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UNEP's input to the UNISDR Discussion Papers on

"Indicators of success: a new system of indicators to measure progress in disaster risk management" and the "Proposed Elements for Consideration in the Post-2015 Framework for Disaster Risk Reduction"

Background

The Framework for Action 2005-2015: Building Resilience in Countries and Communities to Disasters, popularly known as the Hyogo Framework for Action (HFA), is coming to an end in 2015. The world community is currently undertaking discussions to formulate the post-2015 global framework on disaster risk reduction, also commonly referred to as "HFA2". It is expected that the successor to the HFA will be adopted at the World Conference on Disaster Reduction in Sendai, Japan, in March 2015.

In preparation for the World Conference in Sendai, multiple stakeholders in the disaster risk reduction community have put forward their proposed key elements as well as key indicators for inclusion in HFA2. In November 2013, UN ISDR drafted a paper as input to guide this process, entitled "[Indicators of Success: A new system of indicators to measure progress in disaster risk management](#)". In December 2013, the UN Special Representative of the Secretary General for Disaster Risk Reduction published her "Proposed Elements for Consideration in the Post-2015 Framework for Disaster Risk Reduction". In both discussion papers, five families of indicators are proposed to measure success of disaster risk reduction efforts, as follows:

1. Disaster loss and damages;
2. Disaster risk profile;
3. Resilience of a country's economy to probable losses;
4. Underlying risk drivers; and
5. Disaster risk management public policies.

This briefing note is UNEP's input to the UNISDR's proposed set of indicators for HFA2, with aim to better clarify and highlight the role of environment, which UNEP regards to be insufficiently represented in the proposed family of indicators.

Overall Comment on the UNISDR's proposed family of indicators

1. UNEP welcomes the strong message on risk prevention and reducing the underlying drivers of disaster risk, as elaborated in the "Proposed Elements" paper circulated in December 2013. Nonetheless, there are major gaps in the proposed family of indicators, which have been highlighted by various stakeholders in different fora.
2. The UNISDR's set of proposed indicators, as presented currently, lacks coherence with the current HFA, which has five priorities for action:



- I. Ensuring DRR is a national and local priority with strong institutional basis for implementation;
 - II. Identify, assess and monitor disaster risk and enhance early warning;
 - III. Use knowledge, innovation and education to build a culture of safety and resilience at all levels;
 - IV. Reduce underlying risk factors;
 - V. Strengthen disaster preparedness for effective response at all levels.
3. It is expected, based on the regional consultations conducted thus far, that Member States are likely to retain the basic structure of the current HFA. In such a scenario, the proposed indicators do not measure most of the priority areas, and at best only do so indirectly. This is not amenable for easy measurement or communication.
4. The proposed indicators are also not aligned with the [SMSG's proposed elements for consideration for HFA 2](#). The SMSG outlines three strategic goals which are as follows:
- i. Risk prevention and the pursuit of development pathways that minimize disaster risk generation;
 - ii. Risk reduction, i.e. actions to address existing accumulation of disaster risk; and
 - iii. Strengthened resilience, i.e. actions that enable nations and communities to absorb loss and damage, minimize impacts and bounce forward.
5. In addition, the paper on "Proposed Elements for Consideration" includes a call for voluntary commitments of stakeholders at regional and global levels. These are meant to be concrete actions to implement the post-2015 framework for disaster risk reduction at regional and global levels. Consequently, there will be one set of indicators for HFA2, and another set of indicators needed for voluntary commitments and for closer alignment with the strategic goals.
6. It is also noted that the development of quantitative indicators to effectively measure risk reduction and resilience will remain inadequate due to a number of factors, namely availability of data, and the inherent difficulties of measuring resilience.
7. It is not the objective of this concept note to propose alternative elements to HFA2. The above points are mentioned to highlight that there is likely to be significant discussion before the final indicators are accepted, if at all there will be indicators in HFA2. In the meanwhile, this note will focus its attention on the proposed family of indicators, in order for UNEP to work together with UNISDR to present a coherent set of indicators.
8. This UNEP input paper on indicators is to be regarded as an addendum to the UNEP input paper on the post-2015 global framework on DRR, which has been circulated publicly since May 2013. Both input papers draw from consultations with UNEP's partners, especially the Partnership on Environment and Disaster Risk Reduction (PEDRR). The strong emphasis on environment is based on the understanding, that is supported by both science and practice, that environmental causes and consequences of disasters increase overall disaster risk and that environmental and ecosystem-based approaches offer effective solutions in preventing disasters, reducing disaster risk and building resilience to disasters.



UNEP's Proposal to the Indicator Family

1. Family 1: Disaster loss and damage indicators

- 1.1. According to the UNISDR note, "the level of disaster loss is the ultimate indicator of success of public policy in disaster risk management". UNISDR therefore proposes a set of loss indicators, including "human loss (mortality, people injured or affected), physical damage (houses and infrastructure damaged and destroyed) and economic loss (replacement cost of damaged and destroyed assets)", but which could also include operating losses/opportunity costs.
- 1.2. Within this context, UNEP proposes the inclusion of economic value of environmental losses into the total economic loss. The ECLAC/DALA methodology, currently proposed as the basis for the UNISDR indicator measurement system, does not factor this in. As a consequence, while the damage to a hotel on the beach will become part of the damage and loss calculation, damage to the beach itself – and other economic values associated with the beach, e.g. its coastal protection function - will not be. This approach leads to serious under-estimation of economic losses. To address this challenge, the new guidelines on Post-Disaster Needs Assessment (jointly developed between the UN, World Bank and EC) includes the calculation of economic loss of non-tangible assets such as environment and culture. These aspects must be included in the assessment of total economic loss.
- 1.3. UNEP also strongly recommends that disaster damage and losses also account for **industrial/technological disasters**, especially given their long timeframes for recovery, potential nexus with natural hazards, current industrial development trends, and potential for transboundary risk, following the experiences from the Great East triple disaster (earthquake/tsunami/nuclear disaster) in March 2011 and the Gulf of Mexico oil spill in April 2010, amongst others.

2. Families 2 and 3: Risk and Resilience Indicators

- 2.1. UNISDR proposes two indicators - Annual Average Loss (AAL) and Probable Maximum Loss (PML) - in order to highlight the likely future losses that a country could experience in future. In order to measure the resilience of a country's economy to probable losses, the indicator will calibrate the losses against the size of country's economy, its capital stock, investment and savings levels, trade flows, insurance penetration, fiscal health of the government and degree of social protection in the country.
- 2.2. UNEP's proposal in this segment will once again be to include annual and probable *environmental* losses into the disaster loss calculations. In terms of resilience, if the country has adopted inclusive wealth accounting, then environmental and natural resources stock will already be counted. But if this is not the case, resilience of environmental resources



should be calibrated against the existing or remaining natural resources stock, for example measuring deforestation as a proportion of total forest stock in a country.

2.3. In measuring a country's resilience the focus should not only be on economic resilience. Resilience can also be measured in terms of the hazard mitigation functions of ecosystems, for instance:

- Percentage of coastal population and infrastructure sheltered behind coastal and marine ecosystems;
- Percentage of green areas in cities to mitigate urban flooding and heatwaves.

Resilience could also be understood in terms of ecosystems supporting livelihoods and enabling communities to recover more efficiently and effectively in post-disaster settings, including indicators such as:

- River and aquifer water quality (given that communities who are cut off from drinking water supplies often rely on untreated ground and surface water sources in post-disaster situations).

2.4. Measuring resilience should also consider resilience against technological / industrial disasters, and identify public measures to be in place to reduce risk associated with such disasters (see suggested actions under Family 5). UNEP also encourages action by the private sector to reduce risk associated with hazardous facilities/production processes and throughout global supply chains.

2.5. Projection of probable losses due to disasters should also account for climate change impacts.

3. Family 4: Underlying Risk Drivers

3.1. In the current discussion paper of UNISDR, this is the only domain where environment is explicitly mentioned. The following indicators for environmental degradation and climate change are proposed:

- Ecological Footprint;
- Water Stress;
- Deforestation rate;
- Environmental Health; and
- Ecosystem Vitality (including Co2 emissions).

3.2. UNEP appreciates that environment and climate change issues are already included. However, not all the indicators proposed are necessarily the most appropriate ones to measure impact or success in the context of reducing underlying risk factors. Also, some of these are not easily or routinely measured in most countries, for example in the case of environmental health.



3.3. UNEP would like to make the following revisions to this proposed set of indicators related to environment:

- Percentage of protected ecosystems in hazard prone areas;
- Percentage of land use conversion (particularly wetlands, coastal habitats, and forests);
- Deforestation rates (linked to landslides, drought and forest fires);
- CO2 emissions per capita per year;
- Water stress / water extraction
- Number or percentage of high-risk facilities – nuclear plants, chemical plants, hazardous waste facilities, oil and gas refineries, and mining – located in hazard prone locations

4. Family 5: Effective, Disaster Risk Management Public Policy

4.1. This family of indicators proposed will measure to what extent public policy is addressing the underlying risk drivers, existing levels of disaster risks and resilience. While some effort has been made to elaborate on this family of indicators, it is still not clear what exact indicators will be used.

4.2. UNEP proposes the following indicators to monitor disaster risk management in a country:

- Is land use planning at national and sub-national levels in the country factoring in disaster risks ?
- Does the environmental impact assessment (EIA) policy or legal framework factor in the potential impact of hazards (particularly natural and technological/industrial hazards) on the proposed policy or project ?
 - Are all new industrial developments/industrial areas required to undertake comprehensive risk assessments as part of EIA process?
 - Are all new tourism development/tourism investments required to undertake comprehensive risk assessments as part of the EIA process?
- Is there a dedicated national agency/entity with the mandate and capacity to handle environmental emergencies?
- Are municipalities required to have community emergency plans (including for industrial and combined natural-technical/ “natech” disasters)?



Summary of UNEP proposed indicators

UNISDR Indicator Family	UNEP Proposed indicator/s	Possible data sources
1. Disaster loss and damage	<ul style="list-style-type: none"> inclusion of economic value of environmental losses into the total economic loss 	<ul style="list-style-type: none"> now part of the EU-World Bank-UN endorsed Post-Disaster Needs Assessment (PDNA) methodology
	<ul style="list-style-type: none"> inclusion of damage and losses due to industrial and technological disasters 	<ul style="list-style-type: none"> current EMDAT database provides some data on numbers of people killed or impacted by technological hazards, as well as the general overall number of accidents
2 & 3. Risk and Resilience	<ul style="list-style-type: none"> inclusion of annual and probable environmental losses into general disaster loss calculations 	
	<p>Focus on environmental resilience</p> <ul style="list-style-type: none"> measuring natural capital – environmental and natural resources stock 	<ul style="list-style-type: none"> inclusive wealth accounting efforts being undertaken by number of countries, with World Bank, UNEP, and partners other proxies could be : measuring deforestation as a proportion of total forest stock in a country, also can be applied for wetlands
	<ul style="list-style-type: none"> Percentage of coastal population and infrastructure sheltered behind coastal and marine ecosystems; 	<ul style="list-style-type: none"> Global data on LECZ (low elevation coastal zone), overlaid with coastal population and global data sets on reefs, seagrasses, wetlands and mangroves- UNEP WCMC on global data sets on distribution of coral reefs, seagrasses and mangroves. FAO statistics on mangrove forests. On wetlands, Ramsar Convention and USA NASA's global database of lakes and wetlands
	<ul style="list-style-type: none"> Percentage of green areas in cities to mitigate urban flooding and heatwaves. 	<ul style="list-style-type: none"> ? UNISDR Resilient Cities Campaign UN Habitat? Global City Indicators Facility measures "green area (hectares) per 100,000 population" under Urban Planning focus area
	<ul style="list-style-type: none"> River and ground water quality 	<ul style="list-style-type: none"> National datasets UN Global Environment Monitoring System (GEMS) –

		<p>available surface and ground water quality data sets</p> <ul style="list-style-type: none"> • Whymap.org part of Global Water Partnership– river and groundwater basins of the world, mapping and assessment
	<p>Focus on resilience to industrial /technological disasters</p> <ul style="list-style-type: none"> • public and private measures in place to reduce risk associated with these disasters 	<ul style="list-style-type: none"> • see Family indicator 5
4. Underlying risk drivers	<ul style="list-style-type: none"> • Percentage of protected ecosystems in hazard prone areas; 	<ul style="list-style-type: none"> • World Database on Protected Areas
	<ul style="list-style-type: none"> • Percentage of land use conversion (particularly wetlands, coastal habitats, and forests); 	<ul style="list-style-type: none"> • National statistics • FAO statistics • Ramsar Convention • UNEP WCMC
	<ul style="list-style-type: none"> • Deforestation rates (linked to landslides, drought and forest fires) 	<ul style="list-style-type: none"> • FAO statistics • National statistics
	<ul style="list-style-type: none"> • CO2 emissions per capita per year; 	<ul style="list-style-type: none"> • UNFCCC
	<ul style="list-style-type: none"> • Water stress / water extraction 	<ul style="list-style-type: none"> • National datasets • UN Global Environment Monitoring System (GEMS) – available surface and ground water quality data sets • Whymap.org part of Global Water Partnership– river and groundwater basins of the world, mapping and assessment
	<ul style="list-style-type: none"> • Number or percentage of high-risk facilities – nuclear plants, chemical plants, hazardous waste facilities, oil and gas refineries, and mining – located in hazard prone locations 	<ul style="list-style-type: none"> • UNEP DEWA Europe – holds global data set on nuclear power plants • Rest from national reporting

<p>5. Effective, disaster risk management public policy</p>	<ul style="list-style-type: none"> • Is land use planning at national and sub-national levels in the country factoring in disaster risks ? • Does the environmental impact assessment (EIA) policy or legal framework factor in the potential impact of hazards (particularly natural and technological/industrial hazards) on the proposed policy or project ? <ul style="list-style-type: none"> • Are all new industrial developments/industrial areas required to undertake comprehensive risk assessments as part of EIA process? • Are all new tourism development/tourism investments required to undertake comprehensive risk assessments as part of the EIA process? • Is there a dedicated national agency/entity with the mandate and capacity to handle environmental emergencies? • Are municipalities required to have community emergency plans (including for industrial and combined natural-technical/ "natech" disasters)? 	<p>Yes/No national self-reporting with documentation provided</p>
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