

**6th meeting of the Expert Group
on Disaster-related Statistics in Asia and the Pacific
Bangkok, 23-25 April, 2019**

Session 3: Statistics for Disaster Risk Assessment
Objective: to develop recommendations on statistics for risk assessment.

**Exposure, vulnerability, resilience of socio-ecological systems
and financial risks...**

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Risks: What could we do in the context of the DRSF research agenda?

- Continue developing the exposure/vulnerability/resilience dimension of DRSF, including mapping of risk areas and assessment of risks in relation to social issues
- Pay more attention to socio-ecological systems' resilience and adaptability, to their degradation and to related risks; connect to ecosystem natural capital accounting
- Explore financial aspects linked to increasing eco-systemic risks (climate change, resource depletion, biodiversity loss), to related ecological debts (sovereign debts and corporate debts) and the way they translate into financial risks and debts

Why socio-ecological systems' resilience is so important...

Introduction of Ecosystem Adaptability

Perturbation → **Resilience** → **Ecosystem Adaptability**

Robust ecosystem functions (E.g. primary production, nutrient cycling, water regulation, pollination)
Stable ecosystem services (E.g. Provisioned services, Regulating services, Supporting services, Cultural services)
Sustainable human development (Technology, institutional, social, and political dimensions)

Source: International Forum for Ecosystem Adaptability Science (III) Adaptability of Human Societies to Perturbation, Tohoku University, Sendai, Nov. 2011

Socio-Ecological Systems resilience and financial risks

Rating of financial risks → **Rating of sovereign & corporate financial debts** → **Cost of insurance** / **Cost of credit**

Risk = f(Hazard exposure, Vulnerability, Coping Capacity)

Resilience of Socio-Ecological Systems

Natural Hazards → **Impacts of Deterioration**

Degradation by activities (From poor land management, poor preparedness / From economy's impacts on climate, resource and biodiversity) → **Impacts of Deterioration**

Equivalent to Ecological Debts (Sovereign and Corporate) = **Unpaid Restoration Cost**

Environmental degradation increases both physical and financial risks linked to natural hazards

- (So) many examples of risks increased by human activities.
 - Land planning, urban planning
 - Land use, resource overexploitation (deforestation, drainage of wetlands...)
 - Overuse of chemicals, pollution, waste disposal
- Responsibility (liability, accountability...) : short term profits obtained by forwarding negative impacts at others: at other countries, at future generations, at the common good... =
- Unpaid restoration (or compensation) costs → should be accounted as ecosystem depreciation and ecological debts (corporate and sovereign).
- **Accumulation of debts is financial risk.**

Hazards, exposure, vulnerability/resistance, resilience, financial risks

- **Risk assessment in investment decision** includes the **ESG factors** : Environmental, Social and Governance factors (e.g. OECD 2017)
- Climate and ecosystem degradation are risks for **financial stability** (not only for future GDP, not only for Nature...)
- Three categories of financial risks (following Carney, 2015¹):
 - **Physical risks** (property and trade damage: asset losses and loss of investor confidence, increased cost of credit),
 - **Liability risks** (compensation for victims: fines, damages, insurance indemnities and potential risk for the institutions that financed the activities) and
 - **Transition risks** (effects of changes in policies, technology and physical risks on asset values: disruption of business models, disordered sector revaluations).
- **High interest of financial institutions to “green finance”...**

¹ Mark Carney, Governor of the Bank of England: "Breaking the tragedy of the horizon - climate change and financial stability", 29 September 2015, <https://www.bankofengland.co.uk/speech/2015/breaking-the-tragedy-of-the-horizon-climate-change-and-financial-stability>

Emerging policy demand for new statistics and indicators

- **High interest of financial institutions to “Green Finance”** (incl. Central Banks, Rating Agencies, Pension Funds... and institutions such as the European Commission, the OECD, UNEP, countries ...): the purpose is to support investments which reduce environmental impacts, to discourage others, to charge negative environmental impacts...
- Present focus on climate change issues, but there are recent attempts to broaden the scope to address biodiversity issues (e.g. Natural Capital Coalition, Beyond Ratings Agency, EC Green Finance, Point to the next G7 in May 2019..)
- **Natural disaster management is on the broad picture**, both for climate and biodiversity.
- **Change in socio-ecological systems resilience can provide important benchmarks for these new policies.**

Finally, two questions to the Expert Group

- Are there examples in countries of ecosystems being taken into account in natural disaster risk assessment and management ? (e.g. of forests and/or wetlands for protection against floods, or of mangroves against storms, or other...)
- Are environmental impacts of natural disasters monitored and assessed? In which domains? (e.g. loss of forests, of wetlands, or of water resource, or degradation of the water resource quality, or other...)

Thank you!

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