V. 11 Apr 2019

Working Sessions

Concept Note

Event title	The Role of Green, Blue and Grey Infrastructure in Reducing Disaster Risk
Date and Time	Friday 17 May; 11:00 – 12:30
Venue/ Room no.	Room 4
UNISDR Focal Points	Animesh Kumar, Deputy Chief, UNISDR Asia-Pacific Abhilash Panda, Deputy Chief, UNISDR Europe
Organizing Team Members	1. Fabrice Renaud (IUCN-CEM/PEDRR& the University of Glasgow) 2. Zita Sebesvari (UNU-EHS/PEDRR) 3. Giulio Castelli (University of Florence) 4. Dilanthi Amaratunga (Global Disaster Resilience Centre) 5. Lorenza Jachia (UNECE) 6. Rosalia Smaldone (Province of Potenza, Italy) 7. Mahua Mukherjee (Indian Institute of Technology Roorkee) 8. Dima Zogheib (ARUP) 9. Eveline Studer/Jana Junghardt (Swiss NGO DRR Platform)
Background and Rationale	The Sendai Framework for Disaster Risk Reduction emphasizes the need to address the underlying causes of disaster risk and to prevent new risks, in addition to disaster preparedness. One concrete measure that is being encouraged by the global DRR community is the investment in Resilient Infrastructure, including Green and Blue Infrastructure, for example as stated in the High Level Communiqué of the 5th Global Platform on DRR in 2017. The Chair's summary of GPDRR 2017 called specifically for the development of standards for green infrastructure in order to stimulate investments in nature-based solutions. The Sendai Framework indicators under **Target C5** focus on direct economic loss resulting from damaged or destroyed

	critical infrastructure attributed to disasters and **Target D4** on the number of other destroyed or damaged critical infrastructure units and facilities attributed to disasters. For these two indicators, Green Infrastructures are considered to be components of Critical Infrastructure. Blue (water-related) infrastructure, which are part of ecosystem-based approaches, can and should also be considered integral part of the Sendai target indicators. Countries can further use customized indicators to better capture, within the Sendai Framework Monitor platform, the role that Green and Blue Infrastructure plays in DRR. However, while we have the policies and many of the tools for applying green infrastructure, there is still limited understanding of what constitutes the conceptualization of "green and blue" critical infrastructure which contribute to disaster resilience, how to best consider the perspectives, practices and experiences of local communities and of those that are most vulnerable in terms of design, and how its DRR/resilience benefits can be quantifiably measured and monitored. Scaling-up implementation of green and blue infrastructure has also proven challenging. This is in part due to the fact that a majority of investments (current and planned) in infrastructure are grey and are rarely risk informed from a DRR and ecosystem/community resilience perspective. It is widely recognized that conventional "grey" infrastructure measures such as dykes, sea-walls, groins, and reservoirs have protected many people globally and still have an important role to play in disaster risk reduction. Nonetheless, "grey" or approaches have also failed as a single solution on numerous occasions, or sometimes have increased the impacts of natural hazards, for instance by providing a false sense of security for communities settling behind them. Grey infrastructure cannot self-adjust to the consequences of climate change and does not provide the vital economic, environmental and social services that nature provides as co-benefits. Green and blue infrastructure, ecosystem-based approaches or nature-based solutions for disaster risk reduction have gained a lot of attention as a measure that can work in a complementary way either alongside or in place of 'grey' approaches (known as 'hybrid solutions'). Green and blue infrastructure approaches are recognized in all major international agreements, their DRR capabilities are increasingly demonstrated scientifically, and they are being implemented and tested on the ground by experts, communities as well as planners, engineers and contractors. Implementation guidelines for green and blue infrastructure solutions or complementing or replacing grey approaches have been developed, including in co-development with the engineering sector, which can aid project designers, implementers, funders, and investors. Guidelines are required to be based on regional needs also accounting for the different character of ecosystems such as coastal and mountains. According to McKinsey, US$3.3 trillion needs to be invested each year until 2030 in order to support current infrastructure growth rates. As cities get

	rapidly urbanized and countries embark on replacing ageing infrastructure while investing on new ones, this session will initiate a conversation, to highlight how communities value essential services and how we can better integrate green and blue infrastructure into current and future planning processes. Private investors including other stakeholders, working alongside governments, will and can play a profound and positive role in the delivery of these infrastructures as means to prevent future risks while taking into account the current risk accumulation.
Session objectives	1. Provide a platform to promote a more informed dialogue around "green/blue vs. grey vs. hybrid" infrastructure and discuss ways to better align or complement grey and green/blue infrastructure investments to achieve DRR priorities, taking into consideration perspectives of local communities and of those that are most vulnerable without jeopardizing economic growth. 2. Discuss how best to capture, within the Sendai Framework Monitor, the role that green/blue infrastructure plays in DRR and how to overcome the lack of data and the perceptions on feasibility. 3. To highlight blue/green infrastructure's contribution in Future Risk Scenario considering global environmental change, including climate change.
Agenda and Structure	The session could be introduced with either a short (~3 min) video or by the moderator on the topic of green, blue and grey infrastructure for disaster risk reduction. A panel will then be invited and through moderation, will address 2-3 guiding questions addressing the objectives of the session. A significant amount of time will be dedicated to interaction between the panellists and the audience. The session will then be closed by the moderator who will highlight 2-3 key points that have resulted from the session. Structure and timing (90 min session): • Introductory video (5 mins including introductory comments) – moderator • Introduction of the panellists (5 mins) – moderator • Panel discussion (45 mins) – panellists/moderator • Interaction with the public – public/panellists/moderator (30 mins) • Concluding remarks (5 mins) - moderator
Expected Outcomes	**1. What key recommendations can be made to policy makers to accelerate the implementation of the Sendai Framework for DRR?** The Sendai Framework recognises the role ecosystems play in all aspects of DRR. Understanding the mechanisms through which this is achieved still poses problems at the decision-making level and can thus hinder the implementation of some aspects of the Sendai Framework. This session will result in: • Enhanced understanding of "green and blue" infrastructure and their contribution to disaster resilience including perspectives from at-risk groups and stakeholders;

	• Estimation of the contribution of "green and blue" infrastructure to disaster resilience; • Assessment of comparative advantages between green/blue and grey infrastructure, based on concrete examples, including 'hybrid' or combined approaches to maximize benefits; • Agreed steps forward on how to capture/track the use of green/blue infrastructure for DRR, including within the Sendai Monitor. **2. If applicable, how does this session contribute to the achievement of Sendai Target E?** The session will contribute to Sendai Target E by proposing actions for the role of ecosystems (green/blue infrastructure) to be systematically considered in disaster risk reduction planning. This will be achieved though session Output 1 described below. **3. What inputs can be provided to the HLPF and Climate Change Summit to inform their deliberations from a Disaster Risk Reduction perspective?** The session approaches climate and disaster risk reduction as an integrated theme and follows the recommendations of the UN System Strategic Approach on Climate Change Action (CEB/2017/4) concerning the linkages between Climate and Disaster Risk Reduction. The session will deliver insights and will emphasize the need to scale up joint action to climate change and disaster risk reduction based on blue and green infrastructure and risk-informed climate change adaptation.
Special commitments / Announcements	***Expected commitments in support of the implementation of the Sendai Framework and announcements from panellists or participants*** We will work towards two engagements: 1. The preparation of a policy document encouraging and providing guidance to governments on how to consider systematically green/blue infrastructures when addressing disaster risk reduction and climate change adaptation concerns. 2. The preparation of a proposal for the development of new or the technical support of already suggested custom indicators to capture the role of Green Infrastructure in Targets C and D.
Proposed Moderator of the Session	Ms Radhika Murti, Director of Global Ecosystem Management Programme, International Union for Conservation of Nature
List of Panellists	1. **Ms. Laure Tourjansky,** Head of the Natural and Hydraulic Risks Department, General Directorate for Risk Prevention, Ministry of Ecological and Solidarity Transition, France 2. **Mr. Ricardo L. Calderon** OIC Assistant Secretary for Staff Bureaus Department of Environment and Natural Resources

	The Philippines **3. Mr Carlo Scapozza** Head of Flood Protection Section Hazard Prevention Division Federal Office for the Environment FOEN Switzerland **4. Ms Katharina Schneider-Roos,** CEO, Global Infrastructure Basel (GIB) Foundation **5. Professor Dilanthi Amaratunga,** Head, Global Disaster Resilience Centre University of Huddersfeld
Reference Documents	1. A list of the key reference documents that were consulted as background on the topic. 2. Belle, J.A., Collins, N. and Jordaan, A., 2018. Managing wetlands for disaster risk reduction: A case study of the eastern Free State, South Africa. Jàmbá: Journal of Disaster Risk Studies, 10(1), pp.1-10. 3. Bertule, M., Lloyd, G.J., Korsgaard, L., Dalton, J., Welling, R., Barchiesi, S., Smith, M., Opperman, J., Gray, E., Gartner, T. and Mulligan, J. (2014): Green Infrastructure Guide for Water Management: Ecosystem-based management approaches for water-related infrastructure projects. 4. http://wedocs.unep.org/handle/20.500.11822/9291 5. Bridges, T.S., Burks-Copes, K.A., Bates, M.E., Collier, Z.A., Fischenich, J.C., Piercy, C.D., Russo, E.J., Shafer, D.J., Suedel, B.C., Gailani, J.Z. and Rosati, J.D. (2015): Use of natural and nature-based features (NNBF) for coastal resilience. US Army Engineer Research and Development Center, Environmental Laboratory, Coastal and Hydraulics Laboratory. 6. European Environment Agency (EEA) (2015): Exploring nature-based solutions - The role of green infrastructure in mitigating the impacts of weather- and climate change-related natural hazards. Technical report No 12/2015. 7. Available at: https://www.eea.europa.eu/publications/exploring-nature-based-solutions-2014 8. Huib de Vriend and Mark van Koningsveld (2012): Building with Nature Thinking, acting and interacting differently. Ecoshape. Available at: https://www.ecoshape.org/uploads/sites/2/2016/07/ECOSHAPE_BwN_WEB.pdf 9. Kabisch, N., Frantzeskaki, N., Pauleit, S., Naumann, S., Davis, M., Artmann, M., Haase, D., Knapp, S., Korn, H., Stadler, J., Zaunberger, K. and Bonn, A. (2016): Nature-based solutions to climate change mitigation and adaptation in urban areas: perspectives on indicators, knowledge gaps, barriers, and opportunities for action. Ecol. Soc. 21. doi:10.5751/ES-08373-210239 10. Mukherjee, M. and Takara, K. (2018) Urban green space as a countermeasure to increasing urban risk and the UGS-3CC resilience framework. International Journal of Disaster Risk Reduction 28:854-861. 11. Orantes, M.J.C., Kim, J. and Kim, J. (2017): Socio-Cultural Asset Integration for a Green Infrastructure Network Plan in Yesan County, Korea. Sustainability, 9(2), p.192.

	12. PEDRR Briefing Paper on Implementing the SFDRR and 2030 Agenda(2015) [http://pedrr.org/pedrr/wp-content/uploads/2013/09/PEDRR-Briefing-Paper-on-Implementing-the-SFDRR-and-2030-Agenda_FINAL-23-May-2016.pdf] 13. Raymond, C.M., Frantzeskaki, N., Kabisch, N., Berry, P., Breil, M., Nita, M.R., Geneletti, D. and Calfapietra. C. (2017): A framework for assessing and implementing the co-benefits of nature-based solutions in urban areas. Environmental Science & Policy 77. 14. Renaud, F.G., Sudmeier-Rieux, K., Estrella, M., Nehren, U. (2016) Ecosystem-Based Disaster Risk Reduction and Adaptation in Practice. (Eds. Advances in natural and technological hazards research. [https://www.springer.com/de/book/9783319436319] 15. Smith M., Welling R. and C. Van Ham (2016): Green infrastructure and natural infrastructure approaches (p.20-24). In: Cohen-Shacham, E. 2017. Nature-based Solutions to address global societal challenges. Gland: IUCN. 16. Swiss NGO DRR Platform / Centre for Development and Environment /CDE) (2017) Where people and their land are safer. A Compendium of Good Practices in Disaster Risk Reduction. [http://www.drrplatform.org/publications.html] 17. Thorslund, J., Jarsjo, J., Jaramillo, F., Jawitz, J.W., Manzoni, S., Basu, N.B., Chalov, S.R., Cohen, M.J., Creed, I.F., Goldenberg, R. and Hylin, A. (2017): Wetlands as large-scale nature-based solutions: Status and challenges for research, engineering and management. Ecological Engineering, 108, pp.489-497. 18. WWAP (United Nations World Water Assessment Programme)/UN-Water. 2018. The United Nations World Water Development Report 2018: Nature-Based Solutions for Water. Paris, UNESCO.
Technical equipment requirements	Stage, chairs for panellists, podium with microphone for introduction and conclusion, roaming microphones for the public.