

## **Suggestions for the Executive Committee’s draft initial two-year workplan for the implementation of the functions of the Warsaw Mechanism on Loss and Damage**

**International Institute for Applied Systems Analysis  
July 18, 2014**



IIASA is pleased to respond to the call for inputs for the Executive Committee’s draft initial two-year workplan for the implementation of the functions of the Warsaw International Mechanism (WIM) for Loss and Damage associated with climate change impacts.

IIASA, an independent international global change research institute largely funded by membership organisations in 22 OECD and developing countries in Africa, Asia, Europe, Oceania and the Americas, has been strongly contributing to the science –policy interface associated with climate change and disaster risk management, including long-standing involvement in the IPCC process. IIASA has been partnering with countries, academia, and humanitarian and development institutions to inform thinking under the WIM.

For the emerging workplan of the WIM, IIASA would like to consider to strongly focus, among other things, on considerations pertaining to risk management. As the first of the functions stated in Paragraph 5 of Decision 2/CP.19, the WIM shall focus on “Enhancing knowledge and understanding of comprehensive risk management approaches to address loss and damage associated with the adverse effects of climate change” [UNFCCC, 2013).

Comprehensive risk management approaches have been widely accepted in climate policy and science, as also suggested recently by the IPCC in its special report on ‘Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation’ (IPCC-SREX) and IPCC’s 5<sup>th</sup> Assessment Report (IPCC, 2012; IPCC, 2014). *Climate risk management*, as it is termed in this context, has become considered an important lense as well as a powerful methodological toolkit for advanced action on climate change impacts and adaptation. Yet, while the large potential has been recognized, there is need for operationalizations and concrete suggestions of what climate risk management may entail for policy, negotiations and implementation.

To take the discourse on risk management for the WIM forward, IIASA suggests enhanced attention on three aspects

1. Understanding climate risk management and its implications;
2. Exploring the potential for risk layering as a framework to operationalize climate risk management;
3. Building the evidence base regarding risk management approaches for risks associated with climate variability and change.

## 1 Understanding climate risk management and its implications

Risk management has a long history, and has recently been taken up strongly in the climate change discourse, particularly on impacts and adaptation. In this regard, the IPCC-SREX report has been considered a game changer in terms of innovatively framing risk-based climate-related responses, with its insights strongly taken up recently by IPCC's 5<sup>th</sup> assessment report, particularly the contribution of Working Group II.

These reports, providing expert review of the latest research on impacts, risks and adaptation, show that risks from climate change and climate variability go hand in hand and must be addressed in an integrated way as they are shaped by processes related to natural hazards (as affected by climate change) as much as by socioeconomic dynamics and vulnerabilities. The IPCC reports represent a fundamental shift in thinking towards effectively informing decisions on climate adaptation. Effectively, climate change is considered a 'threat multiplier' that has the potential to worsen climate variability as well as other existing stresses. Accordingly, responses for tackling climatic risks thus would need to focus on climate change impacts as much as on pressures and opportunities arising out of development processes. Essentially, the novel perspective framed around climate risk management focuses attention on iteratively managing today's, future and emerging risks as they affect development opportunities, for example, helping people escape poverty in a context marked by climate and global change.

The emerging perspective on risk is a complex one going beyond the standard understanding on risk analysis. As a key resource, IPCC (2014) identifies three framings of risk:

1. *Idealized risk*: The conceptual framing of the problem at hand. Standardly the UNFCCC has constructed risk in relation to dangerous anthropogenic interference with the climate system. Such framing implies identifying natural and social limits to adaptation, and taking measures that help to stay within a *safe operating space*. IPCC's five reasons for concern (and the *burning embers* diagram) are well-known representations of this framing.
2. *Calculated risk*: the product of an analytical model based on observations and synthetic, forward-looking analysis. As one example, standard output of catastrophe risk modeling displays impacts, losses and probabilities. Calculated risk has often been the basis for devising options on disaster risk management and climate variability.
3. *Perceived risk*: the subjective judgment people make about risks. Taking such a perspective implies consideration of different beliefs and preferences people hold in relation to impacts and risks, which often cannot be calculated rigorously or with large uncertainties. Given contrasting beliefs, such a perspective also underlines the need for a process-based, reflexive approach to identifying acceptable responses to climate change.

These different perspectives on risk have very different implications regarding options and implementation for the climate change discourse, including the Loss&Damage debate. All three (and more) perspectives are being embraced in disaster risk and climate adaptation science and practice in terms of an enhanced perspective on risk and risk management, which can be described as *iterative risk management* and quantified

through disaster risk assessment based on drivers, probabilities and layers. This nuanced approach marries expert assessment and knowledge regarding risk identification, analysis, and evaluation and monitoring of options with strengthened and adaptive stakeholder participation.

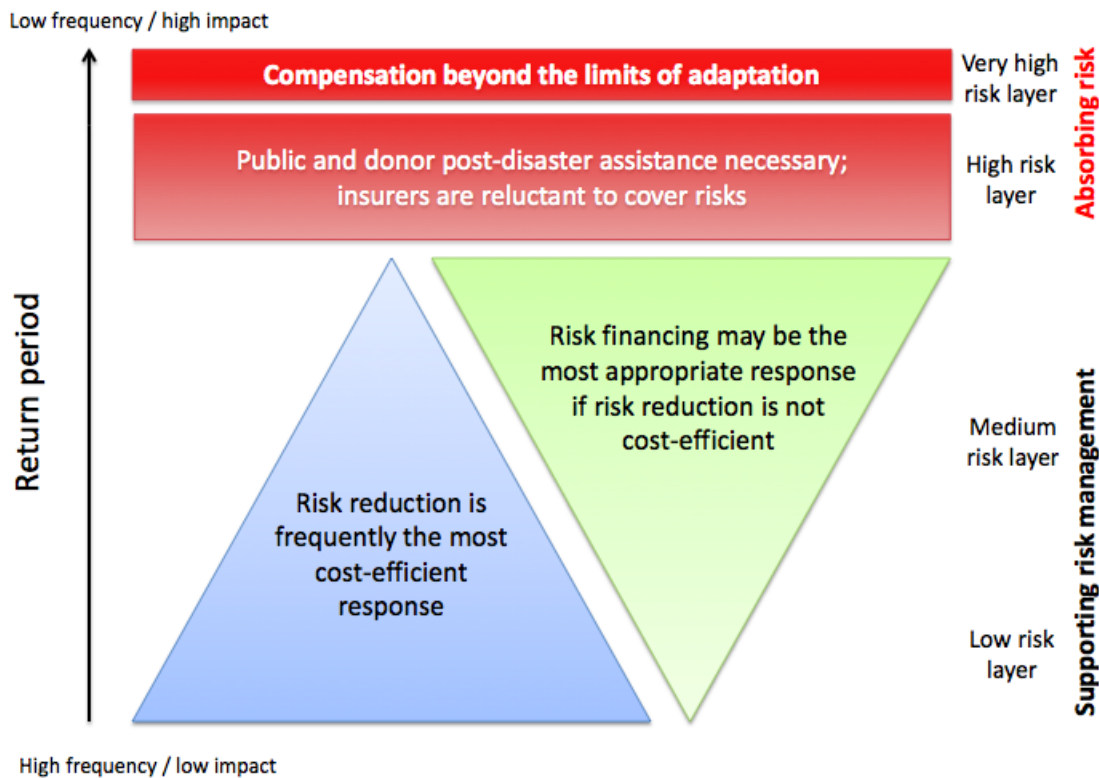
***As theoretical and applied perspectives on climate risk management are emergent, it is worth considering to take the dialogue further in a targeted manner possibly including targeted discussion and possibly a perspectives paper on climate risk management with parties involved in the WIM.***

## **2 Exploring the potential for risk layering as a framework to operationalize climate risk management**

If climate change is considered a risk multiplier, it is of fundamental importance to well understand baseline and future risks as well as any current and future adaptation deficits in order to work towards risk management responses. As disaster risk is special, a comprehensive risk management approach will require nuanced understanding of risk management interventions that work according to disaster return periods – *risk layering*.

Risk layering can help to differentiate between distinct levels of risk organized around increasing return periods (decreasing probability) and degree of stress imposed by risk. Risk layering is a concept underlying many areas of risk policy, especially agricultural and insurance risk management; yet often risk reduction, preparedness and insurance options have not been examined and implemented in tandem. Risk management approaches have been widely discussed at the COPs in terms of the role of insurance (see MCII contributions, where IIASA is a member: Linnerooth-Bayer et al., 2009; Warner et al., 2013), while the wide array of risk reduction and risk preparedness measures, also in terms of their interlinkages with risk financing, have not been strongly in the focus.

In order to take the discussions forward, IIASA in collaboration with other colleagues has been suggesting a risk-layered framework that can reveal management options that are differentially effective for low, medium and high probability events as well as tailored to different risk bearing capacities of communities, governments and international organizations. Such broad understanding of risk management based on country and communities needs and capacities can also be helpful in identifying risks that are ‘beyond adaptation.’ (Mechler et al., 2014; see figure)



**Figure: Layered disaster risk management**  
 Mechler et al., 2014

The figure identifies four distinct layers: (i) Frequent, low-consequence risk for which risk reduction is typically the preferred adaptation - benefit-cost analyses have shown great potential for reducing risks at this low level; (ii) Mid-layer risks for which risk reduction can be combined with insurance and other risk-financing instruments that transfer residual risk; (iii) Rare, catastrophic events for which public and international assistance will be necessary; and (iv) a very high-level risk layer for which the capacity of local, national and even international aid agencies can be exceeded.

*IIASA proposes enhanced consideration of a comprehensive risk layering framework as a rationale for supporting action under the WIM. Considerations could be communicated in a workshop setting or via a background paper, which may lay out the framework and entry points for the WIM discourse.*

### **3 Building the evidence base regarding risk management approaches including on climate variability and change**

As climate adaptation has moved beyond theory, risk management and layering is being implemented; yet, currently evidence is scarce, and there is need for building a comprehensive and solid evidence base.

As one example, a number of coastal megacities exposed to sea level risk, flooding and other stresses are evaluating strategies to reduce risk in light of climate change by setting risk thresholds, agreeing on models and communicating the need to reduce risks. Some of these megacities are currently devising programmes to protect themselves from

rising sea levels with large levees, while recognizing the short-term effects of rapid urbanization, and studying options to implement new building and zoning regulations to lower the exposure and vulnerability of houses and infrastructure to sea level rise and extreme rainfall. As well, there is important information on risk management practice to be harnessed in the wake of the international process leading to the *Third United Nations World Conference on Disaster Risk Reduction* to be held in Sendai, Japan in 2015, which is expected to lead to a new global compact on disaster risk management replacing the *Hyogo Framework for Action*.

More effort is needed to well understand the experience regarding responses on climate variability and disaster risk in light of climate change. IIASA suggests to consider building a solid evidence base with risk management examples that can already today be found to be implemented by communities and countries. This effort could complement work done on compiling databases on methods and tools related to climate adaptation by the UNFCCC.

**IIASA suggest to collect good and best practise around climate risk management through various means (database, online consultation, report, focussed workshops) in order to build the evidence and identify key gaps.**

IIASA would be pleased to provide further input to these three suggestions and overall stands fully committed to provide research input to further discussions on the WIM.

## References

- Aerts, J.C.J.H., Botzen, W.J.W., Emanuel, K., Lin, N., Moel, H. de & Michel-Kerjan, E.O. (2014). Evaluating Flood Resilience Strategies for Coastal Megacities. *Science*, 344(6183), 473-475. 10.1126/science.1248222
- IPCC (2012). *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.). Cambridge University Press, Cambridge.
- IPCC (2014). *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
- Linnerooth-Bayer, J., Warner, K., Bals, C., Hoeppe, P., Burton, I., Loster, T., Haas, A. (2009). Insurance, developing countries and climate change. *The Geneva Papers*, 34(3):381-400
- Mechler, R. Bouwer, L., Linnerooth-Bayer, J., Hochrainer-Stigler, S., Aerts, J., Surminski, S. (2014). Managing unnatural disaster risk from climate extremes. *Nature Climate Change* 4, 235-237
- UNFCCC (2013). Decision 2/CP.19: Warsaw international mechanism for loss and damage associated with climate change impacts. <http://unfccc.int/resource/docs/2013/cop19/eng/10a01.pdf#page=6>
- Warner, K., Kreft, S., Zissener, M., Hoeppe, P., Bals, C., Loster, T., Linnerooth-Bayer, J. (2013). Insurance solutions in the context of climate-change-related loss and damage: Needs, gaps and roles of the UNFCCC in addressing loss and damage. In: *Climate Change: International Law and Global Governance (Volume 2)*, O.C. Ruppel, C. Roschmann, K. Ruppel-Schlichting (Eds). Nomos, Germany: 877-923