" (2011, 383). Thus, while an urban governance network may be appealing and seem more "manageable," it cannot reach its potential and reduce risk if stakeholders do not have decision-making powers and adequate funding.

4. Systemic Shortcomings in Disaster Governance Research

The focus on the constituting elements of disaster governance, resilience as an outcome measure of disaster governance along with the focus on governments within disaster governance research is mirrored in the authorship of the 177 analysed journal articles (Appendix). Out of 350 authors, more than half of the authors come from four disciplines (Figure 2): geography, environmental studies, planning and development, and public administration. These disciplines engage predominately in research on measurement of resilience and vulnerability, land use planning, regulations, institutional organisations, and emergency management. Disciplines that could contribute knowledge on sector-specific governance such as business administration, public health/epidemiology or anthropology are far less involved. Surprisingly, there are low numbers of

sociologists, especially those researchers who examine organisations and organisational behaviour represented in this review. Engaging these disciplines, as well as fostering cross-disciplinary collaborations, is critical for knowledge related to, for instance, the effectiveness of disaster governance and monitoring of risk reduction.

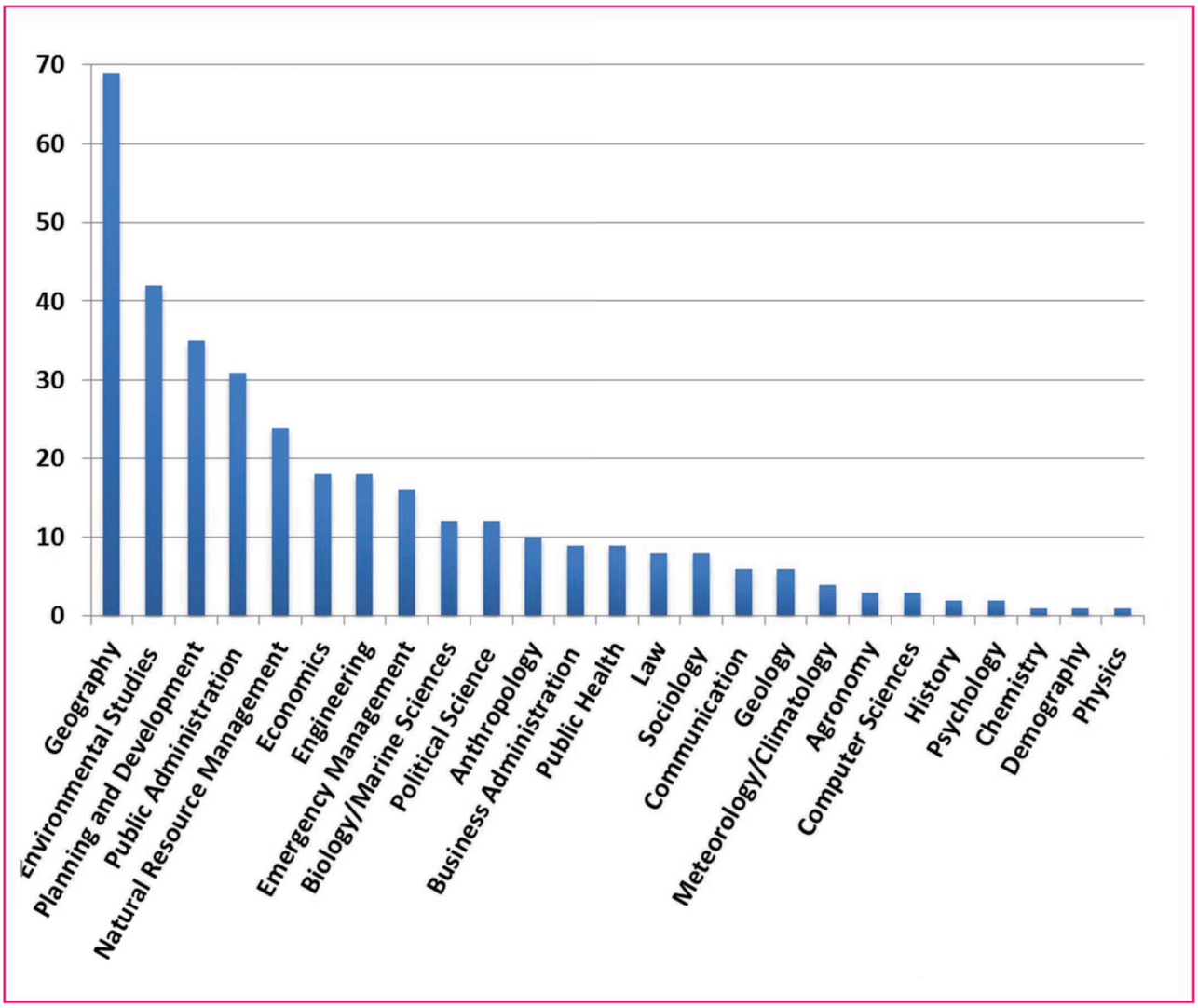

Figure 2: **Disciplinary engagement in research on disaster governance.**

Out of the 177 analysed publications, the majority of the research was either theoretical/conceptual in nature (n=82) or focused on countries with major disasters and/or poor governance (Figure 3). This reflects the lack of applied and comparative research in this young field and an explicit interest of what is not working in disaster risk management. In addition, regional research on the effectiveness of multi-stakeholder platforms or Small Island Developing States (SIDS), for example, is spotty. Clearly, there is a need to enhance research capacity and facilitate research partnerships to investigate the effectiveness of disaster governance throughout all phases of the emergency management cycle with particular attention to 1) long-term disaster risk reduction, and 2) across all scales of disaster governance.

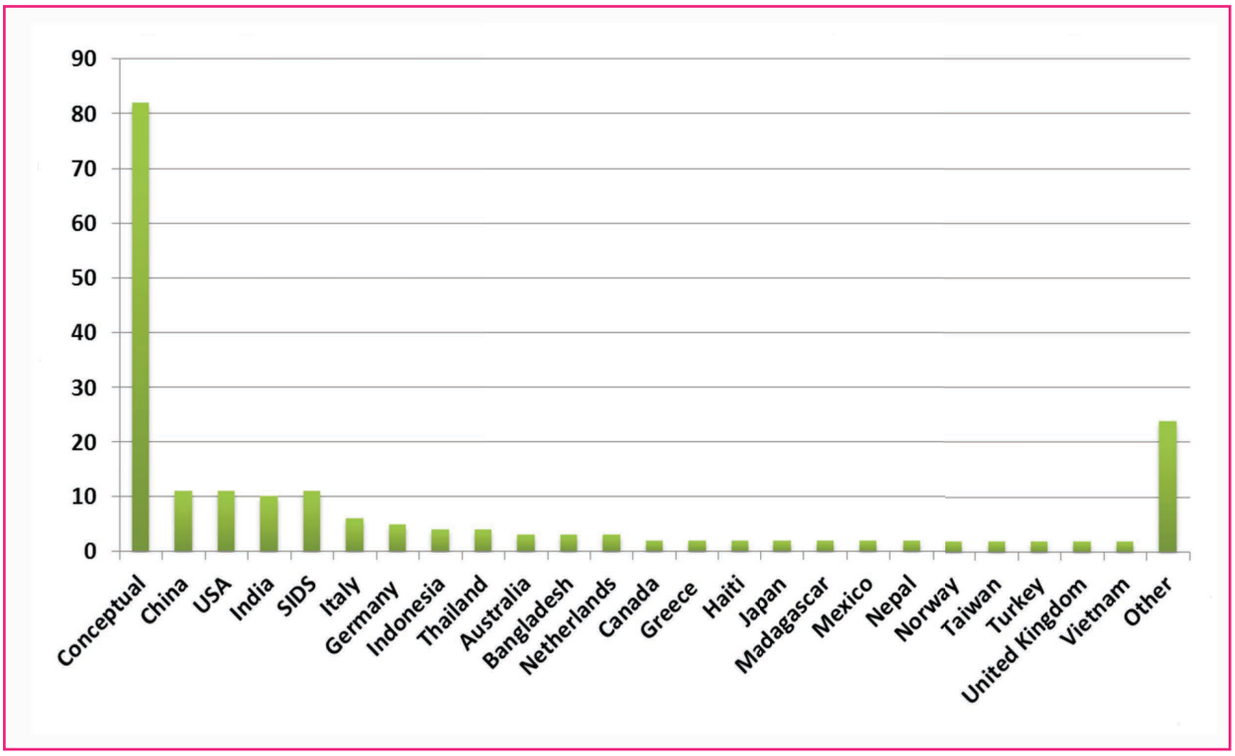

Figure 3: **Disaster Governance research is largely conceptual in nature.**

5. Conclusion

The conventional, administrative approach of managing risk rather than reducing it focuses on disaster preparedness and response rather than long-term reduction of risk, losses, exposure and vulnerability. What is necessary to transition from these engrained and institutionalised forms of risk management to disaster governance networks and what are the benefits of doing so? The research literature identifies two critical benefits: firstly, disaster governance offers an alternative to inadequate (or incapable) governmental efforts when it comes to managing risk; and secondly, the increase in stakeholder participation and representation through governance systems provides a voice to local concerns and previously marginalised groups and actors.

Overall though, disaster governance research is less concerned with investigating the effects—both positive and negative—of governance or how to truly transform existing risk management structures. Instead, most research remains at an abstract level. Although conceptual studies regarding the characteristics of disaster governance are a fundamental necessity, research needs to offer more empirically-based evidence on the risk reducing effects of governance. The promises as well as the limits of disaster governance require more scientific scrutiny. Otherwise, justifying a fundamental shift of risk management structures from government to governance systems remains a challenge.

Furthermore, accountability for governance failures is and cannot be exercised since questions of accountability "to whom" and "from whom" are not well defined. Without a more systematic approach to disaster governance research (i.e. research that encompasses and holds accountable all stakeholders), blame for failures to adapt will continue to be placed upon governmental entities rather than all governance stakeholders.

With the inability to penalise failures, there is little incentive to strive for learning and adapting disaster governance networks. As a result, government agencies still play key roles in risk reduction efforts since they hold power, authority and financial resources. This is facilitated by weak civil societies that cannot assume active roles and responsibilities in managing local risk, as well as by the continued perception that it is the central government's role to protect its citizens. Consequently, a reconceptualisation of disaster risk and a repositioning of disaster risk reduction into and within sustainable economic growth and development have yet to emerge.

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About IRDR

Over recent decades, our knowledge and understanding of natural hazards has grown rapidly. Scientists can now characterise more accurately the possible magnitude of hazard events and can better estimate their probability; and forecasting capacity has significantly improved especially for weather-related events. Far more is now also known about the socio-economic dimensions of disasters, such as exposure and vulnerability, conditions for resilience, and the causal links between disasters, development paths and other factors that determine the scope and distribution of losses.

Despite this growth in knowledge, losses associated with environmental hazards have risen dramatically with hundreds of thousands of people killed and millions injured, affected or displaced each year because of disasters. Also the value of property damage has been doubling about every seven years over the past 40 years, with spectacular increases witnessed in the 2000s.

Recognising the related science needs, the International Council for Science (ICSU), the International Social Science Council (ISSC), and the United Nations International Strategy for Disaster Reduction (UNISDR)—the programme's Co-Sponsors—created "Integrated Research on Disaster Risk" (IRDR) as a global, trans-disciplinary and intersectoral research programme to address the major challenges of natural and human-induced environmental hazards. The complexity of the task is such that it requires the full integration of research expertise from the natural, socio-economic, health, engineering and cultural sciences, encompassing also areas of inquiry and practice such as policy-making, the role of communications, and public and political perceptions of and responses to risk.

Three research and action objectives have been suggested for the programme:

1. Characterising hazards, vulnerability and risk.
2. Understanding decision-making in complex and changing risk contexts.
3. Reducing risk and curbing losses through knowledge-based actions.

Three cross-cutting themes support IRDR's work towards these objectives:

1. Building capacity, including mapping capacity distribution, for disaster risk reduction at different levels and across multiple hazards.
2. Development and compilation of case studies and demonstration projects.
3. Advancing assessment, data, and monitoring tools of hazards, risks and disasters

It is envisaged that a successful programme will lead to a better understanding of hazards, vulnerability and risk; an enhanced capacity to interpret and deal with disaster risk; improved insights into decision-making that may increase risk exposure, as well as how such choices may be influenced; and proposals for how new knowledge can more effectively guide disaster risk reduction efforts at all levels.

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