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Brief communication: Sendai framework for disaster risk reduction – success or warning sign for Paris?

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Abstract. In March 2015, a new international blueprint for disaster risk reduction (DRR) was adopted in Sendai, Japan, at the end of the Third UN World Conference on Disaster Risk Reduction (WCDRR, 14–18 March 2015). We review and discuss the agreed commitments and targets, as well as the negotiation leading the Sendai Framework for DRR (SF-DRR) and discuss briefly its implication for the later UN-led negotiations on sustainable development goals and climate change.

The Third UN World Conference on Disaster Risk Reduction (WCDRR, 14–18 March 2015) was the first gathering in the course of the climate risk and sustainable development negotiations, to be followed by the International Conference on Financing for Development (FfD) in July, the United Nations summit for the adoption of the post-2015 development agenda in September and the 21st session of the Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) in December. By the end of the year, all going well, the world's political leaders will have agreed on ambitious, binding climate mitigation targets as a part of a new global commitment to sustainable development.

1 Introduction

Rising losses from extreme weather events and unequivocal evidence about climate change provide the backdrop of current international efforts to achieve agreement on emission reductions and foster greater climate resilience. The year 2015 has the potential to mark a key milestone in these efforts – with several related policy processes culminating, offering a chance to integrate disaster risk reduction, climate change policy, and poverty reduction more closely.

Earlier this year, government delegates and international disaster risk communities got together in Sendai, Japan, to sanction a new international covenant on disaster risk reduction (DRR). The choice of venue could hardly be better, as Sendai is the nearest major city to the area devastated by the 2011 Tōhoku earthquake and tsunami, not far from the ill-fated Fukushima Daiichi nuclear power station.

2 The road to Sendai

No doubt that climate change, sustainable development, and financing for development are closely interconnected, and substantial progress in any of them hinges on attainments made in the others (Sachs and Schmidt-Traub, 2014). The renewed global partnership for sustainable development, one of six essential elements of the sustainable development agenda (UN, 2014a), will not be workable without mobilizing substantial financial resources as well as other resources. The official development assistance (ODA) from developed to developing countries, raised to the previously agreed target of 0.7 % of gross national income (GNI), will be but a part of a comprehensive support for development, the exact terms

of which will have to be agreed on. It is emblematic in this context that climate change, the truly global and one of the greatest challenge mankind has ever faced, spurs and drives advancement on fundamental subjects of international law such as solidarity, accountability, and collaboration. To succeed, the negotiations in 2015 will have to focus on the right to development (RTD), which places a duty on countries to work closely together to create international environment conducive to development (Orellana, 2013).

Disaster risk reduction (DRR) plays an important role in this context. Over and over, disasters have undermined or made void decade-long poverty reduction efforts, especially in non-industrialized countries. The magnitude of global annual average economic losses from natural hazards to the built environment alone, as estimated in the 2015 edition of the Global Assessment Report (UNISDR, 2015), is comparable to the gross domestic product (GDP) of the 36th largest economy in the world. Extreme weather and climate-related events amplified by human-induced climate change threaten to increase economic losses, and so does the persistence of high land consumption rates and risk-negligent development practices.

Within the UN System, DRR has been raised as a global policy priority since the late 1980s, when the United Nations General Assembly proclaimed the 1990s as the International Decade for Natural Disaster Reduction. Since 2005, the Hyogo Framework for Action (HFA, 2005–2015) has provided guidance for reducing the loss of life and assets in the event of disaster, and making the world safer from natural hazards. Although HFA prompted considerable progress towards a more proactive and holistic approach to DRR, the achievements remain “patchy across regions and unevenly distributed across the priorities for action” (Calliari and Mysiak, 2013). Most of all, the HFA has not succeeded in steering a substantial reduction of disaster losses in terms of human lives and social, economic, and environmental damage, and spending on DRR is still largely trumped by spending on disaster relief and reconstruction (Kellett and Caravani, 2013).

Therefore, the mandate of the WCDRR was to address disaster risk with “a renewed sense of urgency” (UN, 2012), adopting a new and better international blueprint for DRR. In the run-up to Sendai, expectations were growing. The European Union (EU) joined the voices calling for greater accountability, transparency, and (improved) governance of risk under the new framework (EC, 2014a, b, c), the negotiations of which began in summer 2014. The zero draft of the proposed new framework (SFDRR-0; UN, 2014b), made public already in October 2014, suggested action-oriented targets that are operationally feasible, measurable, and achievable (ibid). Little decisiveness remained in the final agreed text of the Sendai Framework for Disaster Risk Reduction 2015–2030 (SFDRR).

3 The outcome: Sendai framework for disaster risk reduction 2015–2030

Eventually, the SFDRR lays down seven targets against which progress should be monitored and assessed¹:

- substantially reduce global disaster mortality,
- substantially reduce the number of affected people globally,
- reduce direct disaster economic loss in relation to global GDP,
- substantially reduce disaster damage to critical infrastructure and disruption of basic services,
- substantially increase the number of countries with national and local disaster risk reduction strategies,
- substantially enhance international cooperation to developing countries,
- substantially increase the availability of and access to early warning systems and disaster risk information.

None of the targets specify a quantitative degree of progress to be made. Instead, the text refers to “substantial” qualifiers of advancement. The first 5 years of the SFDRR are intended as run-up time for putting in place the national and local DRR strategies, while their attainments over 2020–2030 will be compared with the 2005–2015 baseline. Even worse, in most cases the targets are specified as collective (global) outcomes, rather than individual-country-based achievements.

The first four targets of the new framework lean towards future disaster impact, determined to reduce mortality, affected people, economic damage, and damage to health and educational facilities. Although the target levels were not suggested, the SFDRR-0 made clear that relative progress was to be measured in function of the number of disaster events experienced. This is problematic because hazard strikes are the result of stochastic processes with much larger time horizons than the baseline reference period 2005–2015 against which countries’ progress will be judged. Likewise, at least some of these processes are not stationary, neither in terms of frequency nor intensity. Hence, progress would have to be measured in terms of changes in risk, expressed in expected annual loss (EAL, mean value over the loss probability distribution). However, this would require good understanding and constant monitoring of risk with its key drivers of hazard, exposure, and vulnerability, which cannot be taken for granted even in many developed countries.

The pre-conference draft outcome document (SFDRR-1; UN, 2015a), released in January 2015, has given up postulating target levels. The final adopted SFDRR (UN, 2015b)

¹Targets have been edited. See full targets in the Supplement and UN (2015b).

is somewhat better defined and measures relative progress as per-capita disaster impact. The final text embraces a collective nature of achievements made. This means that greater achievements in one country or region can compensate for the less-than-expected outcomes elsewhere, without precluding that the overall goal is met. Granted, measurements of individual achievements can complement the global assessments and single out those that have performed at lower than average levels.

The fifth target applies to extension of national and regional DRR strategies and is accepted as a protraction of the HFA's call for better coordination of disaster risk activities with development, civil protection, and other policies. Targets six and seven were only added in SFDRR-1 and became the most controversial pieces of the new framework. The former resorted to the language of the 2012 Earth Summit non-binding outcome document "Future We Want" (UN, 2012) that invited "governments at all levels as well as relevant subregional, regional, and international organizations to commit to adequate, timely, and predictable resources for disaster risk reduction in order to enhance resilience of cities and communities to disasters, according to their own circumstances and capacities" (p. 33). The proposed six targets reiterated the same language by requesting adequate, timely, and predictable financial resources as well as other resources from developed countries by means of international cooperation. Connected to this, but elsewhere in the text, the SFDRR-1 positioned management of multi-hazard disaster risk under the regime of common but differentiated responsibilities. This formulation, brought in from climate negotiations under the UNFCCC, was subject to heated discussion in Sendai. Debate revolved around whether to frame and operationalize the international commitments around explicit (i.e. enforceable) liabilities or moral (i.e. voluntary) pledges to help countries and communities in need. Had this articulation been adopted, the developed countries would in some way have accepted a duty to assist the countries unable to develop and implement risk reduction in their own territories, if not liability for the damage and loss triggered by environmental (including climate) change. None of the SFDRR-1 language made its way to the final adopted framework which merely insisted on the need to "enhance international cooperation . . . through adequate and sustainable support". A small comfort for the proponents of stronger language came from the fact that the final text of the SFDRR includes an explicit endorsement of all the principles contained in the Future We Want document, as well as the principles sanctioned by the 1992 Rio Earth Summit.

The seventh target focuses on available disaster risk information and assessments, and access to multi-hazard early warning systems. Understanding the hazard and risk, and measuring progress towards accomplishing the DRR targets will only be possible if substantial efforts are put into improving risk assessments and disaster impact records. The SFDRR advocates multi-hazard, inclusive, science-based,

and risk-informed decision making for which it is necessary to collect and share (non-sensitive) disaggregated risk information, including detailed records of impacts from past events. Over the past years, the UN Office for Disaster Risk Reduction (UNISDR) has been constantly improving the knowledge base on disaster impact. The recent edition of the Global Assessment Report (GAR2015; UNISDR, 2015) is based on evidence from 80 detailed country-wide disaster damage databases.

4 Are we on track with integrating climate and development policy?

The principle of common but differentiated responsibilities and respective capabilities (CBDR-RC) has been a part of the climate negotiation since the beginning and is included in the preamble of the UNFCCC. It recognizes that countries have an obligation to support those who are most vulnerable and who have made a limited contribution to the creation of the climate change problem (Burton et al., 2012). However, the application of the principle has been limited to climate mitigation efforts only (Pauw et al., 2014). The endorsement of this principle in the context of climate adaptation or disaster risk reduction would essentially mean accepting liability for the amplified natural hazard risk and losses that cannot be prevented through mitigation or adaptation. The wording used in the SFDRR-1 seems to have been aimed at fortifying the claims advanced under the International Mechanism for Loss and Damage (L&D) formally established at the UNCCC's Conference of Parties (CoP) in Warsaw, November 2013. While it is not yet clear whether and in what form the L&D framework will be integrated in the climate agreement, a work programme is currently being rolled out, which most prominently features consideration for natural disaster in terms of comprehensive risk management. Also, while developed countries are unwilling to work towards implementation of this mechanism, "southern" negotiators have made it clear in recent meeting rounds that any agreement in Paris or thereafter will need to consider this issue and find a solution (ENB, 2015).

5 Will Sendai matter?

The WCDRR will not be remembered as a major breakthrough in terms of actionable efforts, yet it showed important shift in terms of framing the debate, which will be conducive for other international discourses proceeding this year, including decisions on the sustainable development goals (SDGs) and the climate change negotiations. The negotiation showed, perhaps unsurprisingly, that the DRR purview is not insulated from contentious themes in development and climate political realms. The disputes over the references to the CBDR-RC and the right to development have distracted attention from areas where major achievements

could have been made, first of all the measurable targets able to guide and attest countries' efforts to prevent and reduce the disaster risk. By endorsing the principles underlined in the non-binding outcome document of the 2012 Earth Summit (UN, 2012), without using their language explicitly, the core of contention was sent back to the policy arenas better equipped to address them.

The interpretation of “substantially” used in the targets will be stimulating and will clearly cause a lot of debate. Monitoring progress will be challenging; data availability and transparency are big concerns in many places of the world. The SFDRR resorts to the same ways of monitoring the quality and implementation of the DRR strategies as the previous HFA framework 2005–2015, which was generally admitted to be too weak and based on self-reporting or voluntary, self-initiated peer review. However, the accounting and monitoring system itself is too weak and progress per country cannot be properly measured. The seventh target is very valuable, because all accounting starts with reliable risk assessments.

The DRR community should persist in making governments accountable for the implementation of the framework. Some shortcomings of the agreement can be mended through the way the baseline for assessment is defined and progress is reported. In the EU, the Regulation 1313/2013/EU (EC, 2013) obliges the member states to conduct multi-hazard risk assessment by the end of 2015, and every 3 years thereafter. Seizing this year's assessments, the EU could show the determination that was not there in Sendai and serve as an example. The EU could only gain from putting major efforts into a better understanding of disaster risks and improved reporting of disaster impacts, including economic damage and loss (EEA et al., 2013; De Groeve et al., 2013, 2014; JRC, 2015).

Notwithstanding the importance of the quality-assured, systematically collected, and thorough datasets on impacts of natural hazards, the loss data systems (LDS) in the EU are fragmented and inconsistent. As a result of neglected attention to disaster impacts in the past, it is not easy or even possible to portray the spatial and temporal patterns of disaster damage and loss with reasonable precision. However, as we try to remedy for past negligence, we should not waste the opportunity of collecting information and knowledge about the full economic costs of disasters, including their ripple and spill-over effects all over the increasingly interconnected economies (OECD, 2015).

A better understanding of natural hazard risk and ensuing economic losses is important for preventing excessive macroeconomic imbalances, and for coordinating responses to shocks and crises within the European Economic and Monetary Union. This is particularly important in countries that suffered most and have not yet fully recovered from the recent economic, financial, and sovereign debt crises (S&P, 2015). The spatial pattern of disaster impact will also help to better characterize natural handicaps which hold up economic, social, and territorial cohesion in the EU.

A sound understanding of risk does not only imply accounting for past damage and losses. Natural hazards are outcomes of multiple stochastic processes. On a temporal scale, the probability distributions span over years, decades, and centuries. These stochastic processes are often not stationary but respond to environmental changes, including climate change. This makes outcome-oriented measurements of DRR progress a daunting task. The SFDRR should encourage countries and regions to better understand the multiple risks to which they are exposed. This will require risk modelling and simulation. An accounting system of registered damage and loss alone will meet the requisites of forward-looking disaster risk reduction.

Whether Sendai turns out to be the pivotal point for global climate risk management remains to be seen. Many delegates commented that “any agreement is better than no agreement”. The key question is if and how the agreement in Sendai can send the right signals to the next round of political negotiations this year, most notably the development financing summit in Addis Ababa, the sustainable development goals negotiations in the autumn, and the climate change negotiations later this year in Paris.

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References

- Burton, I., Dube, O. P., Campbell-Lendrum, D., Davis, I., Klein, R. J. T., Linnerooth-Bayer, J., Sanghi, A., and Toth, F.: Managing the risks: international level and integration across scales, in: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*, edited by: Field, C. B., Barros, V., Stocker, T. F., Qin, D., Dokken, D. J., Ebi, K. L., and Mastrandrea, M. D., 2012.
- Calliari, E. and Mysiak, J.: Renewed international commitment for Disaster Risk Reduction, in: *A Best Practices Notebook for Disaster Risk Reduction and Climate Change Adaptation: Guidance and Insights for Policy and Practice from the CATALYST Project*, The World Academy of Sciences (TWAS), Trieste, Italy, edited by: Hare, M., van Bers, C., and Mysiak, J., 2013.

- De Groeve, T., Poljansek, K., and Ehrlich, D.: Recording Disaster Losses Recommendations for a European approach, 2013.
- De Groeve, T., Poljansek, K., Ehrlich, D., and Corbane, C.: Current status and best practices for disaster loss data recording in EU Member States, 2014.
- EC: Decision No 1313/2013/EU of the European Parliament and of the Council of 17 December 2013 on a Union Civil Protection Mechanism, Off. J. Eur. Union, 924–947, 2013.
- EC: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: The post 2015 Hyogo Framework for Action: Managing risks to achieve resilience, COM(2014) 216 final, 2014a.
- EC: Council conclusions on the post 2015 Hyogo Framework for Action: Managing risks to achieve resilience, Council of the European Union. Justice and Home Affairs Council meeting Luxembourg, 5–6 June 2014, 2014b.
- EC: Outcome of the European ministerial meeting on disaster risk reduction Towards a post-2015 framework for Disaster Risk Reduction, building the resilience of nations and communities to disasters, 8 July 2014, Milan, Italy, 2014c.
- EEA, JRC and ETC/CCA: Towards a potential European flood impact database. EEA - JRC – ETC/CCA Joint Technical Paper, European Environmental Agency, available at: http://cca.eionet.europa.eu/reports/EEA_JRC_ETC-CCAJTP (last access: 14 May 2015), 2013.
- ENB: Summary of the Geneva Climate Change Conference 8–13 February, Earth Negot. Bull., 12, 2015.
- JRC: Guidance for Recording and Sharing Disaster Damage and Loss Data, Towards the development of operational indicators to translate the Sendai Framework into action, EU expert working group on disaster damage and loss data, 2015.
- Kellett, J. and Caravani, A.: Financing disaster risk reduction: A 20-year story of international aid, Global Facility for Disaster Reduction and Recovery (GFDRR), the World Bank; and the Overseas Development Institute, 2013.
- OECD: Disaster Risk Financing, A global survey of practices and challenges, OECD Publishing, Paris, 2015.
- Orellana, M.: Climate change, sustainable development and the clean development mechanism, in Essays in Commemoration of 25 Years of the United Nations Declaration on the Right to Development, edited by OHCHR, United Nations Human Right Office of the High Commissioner, New York and Geneva, 321–340, 2013.
- Pauw, P., Bauer, S., Richerzhagen, C., Brandi, C., and Schmole, H.: Different Perspectives on Differentiated Responsibilities, A State-of-the-Art Review of the Notion of Common but Differentiated Responsibilities in International Negotiations, Discussion Paper/Deutsches Institut für Entwicklungspolitik 6/2014, 2014.
- S&P: Can, Storm Alert: Natural Disasters Creditworthiness, Damage Sovereign, 2015.
- Sachs, J. D. and Schmidt-Traub, G.: Financing Sustainable Development: Implementing the SDGs through Effective Investment Strategies and Partnerships, Preliminary, unedited draft for public consultation as on 30 November 2014, 2014.
- UN: Resolution adopted by the General Assembly on 27 July 2012, A/RES/66/288, The future we want, United Nations, General Assembly, Sixty-sixth session, 11 September 2012, 2012.
- UN: The road to dignity by 2030: ending poverty, transforming all lives and protecting the planet, Synthesis report of the Secretary-general on the post-2015 sustainable development agenda, UN A/69/700, 4 December 2014, 2014a.
- UN: Third United Nations World Conference on Disaster Risk Reduction, Zero draft submitted by the co-Chairs of the Preparatory Committee, 23 October 2014, Second session Geneva, 17–18 November 2014, United Nations General Assembly A/CONF.224/PC(II)/L.3, 2014b.
- UN: Post-2015 framework for disaster risk reduction. Further streamlined text (as negotiated as of 28 January 2015), 2015a.
- UN: Sendai Framework for Disaster Risk Reduction 2015–2030, A/CONF.224/CRP.1., 18 March 2015, 2015b.
- UNISDR: Making Development Sustainable: The Future of Disaster Risk Management, Global Assessment Report on Disaster Risk Reduction, Geneva, Switzerland: United Nations Office for Disaster Risk Reduction (UNISDR), 2015.