MCR2030 WEBINAR

Practical methods for DRR investment acceleration through organizing DRR strategy in the local perspective

15 SEPTEMBER 2021 (WED), 13:00-14:00 (Japan Time)

8 STEPS

Practical Method for Developing Local DRR Strategies/Plans Toward the Achievement on the Global Target (e) of the Sendai Framework

ARAKIDA Masaru
Asian Disaster Reduction Center
What is the “8 Steps” and who uses it?

- The “8 Steps” is a practical and feasible method to develop a local disaster risk reduction (DRR) strategy/plan with concrete measures for investment.

- It enables leaders and planners of local governments, especially in high risk areas, to formulate or improve their local DRR plans in promoting investment and maintaining a steady implementation of measures to reduce residual risks.

- It contributes to: achieving the aim to reduce risks; ensuring that local DRR plans are risk-informed; considering strategies based on the local context; and including both structural and non-structural measures for prevention and mitigation!
Let’s develop a Local DRR Plan applying the 8 Steps:

• Step 1: Collecting local hazard information
• Step 2: Understanding local disaster risks
• Step 3: Confirming DRR plans by national and other authorities
• Step 4: Identifying residual risks considering time-scale
• Step 5: Listing all necessary DRR measures by local government
• Step 6: Prioritizing DRR measures
• Step 7: Arranging budget allocation in necessary levels
• Step 8: Implementing DRR measures and reviewing periodically

⇒ By compiling these information, it becomes a Local DRR Plan to reduce disaster risks.
Collecting local hazard information

To find risks, let’s identify hazards first because where hazard and exposure merge, it is considered as a “risk” (← what we would like to reduce)

<Key questions>:

☐ What types of hazards may exist in your target municipality?

☐ Where are these hazards located?

To identify, refer following data:

✓ Refer to hazard information prepared by national or higher authorities.

✓ In case of insufficient hazard information, utilize historical disaster records instead, for efficiency in terms of time and budget.
STEP 2

Understanding local disaster risks

Again, where hazards and exposure overlap it becomes a “risk”. So, in this step, let’s confirm which areas are exposed to those identified hazards in Step 1. (=Recognize existing risks and possible future risks which hinder development.)

And also, let’s find out which areas are under more critical condition. The area where critical infrastructures, such as governmental offices and schools, are located is more critical. (=Identify and prioritize risks which has large scale impact.)

Note: It is important to focus on reducing prioritized risks until 2020, and then other risks after 2020.
El peor peligro en su ciudad:

1. evaluar la situación de exposición

<table>
<thead>
<tr>
<th>PROVINCIAS</th>
<th>Alto</th>
<th>Medio</th>
<th>Bajo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lima</td>
<td>1,752,970</td>
<td>6,267,874</td>
<td>679,638</td>
</tr>
<tr>
<td>Callao</td>
<td>226,584</td>
<td>815,214</td>
<td>48,704</td>
</tr>
<tr>
<td>Total</td>
<td>1,979,554</td>
<td>7,083,088</td>
<td>728,342</td>
</tr>
</tbody>
</table>

2. Identificar las vulnerabilidades

282 EESS públicos y privados expuestos en Lima.
563 IEIE Públicos y privados en todos los niveles expuestos en Lima.

3. Posibles situaciones

<table>
<thead>
<tr>
<th>Exposición</th>
<th>Vulnerabilidad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sismo</td>
<td>Tsunami</td>
</tr>
</tbody>
</table>
Confirming DRR plans by national and other authorities

• Now, areas under risks are identified, so let’s confirm if there is any existing plans to reduce risks.

<Key Questions>
- Is there any on-going projects to reduce the identified risk areas?
- Is there any plan for projects in near future to reduce the identified risk areas?
- Who are the concerned organizations for DRR?

✓ Refer to urban plans and DRR plans developed by national governments, and confirm the main structural measures in each disaster types.

✓ Also refer to documents which show organizations for DRR and preparedness
Major Flood Management Project supported by JICA in Metro Manila, Philippines

- **Pasig Marikina River Channel Improvement Project I and II**
- **Pasig Marikina River Channel Improvement Project IV**
- **KAMANAVA Area Flood Control & Drainage System Improvement Project** (Completed in 2012)
- **Metro Manila Flood Control Project-West of Mangahan** (Completed in 2007)
- **Installation of Rosario Weir** (Completed in 1988)
- **Installation and rehabilitation of flood control operation and warning system** (Completed in 1993)
- **Construction of Mangahan Flood Way** (Completed in 1988)

[Whole Metro Manila Area] Construction of pumping station, Improvement of drainage channel (Completed in 1988)
Identifying residual risks considering time-series

Let’s identify residual risks (=remaining risks after/during planned measures are implemented)

<Key Questions>

☑ Which risks are to be reduced after completion of on-going and planned projects?
☑ How long will it take for those all projects to be completed?
☑ What are the remaining risks?

✓ Study implementation schedule of structural measures, because the measures take time to complete and show effectiveness in protecting risks.

✓ Identify the change in residual risks corresponding to time-series.
Effect of Ex-ante Investment on Flood Management - case of Manila, 2020 -

- Implementation of Manggahan Floodway and Pasig-Marikina River Channel Improvement Project (phase II, III) significantly reduced damage from flooding during Typhoon Ulysses on November 11 - 12, 2020.

Flood control projects prevented river flooding at central Manila.

Rough Estimate Results

<table>
<thead>
<tr>
<th>Without these projects</th>
<th>With these projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damage caused by flooding:</td>
<td>Damage caused by flooding:</td>
</tr>
<tr>
<td>About 62,785 million PHP (1,300 million USD)</td>
<td>About 9,811 million PHP (200 million USD)</td>
</tr>
<tr>
<td>People affected by flooding:</td>
<td>People affected by flooding:</td>
</tr>
<tr>
<td>About 1 million</td>
<td>About 0.03 million</td>
</tr>
</tbody>
</table>

Preliminary report
STEP 5

Listing all necessary DRR measures by local governments

Let’s list up possible measures for mitigation and preparedness.

<Key Questions>
- What kinds of measures will contribute to reduce risks?
- Are those measures categorized as short-term, midterm or long-term?
- Which level of the government can take case of those measures?
Importance of Disaster Risk Reduction for Sustainable Development - Relation of Investing in DRR to Development –

Figure 2.2: Disaster-related financing, 1991-2010

GAP

Emergency response, recovery and reconstruction 87.3%

Prior investment in disaster risk reduction 12.7%

Source: Financing Disaster Risk Reduction A 20-year story of international aid (GFDRR, ODI)
Relation of the target disaster scale/frequency, and appropriate measures

The threshold is different depending on the country. Class A rivers and tsunamis occur once 100 years are handled by Mitigation in Japan.

Without mitigation, damage cannot be prevented. Consider both.

Consider structural and non-structural measures.
### PASO 5: Enumerar todas las medidas de RRD que necesitan los gobiernos locales

<table>
<thead>
<tr>
<th>Medidas de RRD</th>
<th>Corto plazo (dentro de 5 años)</th>
<th>Medio plazo (dentro de 10 años)</th>
<th>Largo plazo (dentro de 20-30 años)</th>
</tr>
</thead>
</table>
| **Estructural** | • Mantenimiento de redes de agua y desagüe (Gobierno Nacional)  
• Mantenimiento de redes de gas natural (Sector privado)  
• Estabilización de talud en el acantilado de la Costa Verde (Gobierno Local)  
• Mantenimiento, limpieza, desquinche, reposición y costura de geomalla existente (Gobierno Local) | • Reforzamiento estructural de escuelas públicas (Gobierno Nacional)  
• Construcción de protección costera en el circuito de playas (Gobierno Local) | • Reasentamiento poblacional de población ubicada en zonas de alto riesgo no mitigable (Gobierno Local)  
• Renovación urbana de edificaciones declaradas patrimonio cultural (Gobierno Nacional y Local) |
| **No Estructural** | • Actualización de Planes de Prevención y Reducción del Riesgo de Desastres de los 43 distritos de Lima Metropolitana (Gobiernos Locales) | • Creación de Reglamento de Edificación para construcciones existentes (Gobierno Nacional)  
• Normativa para reforzamiento de bienes culturales (Gobierno Nacional)  
• Incluir la reducción del riesgo en la currícula escolar (Gobierno Nacional) | • Actualización de Plan de Desarrollo Metropolitano de Lima (Gobierno Local)  
• Incluir en el plan de desarrollo urbano las remodelaciones de viviendas, por construcciones antisísmicas (Gobierno Local) |
| **Estructural** | • Construcción de escaleras y puentes de evacuación en la costa verde (Gobierno Local) | • Construcción de almacenes soterrados en espacios públicos (Gobierno Local) | • Construcción de sede alterna del CONAGERD para atención de emergencias (Gobierno Nacional) |
| **No Estructural** | • Organización de Simulacros, sensibilización y capacitaciones (Gobierno Nacional y Local)  
• Elaboración de planes de evacuación (Gobierno Local)  
• Elaboración de fichas técnicas de identificación de zonas críticas (Gobierno Local) | • Desarrollo de eventos para la difusión de estudios y/o investigaciones para incrementar el conocimiento del peligro y condiciones de vulnerabilidad. (Gobierno Nacional y Local)  
• Administración y almacenamiento de kits para la asistencia humanitaria (Gobierno Nacional y Local) | • Creación de línea única para atención de emergencias (Gobierno Nacional)  
• Acreditación grupos de Búsqueda y Rescate (Gobierno Nacional) |
STEP 6

Prioritizing DRR measures

Now, we need to carefully think about which measure is the most holistically effective.

✓ Develop a shortlist to reduce residual risks in consideration of feasibility, cost-effectiveness, financial resources, etc.

✓ Seek the best balance of structural and non-structural measures.

✓ Obtain consensus with stakeholders and government endorsement of the developed plans.
Local DRRM Plan: Disaster Risk Reduction and Management Capacity Enhancement Project Phase 2

Hazard maps / Case of Calamba City

The Comprehensive Land Use Plan of the City of Calamba 2015-2025

- flood exposure map
- Rain Induced landslide exposure map
- Earthquake induced landslide exposure map
- Ground rapture exposure map
- Liquefaction exposure map

are included

STAGE1
Disaster Risk Profile
STAGE2
Establish DRRM roadmap based on situational analysis
STAGE3
Identification of DRRM Measures
**Proyectos**

<table>
<thead>
<tr>
<th>Nivel Nacional</th>
<th>Proyectos</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>1. Bono de Reforzamiento de viviendas</td>
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<td>2a. Reforzamiento de IIEE</td>
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<td>2b. Reforzamiento de Hospitales</td>
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<td>3. Reforzamiento y protección en puntos críticos de riesgo en Sistemas de agua potable y alcantarillado</td>
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<td>4. Reforzamiento y protección de puntos críticos en infraestructura vial</td>
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<td>5. Local para la continuidad operativa del CONAGERD y centro de datos.</td>
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<thead>
<tr>
<th>Nivel Local</th>
<th>Proyectos</th>
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<tr>
<td></td>
<td>1. Estabilización de la Costa Verde</td>
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<td>2. Construcción de Escaleras</td>
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<td></td>
<td>3. Planes de Prevención y Reducción del Riesgo de Desastres en los 43 distritos de la costa verde</td>
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<tr>
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<td>4. Identificación de zonas críticas por licuación de suelos con fines de reasentamiento poblacional.</td>
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<td>5. Sensibilización y concientización a la población ante el riesgo de sismo y tsunami</td>
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<td></td>
<td>6. Reasentamiento poblacional de zonas críticas por licuación de suelos</td>
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<tr>
<th>Año</th>
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</table>
Arranging budget allocation in necessary levels

- Let’s find a strategy for prioritized measures to be implemented.

<Key Questions>
- Who are the concerned organizations?
- How should the concerned organizations share the expenses?
- What is the negotiation procedure among concerned organizations? (e.g. participate in councils to obtain approval by leaders, communicate with treasury, submit proposals to donors, etc.)

- Identify responsible organization to bear the expenses of implementation. In case of lack of budget, actions are necessary to seek for internal or external funds.
**Article 50. Means.** General Budget of the Nation and are contained The Board of Directors will establish the distribution of these resources in the different subaccounts.

**Paragraph 1.** The National Government through the Ministry of Finance and Public Credit, will guarantee that the National Fund has sufficient resources at all times that ensure support to national and territorial entities in their efforts to understand risk, prevention, mitigation, response and recovery.

**Article 53. Budget appropriations for disaster risk management.** The entities of the national, regional, departmental, district and municipal order, will include from the following annual budget and onwards, the budgetary items that are necessary.

**Article 54 / Paragraph.** The resources allocated to the funds mentioned in this article will be cumulative and may not in any case be withdrawn from it, for reasons other than risk management. In any case, the amount of resources must be consistent with the disaster risk levels faced by the department, district or municipality.
STEP 8
Implementing DRR measures and reviewing periodically

- Let’s not forget about “Plan, do, check, action” cycle. Making plan is the goal, but a beginning to reduce risks

<Key Questions>
- What are the roles and responsibilities of each organization in implementation?
- How often should the plan be reviewed?
- Which items should be reviewed? (e.g. hazard info., national DRR plan, land use, and etc.)
- What will be the procedure for revision?

- Periodically review and revise the plans including hazard information and national DRR plans, to adapt to changes in the situation.
STEP 8 (ex.)

• Step 8
  Implementation of DRR measures

Annual Review based in Republic Act 101211 Section 12 (7 & 8)

(7) The Local Disaster Risk Reduction Council as stipulated in the law must prepare and submit to the local council through the LDRRMC and the LDC the annual LDRRMO Plan and budget, the proposed programming of the LDRRMF, other dedicated risk reduction and management resources, and other regular funding source/s and budgetary support of the LDRRMO/BDRRMC;

(8) Conduct continuous disaster monitoring and mobilize instrumentalities and entities of the LGUs, CSOs, private groups and organized volunteers, to utilize the facilities and resources for the protection and preservation of life and properties during emergencies in accordance with existing policies and procedures.
**Example of STEP 8**

Step Eight: Implement disaster risk mitigation measures and periodically review those steps

At this stage, projects for the Deming Cycle (PDCA) inspection and remedial process are anticipated with regard to the feedbacks and systems governing the implementation of the projects.

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Inspection period(m)</th>
<th>Inspection Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforcement of bridges</td>
<td>3</td>
<td>PC</td>
</tr>
<tr>
<td>Educate citizens across neighborhoods</td>
<td>6</td>
<td>PC</td>
</tr>
<tr>
<td>Earthquake Rapid Alert System Development</td>
<td>3</td>
<td>PC</td>
</tr>
<tr>
<td>Preparation of notification and alert program</td>
<td>3</td>
<td>MP-NI</td>
</tr>
<tr>
<td>Earthquake Maneuver</td>
<td>12</td>
<td>NI</td>
</tr>
<tr>
<td>Stability of davam groups</td>
<td>3</td>
<td>PC</td>
</tr>
<tr>
<td>Update secure neighborhood maps</td>
<td>6</td>
<td>PC</td>
</tr>
<tr>
<td>Improved Damage Estimation System</td>
<td>1</td>
<td>PC</td>
</tr>
<tr>
<td>Secure and stable communications system in times of disaster</td>
<td>3</td>
<td>PC-MP-NI</td>
</tr>
</tbody>
</table>

**Inspection Organization**

<table>
<thead>
<tr>
<th>Organization</th>
<th>MPORG</th>
<th>MP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance control</td>
<td>PC</td>
<td></td>
</tr>
<tr>
<td>National inspection</td>
<td>NI</td>
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</tbody>
</table>
Chart on how to proceed with the 8 steps exercise by face-to-face training

- Next Step
  - Lecture for the step X
  - Related lecture/site visit for the step X
  - Local DRR Plan
  - Complete!
  - Homework and Corrections
  - Short presentations from some countries
  - Group exercise on the PCM board

Short presentation of Step 1 by hand drawing
Related Lecture and Site Visit for Step 1-6

Group exercise on the PCM board
Chart on how to proceed with the 8 steps exercise during online training

- **OnDemand lecture for the step X**
- **Complete!**
- **Local DRR Plan**
- **Homework and Corrections**
- **Next Step**
- **Online Lecture for reviewing main points**
- **Online exercise on the MIRO, online whiteboard**
- **Short presentations from some countries**

OnDemand lecture for reviewing main points

Local DRR Plan

Homework and Corrections

Next Step

Complete!
Exercise on the Online Whiteboard

OnDemand lecture for the step X

Online Lecture for reviewing main points

Homework and Corrections

Online exercise on the MIRO, online whiteboard

Short presentations from some countries
Current issues in 8 Steps training for developing local DRR plans

- Low understanding of the need to invest in disaster reduction in advance for economic development
- Lack of concrete understanding of current and future hazards and risks
- In order to promote the understanding of each step, appropriate lectures and visits are needed.
8 steps methodology is being updated for the promotion of local DRR plan to contribute urban resilience

- Development of a general theory of disaster prevention
- Development of 8 steps teaching guidelines
- Development of 8 steps exercise materials for each disaster type
- Integration of list of lecturers and inspection sites
8 steps methodology is being updated for the promotion of local DRR plan to contribute urban resilience

Development of a general theory of DRR

1. Through the transition of international discussions on DRR, the lecture will provide an understanding of the evolution of thinking on DRR up to the recognition of the importance of investment in advance DRR, and introduce basic concepts on its importance and promotion measures.

2. To understand the basic concepts of disaster risk and resilience, which are the objectives of investment in advance disaster reduction.

3. To understand the perspectives and points to be considered in promoting investment in disaster reduction in advance.

Development of 8 steps teaching guidelines

Development of 8 steps exercise materials for each disaster type

Integration of list of lecturers and inspection sites
8 steps methodology is being updated for the promotion of local DRR plan to contribute urban resilience

- Development of a general theory of disaster prevention
- Development of 8 steps teaching guidelines
  - Review and update the contents of the 8 steps for flood, tsunami/storm surge, and earthquake.
- Development of 8 steps exercise materials for each disaster type
- Integration of list of lecturers and inspection sites
8 steps methodology is being updated for the promotion of local DRR plan to contribute urban resilience

- Development of a general theory of disaster prevention
- Development of 8 steps teaching guidelines
- Development of 8 steps exercise materials for each disaster type
  - To develop standard contents with 8 steps training manuals for flood, tsunami/storm surge, and earthquake versions.
- Integration of list of lecturers and inspection sites
8 steps methodology is being updated for the promotion of local DRR plan to contribute urban resilience

- Development of a general theory of disaster prevention
- Development of 8 steps teaching guidelines
- Development of 8 steps exercise materials for each disaster type
- Integration of list of lecturers and inspection sites

- Develop a list of sites and lecturers appropriate for learning each Step (floods and sediment disasters, earthquakes, storm surge/tsunami, volcanic eruptions).
Thank you for your attention!