Module 2: Introduction to Damage and Loss Assessment

ASEAN Training of Trainers (TOT) on Damage and Loss Assessment (DaLA)
MODULE 2: OVERVIEW

• Duration: 2 Hours

• Topics:
  • *Understanding Post-Disaster Damage and Loss Assessments (DaLA)*
  • *Key Steps in the Assessment Process*
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MODULE 2: OVERVIEW

• Learning Outcomes:
  • Participants will become familiar with key concepts and terminology associated with the Damage and Loss Assessment (DaLA) methodology.
  • Participants will achieve a working knowledge of the steps involved in completing an assessment.
Understanding Post-Disaster DaLA

Module 2: Introduction to Damage and Loss Assessment
INTRODUCTION TO DaLA

• Methodology to assess post-disaster damage and losses – developed by the Economic Commission for Latin America and the Caribbean (ECLAC) in 1972
• Steady advancement – most recent ECLAC guidance document: *Handbook for Disaster Assessment (2014)*
• Adapted for use in other countries and adopted by the World Bank
  • DaLA Guidance Notes, Volumes 1-3
INTRODUCTION TO DaLA

• May be implemented independently or as part of a Post-Disaster Needs Assessment (PDNA):
  • Includes a Damage and Loss Assessment (DaLA), and
  • Human Recovery and Needs Assessment (HRNA)
    • Identification of social impacts and societal recovery needs
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DAMAGE AND LOSS ASSESSMENT (DaLA)

**PREPARATION PLANNING MISSION**
- Plan and set up all necessary arrangements to support the DaLA (team composition, logistics, human resources, information management, strategic planning and human development specialists, budget, management structure, etc.)
- Training workshop organized with all members of DaLA team once on the ground.

**DATA COLLECTION VERIFICATION & VALIDATION**
- Field visits: assessment and collection of data from affected areas, including surveys and other field collection methods
- Stakeholder consultations
- Desk review: collection of secondary data and information

**CONSOLIDATION & ANALYSIS**
- Data analysis, processing and consolidation by each sector team
- Inter-sector data analysis and verification
- Identify common priorities across sectors and geographic areas, vulnerable groups, cross-cutting issues
- Stakeholder consultations

**METHODS**
- Stakeholder consultations with all key partners in-country
- Analysis of existing information on disaster
- Compilation of secondary data of relevance to the DaLA
- Agree and plan all requirements for the DaLA consultation with government, UN, WB, etc.

**METHODS**
- Collection of primary data through various data collection methods (surveys, focus group, key informant interviews, etc.)
- Secondary data collection to assess disaster effect and impact (DaLA)
- Collection of baseline data to compare pre- and post-disaster conditions

**METHODS**
- Working meetings within sector teams and across sector teams
- Analysis of qualitative and quantitative information
- Assess disaster impact
- Macro-economic impact analysis
- Analysis of disaster impact at personal/household level

DaLA Process

1-2 Weeks
2-3 Weeks
2-3 Weeks
INTRODUCTION TO DaLA

• DaLA measures the impacts of a natural disaster on:
  • Physical assets (damage)
  • Economic flows (losses)
DALA FRAMEWORK

• Damage:
  • Total or partial destruction of physical assets existing in the affected area
    • Occurs during and immediately after the disaster
    • Measured in physical units (e.g., square meters; kilometers of roads)
    • Expressed in terms of reconstruction or replacement costs according to prices prevailing just before the event
DALA FRAMEWORK

• Losses:
  • The changes in economic flows arising from the disaster
    • Occur until full economic recovery and reconstruction is achieved (sometimes lasting for several years)
    • Expressed in current monetary values
DALA FRAMEWORK

- Examples of Losses:
  - Decline in output in productive sectors (e.g., agriculture, manufacturing)
  - Lower revenues and higher operational costs in the provision of services (e.g., education, health, electricity)
  - Unexpected expenditures necessary to meet humanitarian needs during the post-disaster emergency phase
DALA FRAMEWORK

• Value of *damage*:
  • Used as the basis for estimating reconstruction needs

• Value and type of *losses*:
  • Provide the means for estimating the overall socio-economic impact of the disaster and the needs for economic recovery
DALA FRAMEWORK

- The socio-economic impact analysis estimates:
  - The disaster’s effects on economic performance
  - Temporary macro-economic imbalances that may arise
  - Temporary decline in employment, income and well-being of the individuals and households affected by the disaster
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Damage and Losses due to the Aceh Earthquake and Tsunami, 2004

- Housing
- Transport
- Industry
- Education
- Energy
- Agriculture
- Fishery

- Damage
- Losses

Rupiah Trillion
2006 YOGYAKARTA AND CENTRAL JAVA EARTHQUAKE

- Distribution of Damage and Losses among Sectors
SCOPE OF THE ASSESSMENT

- DaLA is conducted for the entire area affected by the disaster, and is broken down by:
  - Geo-political divisions
  - All sectors of economic activity that may have sustained disasters effects
SCOPE OF THE ASSESSMENT

• Sectors typically assessed:
  • Social Sectors
    • Culture, Education, Health, Housing
  • Infrastructure Sectors
    • Telecommunications, Power and Energy, Transportation, Water and Sanitation
  • Productive/Economic Sectors
    • Agricultural, Livestock, Fisheries, Commerce, Industry or Manufacturing, Tourism
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<table>
<thead>
<tr>
<th>Sectors Assessed, Yogyakarta Earthquake, 2006</th>
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<tbody>
<tr>
<td><strong>Housing</strong></td>
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<td><strong>Infrastructure</strong></td>
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<td>Transport and Communications</td>
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<td>Energy</td>
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<td>Water and Sanitation</td>
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<td><strong>Social Sectors</strong></td>
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<td>Education</td>
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<td>Health and Social Protection</td>
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<td>Culture and Religion</td>
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<td><strong>Productive Sectors</strong></td>
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<td>Tourism</td>
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<td><strong>Cross-Sectoral</strong></td>
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<td>Government</td>
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<td>Banking and Finance</td>
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<td>Environment</td>
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ASSESSMENT TIMELINE

• For a safe and efficient assessment:
  • Emergency relief activities and search and rescue operations should be completed or nearly completed
  • The natural phenomenon that caused the disaster must be over, such that the effects of the disaster are visible (e.g., flood waters receded), and there is adequate road access to affected areas
  • Local government staff and sector specialists are available to participate in the assessment
ASSESSMENT TIMELINE

• Typically begins 1-2 weeks after a disaster has occurred
• Time prior to the assessment can be used to:
  • Gather baseline information
  • Provide training to those participating in the assessment
• Can take 2-8 weeks to complete, depending on
  • Complexity of the disaster, size of affected area and available expertise
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Typical DaLA Assessment Timeline and Associated Activities
Group Activity
What are the Implications for Recovery?

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Key Steps in the Assessment Process

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KEY STEPS IN THE ASSESSMENT PROCESS

1) Develop a Baseline for the Assessment
2) Determine the Post-Disaster Situation
3) Assess Post-Disaster Sector Performance
4) Estimate Total Value of Damage and Losses
5) Estimate Macro-Economic Impact of Damage and Losses
6) Estimate Impact on Personal/Family Income
STEP 1: DEVELOP A BASELINE FOR THE ASSESSMENT

- Provides a picture of the prevailing conditions prior to the disaster
- Foundation for the estimation of *damage* and *losses*
- Critically important to be able to discern:
  - Level of damage to physical assets resulting from the disaster
  - How the provision of basic services have been affected
  - The changes in production and sales
STEP 1: DEVELOP A BASELINE FOR THE ASSESSMENT

• Baseline of Physical Assets refers to:
  • Existing facilities in the affected area (before the disaster occurred)
  • Nearby facilities that may provide services to the affected area on a temporary basis
  • Examples of baseline data:
    • Number and type of health facilities
    • Length and type of roads
    • Number and type of housing units
STEP 1: DEVELOP A BASELINE FOR THE ASSESSMENT

• Baseline data is also essential for determining losses.
• Refers to the performance of all economic activities in the affected area:
  • As projected for the current and subsequent 2 years
  • Measured as the volume and value of production sales of goods and services, etc.
STEP 1: DEVELOP A BASELINE FOR THE ASSESSMENT

Examples of Baseline Data describing losses:

- Calendar of agriculture production activities (annual crops and plantations)
- Statistical information on volume of production, yields, prices
- Production and sales forecasts for ongoing and subsequent years in each sector
- Volume and value (rates) of essential services (electricity, water and sanitation, transportation and communications)
STEP 2: DETERMINE THE POST-DISASTER SITUATION

- Describes the post-disaster scenario
- Field survey, analysis of satellite imagery, and inputs from local sector specialists are used to:
  - Assess the level of damage (total or partial) to physical assets in each sector
  - Determine how each sector will perform on a temporary basis after the disaster (until recovery and reconstruction are achieved)
STEP 2: DETERMINE THE POST-DISASTER SITUATION

• This step results in:
  • Preliminary calendar or schedule for the reconstruction of physical assets
  • Corresponding post-disaster, preliminary performance forecast of socio-economic activities in each affected sector
STEP 2: DETERMINE THE POST-DISASTER SITUATION

• To develop the preliminary calendar for reconstruction, the following information is collected:
  • A typology of physical assets (by size, capacity, construction materials, etc.)
  • Unit repair costs and reconstruction estimates for those assets, not affected by scarcity or speculation
  • A preliminary calendar of repair and replacement of physical assets
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Example - Water Supply based on Damages to Water Supply Plant
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Example - Water Demand Based on Damage to Housing Sector
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Example - Water Shortage in the Affected Area
STEP 3: ASSESS POST-DISASTER SECTOR PERFORMANCE

• This step of the assessment process:
  • Examines the disaster impacts to each sector
  • Comparison of sector performance indicators from before and after the disaster
• Discussed in greater detail in Module 5: Conducting Sectoral Assessments
STEP 3: ASSESS POST-DISASTER SECTOR PERFORMANCE

- Assessment Team should include:
  - Expertise in each sector (e.g. engineers, sociologists, economists, etc.)
  - Members who are well-acquainted with the assessment methodology and with the affected area’s socio-economic conditions
  - Government officials representing the line ministries covering all sectors of economic activity
STEP 4: ESTIMATE TOTAL VALUE OF DAMAGE AND LOSSES

- Aggregates the total value of damages and losses for each sector and sub-sector
- All sectors must be included to determine the overall disaster effects
- Important to consider linkages between sectors
- Identify issues of double-counting or omission
STEP 4: ESTIMATE TOTAL VALUE OF DAMAGE AND LOSSES

• Total value of damage and losses obtained in this step is used in subsequent analyses
  • Macro-economic impact of damage and losses
  • Impact on personal/family income

• Helps define economic recovery and reconstruction needs
STEP 5: ESTIMATE MACRO-ECONOMIC IMPACT OF DAMAGE AND LOSSES

• Calculates the disaster impact on:
  • Gross domestic product (GDP)
  • Balance of trade and payments (BOP)
  • Fiscal budget
  • Other macro-economic aggregates

• Baseline information regarding the most recent estimates or projections of macro-economic variables is required
  • e.g., GDP, BOP, and fiscal budget for current and forthcoming years for non/pre-disaster conditions
STEP 5: ESTIMATE MACRO-ECONOMIC IMPACT OF DAMAGE AND LOSSES

• Impact on GDP examines:
  • Temporary negative repercussion of disaster losses on economic performance
  • Any positive effects on the various sectors that may have resulted due to recovery and reconstruction process (i.e., improvements to infrastructure)

• Data for GDP should include a breakdown by sectors
STEP 5: ESTIMATE MACRO-ECONOMIC IMPACT OF DAMAGE AND LOSSES

• Impact on BOP involves estimating:
  • Increase in imports and decline of exports arising from the disaster
  • Possible reinsurance payments from abroad and relief donations from the international community

• Disaster impacts on the public sector budget are estimated in terms of:
  • Increased operational costs
  • Lower revenues
STEP 5: ESTIMATE MACRO-ECONOMIC IMPACT OF DAMAGE AND LOSSES

• Data for GDP and fiscal budget should be obtained in current values of local currency

• Data for BOP should be expressed in current U.S. dollars
STEP 6: ESTIMATE IMPACT ON PERSONAL/FAMILY INCOME

• Examines the relationship between production and the labor force
• Includes an estimation of the decline in employment income due to losses sustained in the productive and services sector
• Includes an estimation of employment opportunities brought about as a result of the emergency itself (e.g., reconstruction activities)
• Loss of personal income can be estimated in relation to normal monthly income
Case Studies:
Exploring Post-Disaster Assessments
EXPLORING POST-DISASTER ASSESSMENTS

• Working as a Team, review the case studies and answer the following questions on the flipcharts provided:
  • What methodologies were used to conduct the assessments?
  • What sectors were assessed?
  • Which sectors had the greatest damage and the greatest losses?
  • What similarities between assessments did you observe?
  • How were they different? (Be specific)

• You have 30 minutes