How to Understand and Monitor Disaster Risk Reduction in locality under the Global Climate Change

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1. Main Issues and Comments on DRR in the Philippines

**Main Issues**

There are No systematic frameworks for Understanding and Monitoring DRR from concrete DRR implementation point of view.

- Less Incentive for Data Archiving, Sharing and Analyzing for DRR.
- No general frameworks for Integrating Multiple DRR measures among multiple stakeholders / agencies.

- Weak Implementation of Systematic DRR measures based on Scientific Data from a long term point of view.

**Comments**

To overcome the issues above, **New Systematic Framework / Method for DRR Understanding and Monitoring in locality from a concrete execution point of view should be introduced.**
2. Suggestions

Nationwide systematic mechanism using “Set of Hazard Maps with multiple scales of predominant Disaster” and “Disaster Risk Graph” (tentative name) should be introduced as appropriate for concretely realizing DRR to reduce economic damage from a long term point of view through “Mainstreaming DRR” and “Build Back Better” under the GCC.
To Understand Disaster Risk in the locality

Suggestion 1: Providing and sharing Set of Hazard maps with multiple scales of predominant type of disaster among stake holders.

Understanding DR in each area toward feasible DRR measures/Area BCM.

e.g. Storm Surge

<table>
<thead>
<tr>
<th>Return Period</th>
<th>Description</th>
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<tbody>
<tr>
<td>&gt;100 yr.</td>
<td>Rare event</td>
</tr>
<tr>
<td>50 yr.</td>
<td>50 yr. return period</td>
</tr>
<tr>
<td>30 yr.</td>
<td>30 yr. return period</td>
</tr>
<tr>
<td>10 yr.</td>
<td>10 yr. return period</td>
</tr>
</tbody>
</table>

Appropriate for DRR planning against catastrophic disaster situation, but not appropriate for planning against relatively frequent disaster events. e.g. Good for evacuation planning.

Appropriate for DRR planning against relatively frequent disaster events. e.g. Good for building foundation elevation study for annual average damage reduction.
To Monitor DRR in the locality

Suggestion 2: Introducing Disaster Risk Graph* in each area (e.g. LDRRMC) as appropriate.

Example on flood
Effect of measures to lower the frequency of the flood damage. e.g. river improvement work.

Effect of measures to mitigate the damage caused by flood events. e.g. high standard levee, land use regulation in the flood risk area.

Mitigation of the flood damage
Prevent severe increase of flood damage.

Consideration of catastrophic flood disaster.

Flood damage has multiple aspects. → Multiple axes of flood damage estimation.

Flood damage mitigation effects of some measures have large uncertainty. → Consideration of the uncertainty.

Unavoidable uncertainty on the estimation

Scale of flood damage

Scale / Return period of the flood

* Tentative naming in English. From the research results of National Institute for Land and Infrastructure Management, MLIT, Japan. e.g. http://www.nilim.go.jp/lab/kikou-site/data/info_data/2015_takenaka1.pdf
3. How to draw the DRG with limited available data (1)

(1) Collect the available data (e.g. Hazard Maps) in the target area.

- Yolanda (>100 yr)
- 30 yr. return period
- 50 yr. return period
- 10 yr. return period

*Example on Storm Surge*
3. How to draw the DRG with limited available data (2)

(2) Count the number of houses in the inundation area on each Hazard Map.
3. How to draw the DRG with limited available data (3)

(3) Judge the intersection with the horizontal axes depending on past experiences or by engineering judgement.
3. How to draw the DRG with limited available data (4)

(4) Draw the curve connecting the points.
3. How to draw the DRG with limited available data (5)

(5) Clearly explain the limit of the DRG below the graph.

* This graph is tentatively drawn by ... depending on limited available data. ....

One of the Characteristics of the Storm Surge Risk in the target area
4. How the DRG be shifted (1)

(1) After some relocation projects completed

* This graph is tentatively drawn by ... depending on limited available data. ....
4. How the DRG be shifted (2)

(2) After a new coastal embankment construction project completed

* This graph is tentatively drawn by ... depending on limited available data. ....
(3) If the number of houses in high risk areas increased

* This graph is tentatively drawn by ... depending on limited available data. ....
4. How the DRG be shifted (4)

(4) If the effect of climate change is assessed and considered

* This graph is tentatively drawn by ... depending on limited available data. ....
5. How to use the DRG (1)

(1) To monitor the Disaster Risk in the target area.

* This graph is tentatively drawn by ... depending on limited available data. ....

- Scale / Return period of Storm surge

- Number of houses in inundated area

As of 2010

As of 2015

Strike out measures to shift the curve, even if there is no actual disaster happened these years.
(2) To share the effect of DRR by a proposed project.

Share the potential effect of the project and discuss the priority of the project.

* This graph is tentatively drawn by ... depending on limited available data. ....
5. How to use the DRG (3)

(3) To discuss the priority of the DRR measures.

* This graph is tentatively drawn by ... depending on limited available data. ....
5. How to use the DRG (4)

(4) To discuss the adaptation measures against GCC.

* This graph is tentatively drawn by ... depending on limited available data. ....
5. How to use the DRG (5)

(5) To monitor the effectiveness of ongoing/completed projects. e.g. monitoring the effectiveness of ongoing evacuation shelter project

Before the project
Current situation

Monitoring the effectiveness of the project.

* This graph is tentatively drawn by ... depending on limited available data. ....
6. Way forward

JICA Expert is going to apply the suggested new method to some areas in the Philippines for presenting the concrete examples of applicability of the method for promoting the discussion on how to integrate the method into DRRM mechanism in the Philippines. This discussion is not limited to OCD/NDRRMC, but expanded to the concerning agencies such as PAGASA, DPWH, NEDA, DILG, and LGUs.

1. **Test implementation** of the new method to some areas in the Philippines.

2. Provision of test implementation result to NDRRMC TMG for discussing how to integrate the new method into DRRM system in the Philippines.

3. **Issuance of the guideline/manual** for the new method introduction from NDRRMC to R/P/C/M/BDRRMCs.

4. **Supporting the implementation** of the new method by R/P/C/M/BDRRMC as appropriate.
Thank you for your kind attention.
I welcome your questions and comments.

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