Session 5

Identifying the disaster effects & estimating the economic value
Session Objectives

- Define the disaster effects
- Estimate the economic value of the disaster effects
- Test your understanding of identifying and costing through a simple case study
The PDNA Process

Baseline Analysis
- Pre-Disaster context-baseline of social, economic, cultural, financial, political status

Disaster Effect
- Infrastructure and assets
- Production of goods and services
- Governance processes
- Increased risks

Disaster Impact

Recovery Needs

Recovery Strategy
As a reminder...

The assessment consists of a gap analysis in ALL affected sectors and areas...

**BEFORE**
Pre disaster context analysis and baseline data

**AFTER**
Effects of the event presented in post disaster data set

**GAP**
Compare pre-and post disaster scenarios

→ Collect/estimate post-disaster data on the affected population/area(s).
→ Disaggregate data by gender, age, ethnicity and geographical area.
What are the disaster effects?

**Effects** → Immediate results of the event that is to be assessed

**Damage and Loss**

- Expressed in quantitative and qualitative terms
- Identified in every sector
- Disaggregated by geographic divisions, gender, vulnerable groups, public/private ownership, etc.

"This is a DISASTER."
Effects are analyzed under 4 dimensions

- **PARTIAL OR TOTAL DESTRUCTION**
  of infrastructure and physical assets
  - **DAMAGE**

- **DISRUPTION**
  of the production of goods and services and access to goods and services
  - **LOSS**

- **DISRUPTION**
  to Governance and Decision-Making Processes
  - **LOSS**

- **INCREASED RISKS**
  Risks and Vulnerabilities
  - **LOSS**
Effects are defined as...

DAMAGE and LOSS
Damage

Destruction
Refer to the **total or partial destruction** of infrastructure and physical assets

Costing
Its **cost** is estimated at the replacing or repairing market prices prevailing just before the disaster

Evaluation
Damage is **valued first in physical terms** (number of houses of a specific typology, Km of roads or pipelines, size and types of schools or hospitals); and **then in terms of their monetary value.**
Economic loss refers to changes in economic flows arising from the disaster.

These changes in flows continue until the achievement of full economic recovery and reconstruction, in some cases lasting for several years.

Loss is expressed in current monetary values.
Assessment of Damage
Assessment of Loss - Goods & Services
Value of Loss - Goods and Services
Assessment of Loss - governance
The **economic value** is estimated on the increased expenditure for managing new risks arising from the disaster.
Importance of Identifying and costing the Losses

✔ In the past, the cost of disasters was identified mostly in terms of damages due to urgency in reconstruction financing;

✔ Total effects of disasters could be largely underestimated if losses are not accounted for;

✔ Many social needs may not be addressed.
## Example: Damage and loss in the health sector

<table>
<thead>
<tr>
<th>Infrastructure and physical assets</th>
<th>Production and access to G&amp;S</th>
<th>Governance and decision making</th>
<th>Increased risk and vulnerabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities fully destroyed</td>
<td>Loss of revenue</td>
<td>Reduced capacity of Health authorities to manage the service</td>
<td>Potential disease outbreaks</td>
</tr>
<tr>
<td>Facilities partially destroyed</td>
<td>Demolition and rubble removal</td>
<td>Lack of personnel/staff</td>
<td>Chronic malnutrition</td>
</tr>
<tr>
<td>Equipment</td>
<td>Higher number of patients due to injuries during the disaster</td>
<td>Information management systems affected</td>
<td>Increased vulnerability of hospitals and medical centers</td>
</tr>
<tr>
<td>Furniture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medications and supplies</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How are non-economic effects accounted for in a PDNA?

- A qualitative description of the effects
- Matrix summarizing the measurement of the extent of effects
- The non economic effects also informs the recovery strategy
Sources of Information for Effects

**PRIMARY**
Collected by government in the form of surveys, field visits and direct inquiry / interviews, consultation with key informants, as appropriate or needed, focus groups discussions

**SECONDARY**
Surveys undertaken at sector level after the disaster (emergency humanitarian needs assessments is done by local and international first responders), situation reports, media information.

Ensure data includes: sex disaggregated data, analysis of geo-referenced data from satellite information and maps, technical analysis from geological, climatic, meteorological and geographical scientific institutions.
You are the owner of an internet cafe in Somecity. After a week of heavy rainfall a river in your neighbourhood broke through its dam and flooded houses and shops close-by, including your internet cafe. You have to evacuate the area and are not able to access your internet cafe for four days.

On the fifth day, you go back to your business with a friend from a local construction company to assess the effects of the floods on your internet cafe.
Here is what you and your friend find:

- The internet cafe has been partially destroyed:
  - 5 m² of your walls need to be repainted
  - 6 m³ debris have to be removed
- The **computer** has been totally **destroyed**
- Your annual **business license was washed away**
- According to the latest weather forecast, it might rain again. The river’s dam is still broken and you therefore **decide to install** a temporarily **flood protection wall with 40 sandbags**.
- Luckily, your friend is able to help you immediately and **you do not need to hire additional workers** to handle situation.
- You expect to **re-open** your internet cafe in **15 days** (including days when you could not access the cafe’
Relevant baseline data:

- Before the flood you had a monthly revenue of 1,300 USD
- Cost of your computer: 1,000 USD
- Cost of paint: 10 USD/m2
- Cost of debris removal: 8 USD/m3
- Cost of renewing business license at local municipality: 30 USD
- Cost one sandbag: 3 USD
Activity 1

- At your table, familiarise yourself with the case study
- Identify the different dimensions of the disaster effect
- Estimate the economic value of the disaster effect, using the following table:

<table>
<thead>
<tr>
<th>Disaster effects</th>
<th>Damage</th>
<th>Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Application - Results

<table>
<thead>
<tr>
<th>Disaster effects</th>
<th>Damage (USD)</th>
<th>Losses (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partially destroyed building (repainting of the walls)</td>
<td>(5 m² x $10/m²) = 50</td>
<td></td>
</tr>
<tr>
<td>Totally destroyed computer</td>
<td>1,000</td>
<td></td>
</tr>
<tr>
<td>Debris removal</td>
<td>(8 m³ x $6/m³) = 48</td>
<td></td>
</tr>
<tr>
<td>Destroyed business licence</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Temporary flood risk (Sand bags for protection)</td>
<td>(40 bags x $3/bags) = 120</td>
<td></td>
</tr>
<tr>
<td>Business interruption (income not received)</td>
<td>1,300 / 2 = 650</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1050</strong></td>
<td><strong>848</strong></td>
</tr>
</tbody>
</table>
The assessment of the disaster effects consists of a **gap analysis** that is conducted across all PDNA sectors and in each disaster affected area.

- **Damage** refers to the **total or partial destruction of infrastructure and physical assets** - valued first in **physical terms** and then **in terms of their monetary value** (using unit **market prices prevailing just before the disaster**).

- **Loss** refers to **changes in economic flows** arising from the disaster. It may continue until full economic recovery and reconstruction is achieved. Loss is **expressed in current monetary values**.