



World Bank Workshop on Developing Indicators for Climate and Disaster Resilience Summary Note and Steps Forward

July 10-11 2014, Washington DC

1. Summary

Over 25 participants contributed to the workshop on developing a climate and disaster risk resilience indicator last week in Washington, DC. This document provides the desired characteristics of the indicator, a summary of the proposals from presenters at the workshop, and the results of discussions on how this work can be carried forward.

Moving forward, we propose a scorecard approach for the indicator, with 3 potential components: (1) a desk study, (2) country interviews, and (3) data analysis. We suggest forming 3 virtual working groups (one per component) by September 2014. Each working group will then submit a report assessing the usefulness of each component and work that will need to be done, by the end of the year. Implementation will then be carried out in Year 2015.

Participants may choose to join working groups based on existing initiatives and interest. We view this development as a collaborative process and would like to incentivize synergies as much as possible, both with other organizations developing indicators and academics seeking to publish results. We would like this work to be as integrated as possible in current discussions for HFA2, to ensure resulting indicators are as consistent as possible.

2. Background

By December 2015, the Climate Change Global Practice, in conjunction with GFDRR, has been tasked to develop and pilot an indicator of country-level climate and disaster risk resilience as part of the World Bank Group's International Development Association (IDA) commitments. During our 2-day workshop, we brought together researchers and practitioners to present and evaluate proposals, define characteristics of the indicator, and plan for steps forward.

3. Participant List

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4. Desired Characteristics of Indicator from TOR

Much work has gone into developing indicators from a wide variety of organizations. In developing a resilience indicator for our purposes, we will build on existing indicators, and aim to include the following characteristics:

- (1) Measure the resilience of climate and disaster shocks at the national level;
- (2) Incorporate the distributional effects of shocks and stresses on poverty and shared prosperity;
- (3) Show differentiation between policies on the books (*de jure*) and actual enforcement (*de facto*);
- (4) Allow for separation of hazard and inherited part of exposure from policy measures;
- (5) Be comparable over time although not necessarily across countries;
- (6) Be relevant and measurable for countries with varying levels of income, data, and endowments;
- (7) Be affordable and flexible: updated are regular intervals at minimal cost; and
- (8) Be easily communicated and interpreted.

As we view the development of the desired indicator as an open and collaborative process, 9 presentations of proposals across the indicator space were invited to present at the workshop.

5. Summary of Presentations

- (1) Luca Vernaccini (EU-JRC) – [InfoRM](#)
 - InfoRM, currently in beta stage and to be released by Dec 2014, measures the risk of humanitarian crisis and how the conditions that lead to them affect sustainable development. It is global and open-source.
 - Three dimensions in indicator – (1) hazard & exposure, (2) vulnerability, and (3) coping capacity are measured, which are broken into a series of categories and sub-components.
 - Results can be viewed [HERE](#); the InfoRM brochure can be viewed [HERE](#).
- (2) Kazuko Ishigaki (UNISDR) – [HFA2 Indicator System](#)
 - HFA2 indicator system, currently in consultation and expected to be adopted by March 2015, measures 22 core indicators of DRM; aims to link input indicators to outputs and outcomes.
 - Detailed indicators will be defined in consultation with each country and will be country-specific.
 - Monitoring is suggested to take place every 4 years, indicator system will follow a dashboard outline, and implementation will include a peer review process.
 - More information on PrepCom, to review the HFA2 System, can be viewed [HERE](#).
- (3) Eric Strobl (Ecole Polytechnique), Rob Elliott (University of Birmingham)
 - Lessons from literature: (1) impacts of disasters should be aggregated from local level (2) need to use ex-ante measure of potential impact not ex-post damages (3) disasters and economic impact heterogeneous.

- Disaster risk and exposure should ideally be identified sub-nationally, one potential data set for examining this is nightlight imagery but the data is not without limitations (imperfect proxy, lag, etc.).
 - Example of nighttime lights being used in literature: [Bertinelli & Strobl \(2013\)](#).
- (4) Rachel Scott (OECD) – [Risk and Resilience](#)
- OECD is completing a “how-to-guide” for a Resilience Analysis Tool, which has been piloted in 2 countries, allows users to design roadmaps for boosting resilience in a system, community or state.
 - Indicators based on status of assets identified for resilience, with type/status of assets context-specific. Relevant indicators depend on the resilience strategy followed in a given country. The process is based on a consultation process in the country (initial pilot took 5 weeks – 2 weeks preparation and 3 weeks in-country; consultations to follow will likely take less time).
 - A pilot for DR Congo can be found [HERE](#).
- (5) Adam Rose (USC) – Developing an Indicator of Economic Resilience
- Direct economic resilience = % avoidance of a maximum disruption to a given shock; definition applied to a number of cases including 9/11, Utility Infrastructure in California, Port Disruption.
 - Mitigation is still key, but resilience worthy second line of defense (effective, low-cost, self-motivated) and is another way we can all contribute to reducing losses from disasters. It is important to take into account the cost of various resilience-enhancing actions, a component that is absent from classical resilience indicators (making them insufficient for policy design).
 - Relevant papers: [Rose & Krausmann \(2013\)](#), [Wein & Rose \(2011\)](#), [Rose & Blomberg \(2010\)](#).
- (6) Susanne Schwan (GIZ) – GIZ’s experience in developing indicator-based approaches
- (1) Vulnerability Assessment Sourcebook, to be published by August 2014, provides guidelines for developing vulnerability index and for using this index to measure changes over time.
 - (2) Climate Resilience Indicators, which are at the discussion stage, aim to assess resilience at country-level based on globally available data complemented by country-specific data.
 - More information on (1) Vulnerability Assessment Sourcebook can be found [HERE](#).
- (7) Martin Murillo (ND-GAIN) – Lessons from [ND-GAIN](#)
- ND-GAIN Index summarizes country-level vulnerability and readiness across water, food, health, ecosystem service, habitat, and energy sectors – each of which fed by indicators.
 - Steps for Resilience Index: (1) Reflection and quality assurance of data (2) Classification to local, regional, national; different sectors (3) Index & confidence index creation (4) Validation and fine-tuning.
 - Results from ND-GAIN can be viewed online [HERE](#).
- (8) Hori Tsuneki (IDB) – Recommendations for new resilience indicator
- IDB has developed numerous indicators, including: [RMI](#), [DDI](#), [LDI](#), [PVI](#); work-in progress is iGOPP, which is a combination of 246 binary indicators for Public Policy and aims to verify enforcement.
 - Recommendations include: defining “resilience” and components, protocol to clarify evaluation criteria, use of binary indicators, and clarity on indicator’s focus (public policy, output, outcome, etc.).
 - Application of RMI, DDI, LDI, PVI to numerous countries can be viewed [HERE](#).
- (9) Stephane Hallegatte (WB) – [Economic Resilience: Definition and Measurement](#)
- Framework to understand welfare impact of disasters – includes direct asset risk, aggregate consumption risk (modified by macro-economic resilience), and micro-economic resilience.
 - Aggregate impacts of disasters can be very misleading – distribution across poor and non-poor matters; in Mumbai we find a signal that the poor are dis-proportionately exposed to flood risk.
 - Need to incorporate and measure social protection and financial inclusion, which reduce welfare loss.

6. Steps Forward – Three Components for a Resilience Scorecard

The group reached a consensus on the fact that a single number cannot summarize resilience and that a scorecard approach was both more realistic and more useful. To design this scorecard, we agreed to work on three potential components of a resilience scorecard:

- (1) **Desk Study** to select de-jure indicators from existing work to create an indicator “tree” used as a scorecard; the definition of the relevant indicators could be based on existing indicators (InfoRM, ND-Gain, HFA2, and others), and we would favor reducing the number of sub-indicators to increase transparency and simplicity. We also discussed the addition of other data sources such as ASPIRE database on social protection. This component of the scorecard would focus on “what’s on the book” and could be done from available sources, at a low cost. One possible option is to use econometric analysis of past disaster loss (and their drivers) to assess the importance of these sub-indicators (e.g., do we consistently find that countries with a policy X are suffering from lower losses than other countries?). [This component is also closely related to the “inputs” of resilience-building, i.e. the measures implemented.]
- (2) **Country Interviews** to validate the results of the desk study and to assess enforcement/implementation, governance issues and adaptation planning. First, a desk study can easily miss important factors of resilience, and interviews can complement the analysis checking that results from the desk study are consistent with expert opinion on a country situation. Second, de jure indicators can miss important problems related to implementation, enforcement and governance, and these aspects are difficult to quantify using classical indicators; interviews could help provide an “enforcement” score that would complement de jure indicators. [This component is also closely related to the “outputs” of resilience-building, i.e. the effectiveness of the measures implemented.]
- (3) **Data Analysis** to observe results on the ground and measure the impact of drivers of resilience. The final impact of resilience measures (laws, regulation, or investments) should be to change the situation on the ground, in terms of exposure, vulnerability and/or ability to respond. It would be useful to complement the desk study and country interviews with the analysis of hard data on the population and assets exposed to various risks and on the systems in place to cope with a shock. This component could be based on a few global databases, such as nightlight dataset for population density or image-analysis processes to identify exposed assets. A last element could be the use of disasters – when they occur – to validate and refine the assessment of resilience, helping improve the indicator over time. [This component is closely related to the “outcomes” of resilience-building, i.e. the higher resilience and lower losses from disasters due to the measures implemented.]

Participants at the workshop expressed interest in continuing this work further. The next step would be to create three virtual working groups on each of these components. Participants may choose to join a group that aligns with their existing initiatives and interests. Groups will be asked to make detailed proposals on whether each component can be a useful part of a resilience scorecard, whether doing so is realistic with potential budget and time available, and to assess the work that is needed over the next year to create the corresponding indicators. The plan would be to create these groups in September and have their report by the end of year 2014. Year 2015 could then be used to implement the recommendation of the groups.

Discussions also touched on the boundary of the resilience scorecards, with different views regarding the inclusion of all climate change impacts or only disaster-related issues, and the taking into account of climate change scenarios from climate models. It was agreed that these decisions could be taken at a later stage, and that each of groups would have to include these questions in their discussions and recommendations.

Finally, HFA2 is an important process that is taking place in parallel to our efforts. We hope that the work done for the IDA indicator (and the three working groups) can contribute to the HFA2 process, through concrete proposals, and we will engage as much as possible in the HFA2 discussion. We would like to ensure that the IDA indicator and HFA2 indicators are fully consistent and if possible integrated, and one option – to be decided in March 2015 when the HFA2 process reaches its conclusion – will be to use HFA2 indicators for IDA.