



Invited ViewPoint

Governing complexities and its implication on the Sendai Framework for Disaster Risk Reduction priority 2 on governance



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ABSTRACT

Disasters characteristics are changing: they are likely to be more frequent and intense in the future. Nations, communities, and individuals' current ability to deal with the impacts will be continuously undermined and insufficient to deal with more complex future disasters. The Sendai Framework for Disaster Risk Reduction (SFDRR) 2015–2030 is a global strategy for reducing the risks of disasters. It has 4 priorities by which Priority 2 calls for strengthening disaster risk governance (DRG). We find that this short paper critically analyzes progress, challenges and strategies to strengthen DRG. We find that there is enormous progress for DRG planning and implementation at the international, regional and national level, mostly in terms of formation of organizations and networks for DRR. We call for increasing the capacity of local actors through providing more resources, data and capacity for decision making. We propose four strategies to deal with future complexities and uncertainties in DRR: reduce the underlying vulnerability as the root cause of disasters; be inclusive/leave no-one behind: focus on vulnerable groups, migrants and displaced; governing urban disaster risks; governing climate change adaptation and mitigation; and governing for resilience: towards adaptive and transformative governance.

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1. Introduction: the SFDRR and its priority 2: disaster risk governance

The 2015 marks an important year for global sustainability. The Sendai Framework for Disaster Risk Reduction (SFDRR) is adopted in March, followed by the 2030 Agenda for Sustainability with the 17 Sustainable

Development Goals, and the Paris Agreement on Climate Change. Three years after their adoption, it is important to examine the progress in the implementation of the frameworks. This short paper examines the progress in implementing the SFDRR Priority 2 on strengthening disaster risk governance (DRG). It is important since Disaster governance has emerged in recent years as a potential avenue for risk reduction [27^{**}]. DRG is understood as “the way in which the authorities, public servants, media, private sector, and civil society coordinate in communities, and on regional and national

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levels in order to manage and reduce disaster and climate related risks” [96]. Tierney [80**] specifically suggests that “disaster governance consists of the interrelated sets of norms, organizational 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”. It goes beyond governmental settings, norms, powers, processes and tools through participation and engagement of all stakeholders at different scales [80]. We critically analyze current progress and challenges in strengthening DRG and put forward strategies needed to strengthen DRG to deal with future uncertainties and complexities.

2. Current progress and challenges for disaster risk governance

This section first examine progress in DRG implementation and second outline what have been the challenges for governing risks been. The progress of DRG in terms of strengthening and participation of institutions is notable since the adoption of the Hyogo Framework for Action 2005–2015: Building the resilience of cities and communities (HFA), with the goal was to substantially reduce disaster losses by 2015 - in lives, and in the social, economic, and environmental assets of communities and countries [84**]. The HFA has since laid the foundation for stronger recognition on the role of governance for DRR. The HFA priority for action 1 of ‘Ensuring that disaster risk reduction is a national and local priority with a strong institutional basis for implementation’ has the highest progress among other 3 priorities [85**]. Strong progresses have taken place at the international, regional and national level, but not necessarily at the local level [85**]. At the **international** level, since the adoption of the HFA, the role of the UNISDR is better recognized as the focal point for DRR within the United Nations (UN) system and the recognition on the importance of DRR through the UN plan of action on disaster risk reduction for resilience [81]. The adoption of the HFA created space or arena which allow for multiplicity of stakeholders to join the strategies, which was formalized through the Global Platform for Disaster Risk Reduction [86]. The stakeholders are from the UN organizations, parliamentarians, civil society organizations, academia and science and technology and innovation entities, private sectors, media and children and youths. International organizations adopted DRR/disaster resilience as a major part of their programming and operations. The World Bank, for example, promotes a comprehensive, multi-sectoral approach to managing disaster risk, and make it mandatory for screening for climate and disaster risk, notably through its Global Facility for Disaster Reduction and Recovery [29]. Other notable initiatives for multi-stakeholder involvement include ARISE (private sector alliance for disaster resilient societies), Global Network of Civil Society Organizations for Disaster Reduction (GNDR), the Young Scientists Platform on Disaster Risk Reduction, the Science and Technology Partnership, and the Scientific and Technical Advisory Group (STAG) to the UNISDR [87].

Regionally, progress is strengthening DRG takes place at a similar pace. There are 6 regional platforms for DRR, those in the Americas, Europe, Asia, Arabs, Africa, and the Pacific [88]. Especially in the aftermath of the 2004 Indian Ocean tsunami, international collaborations have strengthened through more funding, technical expertise and resources allocated for dealing with the impacts of the earthquake and tsunami [77]. The Indian Ocean Tsunami has called for stronger regional collaboration for tsunami early warning system, the strengthening of regional mechanisms for detection and warning, and regional exercises and preparedness. The Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES) was formed in 2009 as an international and intergovernmental institution for the generation and application of early warning information. Within the ASEAN countries, as the region mostly affected by the tsunami, ASEAN Agreement on Disaster Management and Emergency Response (AADMER) was adopted in 2009 to enable coherent disaster management across the region.

Stronger progress is also taking place at the **national** level. There are 121 countries that have enacted legislation to establish policy and legal frameworks for disaster risk reduction, 191 countries have established

HFA Focal Point, 111 countries have Sendai Framework focal points and 85 countries have established National Platforms for disaster risk reduction [85**]. The importance of strengthening disaster resilience at the local level have been strongly called from in the HFA and better recognized in the SFDRR through part of Target E (Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020). There is however no comprehensive data nor systematic reporting yet on the extent by which **local** governments are implementing DRR. One notable DRG progress at the local level is on the implementation of various disaster resilient cities programming. The UNISDR is implementing the ‘Making Cities Resilient’ campaign [86], while others such as the 100 Resilient Cities by the Rockefeller Foundation [1] and the Resilient Cities program by ICLEI [35].

Having revisiting some of the key governance progress at different levels, we move on to outline what have been the **challenges** in governing disaster risks that have been outlined in the literature.

There are remaining challenges when we learn from the implementation since the adoption of the HFA (2005–2015) and SFDRR (2015–2030). These challenges are related to capacity at the local level by local stakeholders, and other societal issues that are influencing risks perceptions and actions [26**,64**]. This is indeed recognized in the SFDRR which calls for focusing DRR strategies at the local level. Target E of the SFDRR mandated that every local governments need to have disaster management plan. It is not however not clear how each national government is going to develop these plans systematically nor how they are going to be utilized by the local governments and others. While the role of NGOs is recognized at the local level, capacity varies and there is lack of coordination due to inexistence of plans and local platform [21,44*].

In summary, DRG governance progress in the international down to the national level have been progressing relatively well in terms of stronger recognition for DRR, creation of institutions which are supported by the necessary legal and regulatory frameworks for DRR. All of which can be attributed to the success implementation of the Hyogo Framework for Action (HFA). It is however recognized that these achievements are still not enough, disasters keep occurring the impacts are getting deadlier, and costly. While much progress has occurred within the institutionalization and formation of institutions and the necessary regulations to support DRR, actions on the ground and those at the **community** level are still lacking. There is now call for more attention on strengthening risk governance at the local level, through strengthening of local actors, provision of data,

Table 1
Key progress and challenges in disaster risk governance.

Level	Examples of key progress (P)/challenges (C)
International	<ul style="list-style-type: none"> – Adoption of the HFA (P) – Stronger recognition of the UNISDR within the UN system (P) – Global Platform for Disaster Risk Reduction (P) – Global Fund for Disaster Risk Reduction(P) – ARISE (private sector alliance for disaster resilient societies) (P) – Global Network of Civil Society Organizations for Disaster Reduction (GNDR) (P) – Scientific and Technical Advisory Group (STAG) (P)
Regional	<ul style="list-style-type: none"> – 6 regional platforms for DRR, those in the Americas, Europe, Asia, Arabs, Africa, and the Pacific (P) – Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES) (P) – ASEAN Agreement on Disaster Management and Emergency Response (AADMER) (P)
National	<ul style="list-style-type: none"> – 121 countries that have enacted legislation on DRR (P) – 111 countries have Sendai Framework focal points (P) – 85 countries have established National Platforms (P) – Varying capacity between national governments worldwide (C)
Local	<ul style="list-style-type: none"> – Greater recognition on the importance of focusing efforts at the local level (P) – Lack of capacity at the local by local stakeholders (C) – Lack of understanding on societal issues that are influencing risks perceptions and actions (C) – Lack of local coordination due to inexistence of plans and local platform (C)

decision making which involve local organizations, and focusing on the vulnerable groups within the community. This is summarized in Table 1.

3. Future governance needs to deal with complexities and uncertainties

This section discusses the need for new mode of DRG due to increasing complexities and uncertainties from disaster risks. Complex problems generally typified by those problems that can be defined, approached from multiple, sometime competing approaches [68,69]. The International Risk Governance Council (IRGC) suggest the risk governance in the 21st centuries need to consider integrated strategies for managing socio-technological risks in a highly complex and uncertain risk environment [66*,67]. The IRGC [42,43] propose that in general, challenges to govern risks are due to a lack of appropriate methods, approaches and protocols to manage risks, inadequate consideration of risk-benefit as well as risk-risk trade-offs, failure to understand secondary consequences of specific risks and the interconnections among consequences and between risks and opportunities, uncertainties due to incomplete information, time pressure, costly processes, inappropriate involvement of different stakeholder groups, and lack of consideration for public opinion and loss of trust. Complexities on the impacts of disasters can occur as the results of interactions of several different hazards which interact with natural and man-made factors. IFRC [41] propose that complex disaster emergencies can be typically characterized by ‘*extensive violence and loss of life, displacements of populations, widespread damage to societies and economies, the need for large-scale, multi-faceted humanitarian assistance, the hindrance or prevention of humanitarian assistance by political and military constraints and significant security risks for humanitarian relief workers in some areas*’. The following are some of the needs for future DRG in governing complexities and uncertainties in DRR. While some strategies are quite straight forward governance issues, others are more related to broader sustainability issues.

3.1. Reduce the underlying vulnerability as the root cause of disasters

Literature has long suggested the importance of examining the role of vulnerability as the root causes of disasters. As various scholars [3*,13*,80] put it, disaster or climate change governance arrangements and challenges are shaped by forces such as globalization, world-system dynamics, social inequality, and sociodemographic trends. O’Keefe et al. [60**] and Blaikie et al. [11**] suggest that while hazard occurs naturally (flood, drought, etc.), disaster is not natural, and they argued that vulnerability is the key factor that translate a natural hazard event to turn into often catastrophic disasters. The HFA priority 3 is indeed on addressing the underlying causes of disasters [85**] and has the least progress to be carried forward by the SFDRR. To address vulnerability, future DRG needs to strongly address reduction of poverty, inequality, access to power and information, and informality as some of the most common forms of people vulnerability [4**,5**,12**]. Some of the most vulnerable groups are the poor [74,92], those living in Africa, hotter region, urban areas, small islands and in developing countries, and due to climate change, it is expected that more people in these places will be affected by droughts, floods, typhoon and sea-level rise [50**].

3.2. Promote inclusive governance/leave no-one behind: focus on vulnerable groups, migrants and displaced

Inclusive DRG governance needs to recognize those who are vulnerable and do more to respond to the needs of the world’s most vulnerable people. The IFRC World Disaster Report in 2018 is titled ‘Leaving no one behind’ stated that we need leave no one behind and proposed five different reasons that affected people may not receive the assistance they need: they are *Out of sight, Out of reach, Out of the loop, Out of money, and Out of scope* [40]. IFRC calls for the international humanitarian sector to do more to respond to the needs of the world’s most vulnerable people. Specifically, migration and displacement need to be taken very seriously. In the last decade, disasters

and conflict have increasingly displaced people [37,39] while in 2017 alone, there were 30.6 million new displacements associated with conflict and disasters across 143 countries and territories [36]. In the future, it is expected that millions of people will be displaced by climate change and internal climate migrants are rapidly becoming the human face of climate change ([28*,38,53**]). The World Bank reinforced that without urgent global and national climate action, Sub-Saharan Africa, South Asia and Latin America could see more than 140 million people move internally within their countries’ borders by 2050 [46].

3.3. Govern urban disaster risks

The world is now heavily urbanized with over 55% of world population is now living in urban areas [83*] and it is expected to increase to 68% by 2050 [82*]. The concentration of people, infrastructure, assets and waste coupled with improper land use planning has also lead the contraction of disaster risks [62**,90**]. Sustainable urban development to allow for transformation is suggested as the key to ensure benefits from urbanization [51**,71*]. This include managing rapid growth in the low and lower-middle income countries, decentralized efforts [56,73], managing urban and rural linkages [75**], strengthening critical infrastructure and services [48,52*,58], strengthen the role of ecosystem [54,65*,70**] that focusses on the poor and vulnerable groups and provision of decent jobs, housing, health care, education and safe environment [82*].

3.4. Integrate the governance of climate change (adaptation and mitigation) and disaster risk reduction

The integration of disaster risk reduction and climate change adaptation has stated to be advocated in the last decade [24,55,78**]. One highly emerging governance issue is related to the governance of climate change which extend the DRG literature. Literature on climate change governance is rapidly expanding, especially focusing on the role of network [30*], fragmentalism [94], experimentation [15,18], transnationalism [16**,32**], multi-level governance [10,14*,17,20*,25**], polycentrism [19**,45**,93*], cooperation and collaboration [23**,47**,59*], learning [8], partnerships [91**] and that discussion transformation [31*,34**,72**,79*]. Bai et al. [7**] recently call for long-term, cross-disciplinary studies to reduce carbon emissions and urban risks from global warming. In practice, trans-national network for cities such as ICLEI [95], C40 [49], RC100 [76], Resilient Cities campaign by the UNISDR [76], are taking over international stage on diplomacy and negotiations, and learning and knowledge exchange.

3.5. Governing for resilience: towards adaptive and transformative governance

Building resilience to disasters is recognized as one of the ultimate goal for disaster risk reduction and management. Disaster resilience is defined by the UNISDR [97] as the ‘‘The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform 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 through risk management’’. This hence calls for an integrated approach for disaster resilience [2**,9**,22**,61**]. Alexander [6**] state that in the case of DRR, transformation rather than the preservation of the state of the system will be more relevant for future DRR. When resistance, and incremental adjustment to build resilience is no longer enough, then transformation in disaster risk governance policy is necessary [51**,59,63*]. This can be done through for example transforming development and disaster risks to address the underlying roots of vulnerability [57**], which can be done through intense interaction between actors; the intervention of external actors; system level change extending beyond efficiency to governance and goals; behavior beyond established coping strategies; and behavior extending beyond established institutions [63*]. In a broader scale, there is increasing call for sustainability governance and transformation [33**] and transforming DRG will need to take place within this context.

4. Conclusion: governance towards sustainability

To summarize this paper, we have put forward key governance progress, challenges, and how disaster risk governance will have to be shaped for the future. In the era of sustainable development and the adoption of the 17 sustainable development goals (SDGs) [89], it is outmost necessary that disaster risk governance is placed within the context and pathways to achieve the SDGs. To transform DRG, it needs to be nested within and influenced by broader governance of societal, environmental and technological transformation.

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* Of special interest.

** Of outstanding interest.

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