



PDNA Training of Trainer (ToT) Module

Post Disaster Needs Assessment (PDNA)
Study for India

National Cyclone Risk Mitigation Project (NCRMP)



Resilient India - Disaster free India

National Institute of Disaster Management (NIDM)
(Ministry of Home Affairs, Government of India)



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National Institute of Disaster Management (NIDM)

(Ministry of Home Affairs, Government of India)

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Post Disaster Needs Assessment (PDNA) Study for India
National Cyclone Risk Mitigation Project (NCRMP)

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Disclaimer

We welcome receiving information and suggestions on its adaptation or use in actual training situations. The content of this document are solely those of the author(s).

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नित्यानन्द राय
NITYANAND RAI



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संदेश

मुझे यह जानकर अत्यंत हर्ष हो रहा है कि राष्ट्रीय आपदा प्रबंधन संस्थान, गृह मंत्रालय ने आपदा से हुए नुकसान का वैज्ञानिक तरीकों से आकलन सम्बन्धी अंतर्राष्ट्रीय स्तर का साधन विकसित किया है।

भारत विश्व में प्राकृतिक आपदाओं से सबसे अधिक प्रभावित होने वाले देशों में से एक है। हमारी भौगोलिक स्थिति कुछ इस प्रकार की है कि आपदाओं का प्रकोप और इसका प्रभाव तीव्र एवं अत्याधिक होता है। हमारे देश में आपदा के पश्चात इससे होने वाले नुकसान का आकलन पारम्परिक तरीके से होता रहा है। इसका सही आकलन वैज्ञानिक तरीके से होना चाहिए।

माननीय प्रधानमंत्री, श्री नरेन्द्र मोदी जी ने एशियन मंत्रीगण सम्मेलन में आपदा प्रबंधन को वैज्ञानिक आधार पर करने हेतु 10 बिंदुओं को चिन्हित किया। अभी हाल ही में राष्ट्रीय आपदा विमोचन दल द्वारा आयोजित कार्यशाला में माननीय गृह मंत्री, श्री अमित शाह जी, ने उन्हें दोहराते हुए सभी प्रतिभागियों से उसे सुनिश्चित करने तथा इन नीतियों पर कार्य करने को कहा।

मुझे विश्वास है कि वर्तमान प्रकाशन, जो चार भागों में प्रकाशित हो रहा है, का लाभ प्रत्येक राज्य और केंद्र के मंत्रालयों को मिल सकेगा। इस प्रकाशन को आकलन हेतु संदर्भ स्वरूप प्रयोग में लाया जा सकता है। वर्तमान में देश के कुछ राज्यों में इस विधि को आपदा के पश्चात होने वाले प्रभावों का आकलन किया है और इसके आधार पर दीर्घकालीन पुनर्निर्माण की नीति विकसित करके आगे बढ़े हैं। इस ओर राष्ट्रीय प्रबंध संस्थान का यह प्रयास सराहनीय है।

मैं एक बार पुनः इस अंतर्राष्ट्रीय स्तर का कार्य करने हेतु राष्ट्रीय आपदा प्रबंधन संस्थान को हार्दिक बधाई देता हूँ।

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(नित्यानन्द राय)



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3rd September, 2019

Message



Over the last twenty years, the practice of post-disaster recovery has undergone significant transformation. This change is characterized by three features: first, there is much greater focus on multi-sectoral, comprehensive recovery; second, there is much greater focus on “building back better,” not only in physical terms but also in terms of better socio-economic conditions; and third, there is much greater focus on recovery outcomes rather than on inputs. For example, in the education sector, we measure success in terms of enabling access to a safe and healthy learning environment as opposed to the number of classrooms built.

This transformation in the practice of post-disaster recovery is underpinned by the development of post-disaster assessment methodologies. We have come a long way from assessing only the damages and losses from disasters to assessing the needs of the affected communities. In this context, I congratulate NIDM in systematizing the practice of post-disaster assessments in the form of this volume. This is an important contribution to the practice of disaster risk assessment and ultimately post-disaster recovery.

I am sure this will go a long way in meeting the needs of multiple stakeholders – local governments, non-governmental organizations, academic institutions – who are supporting post-disaster recovery in the country.

Kamal Kishore

Foreword



Disaster disrupts development and the dividends of development get seized. For regaining the growth gaps, created due to disasters, long term recovery becomes the only choice. In the light of understanding the disaster impact on economy, Post Disaster Needs Assessment is required to be done. PDNA also facilitates in understanding the impact of disaster in terms of direct and indirect loss. In resource gap scenario, PDNA is a good tool to be adopted by the states.

National Institute of Disaster Management has developed PDNA tool customized to Indian conditions under the National Cyclone Risk Mitigation Project of Government of India which was implemented by National Disaster Management Authority and funded by The World Bank. I would like to mention that it's a very pragmatic and easy to use tool. NIDM has also developed a user manual and professional development Modules for using the PDNA tool.

This is going to be the new beginning in the area of disaster management impact assessment for understanding the real impact of disaster event holistically. It will not be an exaggeration in saying that this process would help in setting new era of development environment of the disaster affected states in the post disaster scenario and in development planning by the sector.

I complement Prof. Santosh Kumar and Shri Shekher Chaturvedi, NIDM and other team members who have facilitated the process.



Manoj Kumar Bindal

आपदा प्रबंधन महाविचार: पूरा भारत भागीदार

Acknowledgement

Indian states are submitting their memorandum of loss assessment in the post disaster scenario. The assessments are done with a conventional tool while applying across the sectors. The memorandum of the states are based on the direct loss basis which is largely calculated on the replacement cost basis on current price. The memorandum does not cover the indirect loss i.e loss in flow or revenue loss basis (indirect cost). NIDM has completed the tools for calculating indirect loss, opportunity cost loss and its impact on the macro economy of the affected state. The current tool is an improvisation on the international tool initially developed by UNECLAC (United Nation Economic Commission of Latin American Countries). It has been customized to Indian system and procedure made easy to use by the officials at the local levels. The study was proposed by NIDM to National Disaster Management Authority and subsequently examined and proposed by NDMA to DM Division of MHA and the World Bank for its approval and the funding support. The World Bank funded the study and NIDM hired the services of Asian Disaster Preparedness, Bangkok. I got the opportunity of leading and coordinating the study and Shri P. G. Dhar Chakrabarti, the then Executive Director of NIDM guided the team extensively. I am also grateful to subsequent executive directors of NIDM Dr. Satendra, Mr. Bipin Mallick, Mr. Sanjeev Jindal, Mr. B. H. Anil Kumar, Ms. Rajini Sekhari Sibal and Maj. Gen. Manoj Kumar Bindal for continuously supporting for its implementation and institutionalization.

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Prof. Santosh Kumar
NIDM

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1: Introduction

The PDNA Training of Trainers (ToT) module has been developed as a resource for the perspective trainers, who will be facilitating training programmes on PDNA with the overall objective to create a pool of PDNA Professionals. These trained professionals are expected to lead, conduct and support the PDNA exercise in the aftermath of a disaster, in accordance with the methodology contained in the PDNA Handbook for India.

This ToT module should be used in along with the PDNA Professional Training module and the PDNA Handbook for India. The purpose of the PDNA Professional Training module is for the application of the PDNA India tools, whereas the PDNA ToT Module is for replication by trained professionals and institutions.

The ToT module contain seven Learning Units (LUs):

- LU 1 to LU 6: It contains technical aspects of PDNA and is in sync with six LUs of the PDNA Professional Training module.
- LU 7: It contains guidance on training and skills development including facilitation of PDNA training sessions and usage of PDNA training tools.

The ToT module will help the Trainers or Facilitators on delivering key message for each LUs to the participants and thus meeting the objective of the unit. Case studies are presented in LUs for the participants/trainees to improve understanding as well as application of the PDNA methodology.

The LU on improving training and skills development is for the Trainers/Facilitators to get prepared prior to the PDNA training activities. It provides check list for conducting and managing PDNA training activities including the assessment form by which the participants/trainees will be given the opportunity to provide feedback on the overall PDNA training. This will provide inputs that will improve the conduct of future trainings by improving content as well as process.

Getting Ready for PDNA Training

Scenario 1:

Imagine that you've just led a PDNA training session. Unfortunately, it didn't go as well as you'd hoped.

Self-Retrospection



First, you forgot to cover some important points in your presentation. Then, you ran out of time to answer questions, because you had to change your session at the last moment to cover the points you'd missed. All in all, you're not sure that people learned what they needed to know, and you wish you'd had a clearer plan for the session.

Scenario 2:

You invited eminent experts to deliver sessions on PDNA, they spoke for hours and the participant's feedback was not impressive. Unfortunately, the technical knowledge of PDNA could not enhance their capacity.

Self-Retrospection



PDNA training requires better preparation and adaptation of the methodologies and tools into practice.

Key Considerations

The PDNA training requires a session plan that provides a useful format for thinking about the activities and resources you'll use to guide a group toward a learning objective. To create an effective training session plan, take the following steps:

Step 1: Define your objectives.

Step 2: Clarify key topics and related concepts.

Step 3: Organize material.

Step 4: Plan presentation techniques.

Step 5: Include evaluation.

Step 6: Focus on timing.

Step 7: Training documentation table.

Training session plans take time to create, but they ensure that the information you need to teach follows a logical sequence. This will help participants engage with it, and, ultimately, understand and retain it.

Trainer/Facilitator Note

Like any other training, defining the objective is important. However, the objectives are not fixed for all PDNA trainings. The objectives should match with the target audience.

Step 1: Define your objectives

The first step is to specify what you want your trainees to learn, and determine how you will measure this. Think about these questions:

- What are the most important concepts or skills that trainees need to understand by the end of the class?
- Why are these concepts and skills important?
- How will you know that they have understood these correctly?

For PDNA training, the objectives are

- To understand existing post-disaster assessment systems.
- To learn the PDNA, its framework and procedures relevant to India.
- To learn tools to conduct sector assessment and aggregation of disaster effects and impact.
- To identify and priority needs for development of comprehensive recovery framework.

Tip 1:

You can use the ABCD Learning Objectives Model to set a training objective that comprehensively addresses your learners' needs.

This helps you understand your Audience, define the Behavior needed at the end of the session, specify the Conditions under which knowledge will be used, and determine the Degree of knowledge needed.

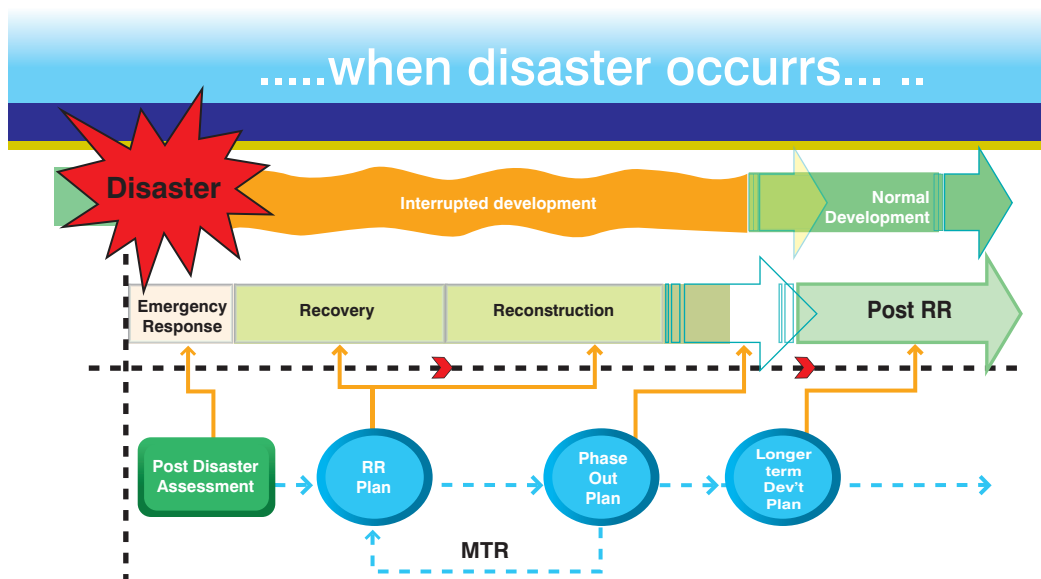
Tip 2:

You should only have one or two learning objectives for each session. If you have more, you are likely to have too much information to cover, and trainees may feel overwhelmed with the information.

Step 2: Clarify key topics and related concepts

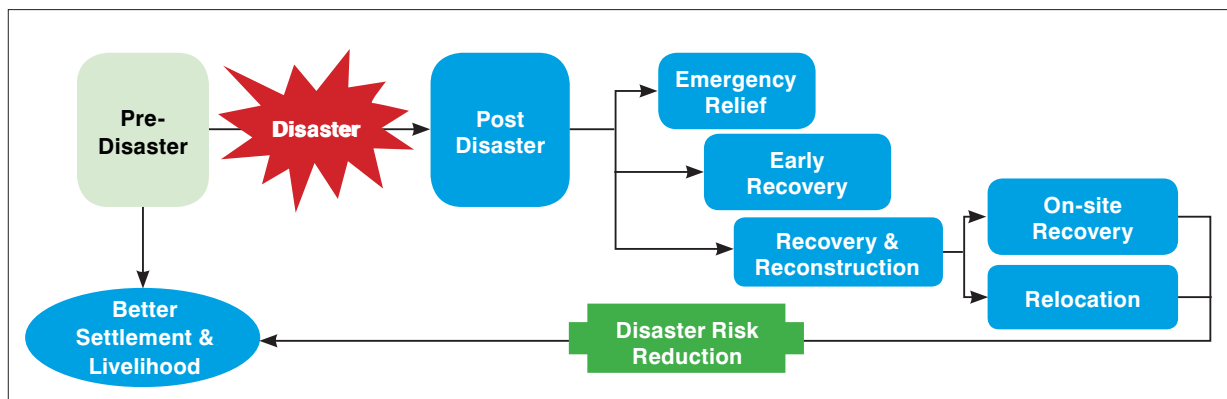
The PDNA training will focus on a few central ideas or skills, but you'll need to explain related concepts to reach your learning objectives.

List your key topics and their related concepts, and then group them together – for example, using this diagram – to show how they're connected.



Tip 3:

PDNA concepts should be linked to overall disaster risk management cycle. While defining the topics, have a clear idea that there is a pre-disaster element in post-disaster needs assessment. The illustration is presented below.



Step 3: Organize material

Once you have a general idea of what you need to cover, draft a lesson outline. List all of the points that you need to cover, in the order in which you'll cover them.

Now, insert the information from your outline into your training plan template. Check back against your initial brainstorming document to make sure that you've covered everything that you need to say. Also, compare your template with your objectives for the session, to make sure that you'll achieve them.

Tip 4:

For PDNA Training, you will need the following materials.

- PDNA Handbook and Tools for India.
- PDNA Professional Training Module.
- PDNA ToT Module.
- Power point presentations.
- Past PDNAs worldwide/Case studies.
- Scenario based exercises.

Step 4: Plan presentation techniques

Now think about how you will teach this material. It's best to use several different presentation approaches to keep students engaged, and to appeal to people with different learning styles. (This is very important, because learning styles vary widely).

Consider using these activities in your training session:

- **Lectures** are ideal for introducing a topic. Keep lectures short and summarize the important points at the beginning and end. You may want to use a guest speaker if the topic is highly specialized.
- **Demonstrations** work best when you need to show the steps in a process or task. Learners can try the task out for themselves, or you can demonstrate it in front of the group.
- **Discussions** and debates are useful after a lecture, because they allow trainees to ask questions about the concepts that they have just learned. Consider handing out a list of questions or topics to prompt a discussion.
- **Online learning** is helpful when trainees need to gain practical experience, if they need to access video or audio material, or if quizzes and self-test activities will be useful.
- **Role-play** involves trainees acting out a new skill in a simulated environment, and learning from feedback from other participants.
- **Small group exercise** helps learners clarify their understanding of the new information. They can explain it to one another in their own words, and answer the questions.
- **Case studies** can help learners put new information into context. As they process the information and relate it to a situation that's relevant to them, they create mental connections that will help them recall the information later.

Tip 5:

The participants are practitioners so treat them with adult learning methods.

- **Adult learning principles**
 - Bidirectional
 - Content to connect with experiences
 - Applicability
- **Learning environment**
 - Respect opinion
 - Learning by doing
 - Work in small groups
 - Fun element

Step 5: Include evaluation

Now, think about when you'll check that participants have understood key points. Build in learning checks and question-and-answer sessions, and include these in your presentation. Also, consider how you will evaluate the session.

Tip 6:

- Engaging participants during the session and seeking their opinion is best way to evaluate your performance.
- End of session or End of course evaluation is important.

Step 6: Focus on timing

Finally, think about the timing of your session. Some concepts or skills will take more time to master than others, so identify these up front, and allow students extra time to absorb or practice the material.

Record the time that you will allocate for each concept or section on your training plan, and make sure that you've allowed plenty of time to focus on the core concepts – if you don't have enough time, you'll need to run additional sessions, or narrow your learning objectives and reduce the number of topics that you plan to cover.

Tip 7:

The session timing should be planned carefully.

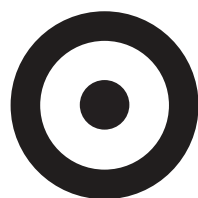
Step 7: Training documentation table

It is important to ask your co-facilitator to observe the training sessions and note down the important observation related to the elements as described from Step 1 to Step 6. A sample format is presented.

Session No.	Time	Duration	Content	Method	Media	Learner Activity	Trainer Activity	Remarks

Day No.	Learning Unit	Number of Hours	Topic	Methodology
1			Opening ceremonies	
	1		The present post-disaster assessment in India	Lecture, Video Discussions, Group work and Case Studies
			1. Disaster Response Funds guidelines	
			2. The Relief memorandum	
			3. Other protocols	
	2		The PDNA conceptual framework	
			1. Concepts and definitions.	
			2. The sectors for assessment.	
			3. Inter-sectoral linkages.	
			4. Crosscutting issues.	
	3		Standard procedures in undertaking a PDNA	
			1. Baseline information	
			2. Field Assessment	
			3. Aggregation of data	
			4. Estimation of needs	
2	4		Sector Guidelines for Undertaking PDNA	
			1. Baseline Information of Selected Sectors	
			2. Assessment of Disaster Effects	
			3. Estimating Damages and Losses	
3	5		Aggregation of disaster effects and impact assessment	
			1. Summary of damages and losses	
			2. Macroeconomic impact assessment	

			3. Social impact assessment	
			4. Exercises	
			5. Gender impact assessment	
			6. Personal and household levels impacts	
3	6		Estimation of post-disaster recovery needs	
			1. Identification of needs	
			2. Prioritization of needs	
			3. Estimation of the amount of recovery needs	
			4. Developing the recovery framework	
4-5	7		Improving Training and Presentation Skills for PDNA	Lecture, Group Work, Video, Case Study Simulation Exercise/ Practice
			1. PDNA Training Skills and Requirement	
			2. PDNA Delivery and Facilitation	
			3. Effective PDNA Learning Tools	
			4. Simulation Exercise: Conducting PDNA Training	
			5. PDNA Training Course Evaluation	



Learning Unit 1:

Post-Disaster Assessment Practices in India

Note: Refer the LU1 of the Professional Training Module for technical content

Learning Unit 1 will introduce the trainees to the current status of post-disaster assessment based on existing policies and protocols. In this learning unit, the justification why the PDNA methodology is needed in India will be discussed. The information that will be presented is based on the findings from field¹.

Learning Unit 1 at a glance



Learning Objective

- To get an overview of the current post-disaster assessment processes in India.
- To analyze the current post-disaster assessment processes in India and identify need for PDNA.



Sessions

- Session 1: Disaster Response Fund Guidelines.
- Session 2: The Relief Memorandum.
- Session 3: SWOT Analysis of the Current Post-Disaster Assessment in India.



Duration

Total: 120 minutes

- Current post-disaster assessment in India: 40 minutes.
- Relief memorandum: 30 minutes.
- Analysis of the current practices in India: 40 minutes.
- Summary and questions: 10 minutes.



Tools and Methodology

- **Training methods:** Lecture and Group Work.
- **Material required:** Projector, screen, laptop, White board, chart paper and marker.



Key Discussion Topics

- The roles of the Office of the Relief Commissioner in the Revenue Department of each State and Union Territory (UT) and the District, Block and Village Revenue Officers in post-disaster assessment.
- The contents of the “rapid assessment” reports, the supplementary “detailed assessments” and the “Relief Memorandum”.
- The general scope of assistance as defined by the National Disaster Response Fund (NDRF) and by the State Disaster Response Fund (SDRF).
- The strength and weaknesses of the existing post-disaster needs assessment system in India.
- The need to standardize the procedures for the estimation of damages, losses and needs in all States and UTs and ensure that the knowledge and skills in PDNA of national and state level officials is sustained.

¹ Asian Disaster Preparedness Centre (ADPC) conducted a series of consultations in 2014-15 to study the existing post-disaster assessment process including its strength and areas of improvement.

PDNA Trainer's Note

Session 1: Disaster Response Fund Guidelines

Session at a glance

Session objective	: To discuss and understand current post-disaster assessment processes in India.
Duration	: 40 minutes.
Tools and Methodology	: Training methods : Lecture and Discussion. Material required : Projector, screen, laptop, white board and marker.
Key discussion topics	: National Disaster Response Fund; State Disaster Response Fund; Disaster Management Act, 2005; Assessment process; Nodal ministries for disasters.

1. Explain the idea behind the NDRF and the SDRF

- The National Disaster Response Fund (NDRF) and the State Disaster Response Fund (SDRF) are two sources of post-disaster funding support.
- Based on set assessment procedures to estimate the amounts of relief assistance to be given to disaster-affected persons.
- The National Disaster Response Fund (NDRF) and the State Disaster Response Fund (SDRF) define the general scope of assistance to be provided to disaster-affected population in India – a summary table of assistance can be found in the Handbook. The summary table must be shown to the participants/trainees.

2. Briefly introduce the participants to the revised norms of assistance in 2013

- In 2013, the Ministry of Home Affairs issued revised norms of assistance from the State Disaster Response Fund and the National Disaster Response Fund that would be observed in the period 2010-2015² (it is recommended to familiarize yourself with the updated guidelines to provide the necessary information to the participants).

3. Introduce the participants to the process of post-disaster assessment in India following the Disaster Response Fund Guidelines

- The Office of the Relief Commissioner in the Revenue Department of each State and Union Territory (UT) is mandated to collect information on disaster effects after any disaster and to provide the required disaster response thereafter.
- The post-disaster “rapid assessment” reports are developed by District, Block and Village Revenue Officers as well as of supplementary “detailed assessments” are prepared by sectorial State Department Officials (including the Departments of Agriculture, Public Works, etc.) – please note that these reports form the basis of the Relief Memorandum which will be further discussed in the following session.

² Refer the communication sent on 28 November 2013 by the Deputy Secretary of the Government of India to the Chief Secretaries of all States and to Relief Commissioners/Secretaries, Department of Disaster Management of all States.

Session 2: The Relief Memorandum

Session at a glance

Session objective	: To discuss and understand current post-disaster assessment processes in India.
Duration	: 30 minutes.
Tools and Methodology	: Training methods: Lecture, Group work and Presentation by participants Material required: Projector, screen, laptop, white board, flip chart and marker.
Key discussion topics	: Relief memorandum, Process, sectors covered in relief memorandum.

1. Briefly describe the use of the Relief Memorandum

- The Relief Commissioner prepares a “Relief Memorandum” based on the “rapid assessment reports” and send it to the Central Government in order to obtain additional financial resources to meet post-disaster demands for assistance.
- Field verification missions are carried out by Central-level Departments to review the reliability and accuracy of the estimations for response fund assistance submitted by the States.

2. Introduce the participants to the contents of the Relief Memorandum

- Contents and details of the relief memoranda vary from state to state and from one disaster to another.
- Generally, it provides full information on the estimated value of required disaster response assistance based on the estimation of the extent and degree of damage and losses sustained by the affected population (please refer to the Handbook to show the example of the information collected by different departments in the state of Gujarat as part of the rapid and detailed assessments).
- Important: The values included in the Relief Memorandum are, incorrectly, called damage and losses. They actually represent the value of disaster response assistance needed, which is only a fraction of the value of damage and losses or of recovery and reconstruction needs.

Group work

- Some of the participants are likely to have experience of working on the Relief memorandum.
- The facilitator can request the participants to discuss in small group their experience of Relief memorandum covering the topics such as content, process including officers engaged, disaster covered in the memorandum, geographical area, year, challenges faced and outcome of the relief memorandum.
- Participants can share the findings with the class.
- In there is more than one case, the facilitator can prepare a comparative table against key parameters like content, process including officers engaged, disaster covered in the memorandum, geographical area, year, challenges faced and outcome of the relief memorandum.
- The facilitator should summarize key learnings.

Session 3: SWOT Analysis of the Current Post-Disaster Assessment in India

Session at a glance

Session objective	: To analyze the current post-disaster assessment processes in India and identify need for PDNA.
Duration	: 40 minutes.
Tools and Methodology	: Training methods: Lecture and Discussion.
Material required	: Projector, screen and laptop.
Key discussion topics	: SWOT Analysis of Relief memorandum; Relief memorandum vis-à-vis PDNA in context of Cyclone Phailin of Odisha.

Strengths: Simplicity and Efficiency.

- The amount of assistance to be provided to the affected population are pre-defined (not determined on the basis of actual field measurements of damage and losses sustained by the affected population); and.
- Assessments can be carried out by non-specialized technical and professional personnel at State levels and below.

Weaknesses:

- Lack of inflation adjustment: The rates of assistance to be provided have remained at fixed levels for a number of years, with only minor and partial adjustments for inflation.
- Lack of sector-inclusive approach: Not all sectors of economic and social activity are included in the analysis and some sectors are only partially included. Relevant sectors such as industry, commerce, tourism and others are not included.

Example: Response Assistance after Cyclone Phailin in Odisha, 2013

A comparison of the value of response assistance provided to the affected persons after the 2013 Cyclone Phailin disaster in Odisha vis-à-vis the estimated value of damage and losses obtained during the Rapid Damage and Needs Assessment conducted with support from the World Bank and the Asian Development Bank is quite revealing. While the latter report did not cover all affected sectors of social and economic activity and did not include a full estimation of the value of production and personal income losses, the estimated value of disaster effects reached a level of 93,170 million Rupees (or its equivalent of 1,500 million US Dollars), and the value of disaster response assistance was valued as only 43,110 million Rupees (or 685 million US\$), as shown in Table 2. This reveals that provisions in the Disaster Response Fund cover only less than half of the admittedly under-estimated value of total damage and losses.

- Limited to government-owned assets: The assessment of destroyed assets like buildings, machinery and equipment includes mainly those under the purview of government-owned activities, leaving aside those falling under private sector ownership (whether owned by individual persons or by enterprises).

- Lack of estimation of the total impact of the disaster: Assessment is focusing on the estimated value of assistance to be provided to the affected population as set forth in the Disaster Response Funds guidelines, thus it does not provide an estimation of the total impact of the disaster on social and economic conditions nor of the total needs for recovery and reconstruction.
- Lack of standardization: Results in the estimation of assistance requirements are not fully comparable across all States and over time which results in delays in approving requests at the Central Government level.
- Limited to relief assistance: Current assessment only partially covers recovery assistance and little or no reconstruction of destroyed assets using risk-reduction features.

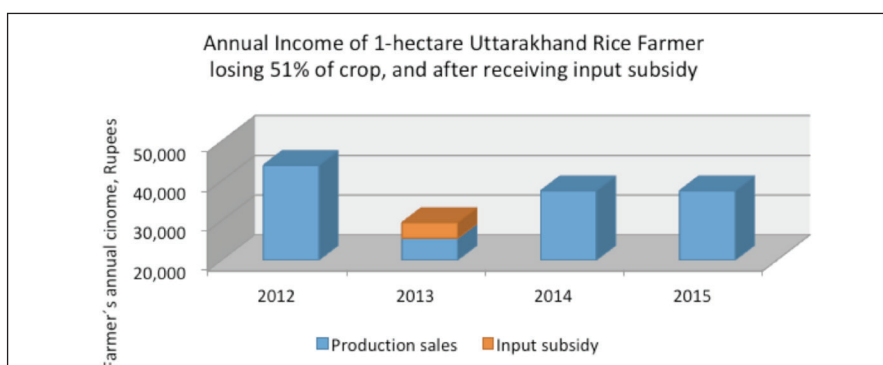
Example: Recovery of Housing after Cyclone Phailin in Odisha, 2013

In the case of the Cyclone Phailin in Odisha assessment, it is stated that the unit construction cost of destroyed houses ranges between Rs. 70,000 for Kutchha houses and Rs. 280,000 for Pucca houses, while the disaster response assistance to destroyed home owners was Rs. 15,000 and Rs. 70,000 for Kutchha and Pucca houses respectively as per the norms of the Disaster Response Fund. These amounts represent, respectively, 21.4 and 25.0 per cent of the total cost of reconstruction of each house type, and the homeowners need to obtain the balance from other sources (i.e. personal or family savings and/or credit loans) in order to rebuild their homes to the same pre-disaster characteristics and standards. If the additional funding required for reconstruction is not obtained from other sources, homeowners are forced to build their homes using lower quality materials and below.

- Limitations and shortcomings in scope: Currently, not all affected population is included to receive assistance – e.g. assistance is provided only to those farmers that lose more than 50 per cent of their crops, and no assistance is given to those that lose less than that value.

Example: Response Assistance after Uttarakhand Floods, 2013

Using data obtained in Uttarakhand after the 2013 floods disaster, it has been found that a farmer having a 1-hectare farm where he grows grain crops who losses more than half of his crop would receive crop input assistance that does not enable him/her to have sufficient money to plant the same extension of 1 hectare, and therefore his annual income would decline after the disaster and may in fact fall below poverty-level. And the farmers who lose less than half of their crops would face similar and probably worse situations.



Conclusion: Current assessment practices do not provide adequate information that may be used by the higher authorities to adopt adequate public policies for recovery and reconstruction, and as a result, the affected population faces longer periods of suffering to achieve recovery.

Opportunities:

- Willingness to adopt a scientific and comprehensive procedure for disaster impact assessments by State Government Officials.
- India PDNA project provides an opportunity to put in place a comprehensive and scientific system of disaster effect and impact assessment for the purpose of ascertaining post-disaster recovery and reconstruction financial needs assessment.

Threats: Should those opportunities not be grabbed opportunely, external threats arise that include:

- a. full recovery of production, availability and access to goods and services is not achieved by all affected persons after disasters;
- b. overall well-being and quality of life of the affected population worsens after disasters;
- c. disaster risk is increased after reconstruction of assets using non-improved standards;
- d. slowdown of overall economic growth and worsening of the fiscal position of the State and Central governments;
- e. significant delays in achieving Millennium Development Goals (MDGs); and.
- f. widespread dissatisfaction and complaints of the population with the amount and coverage of Government assistance provided after disasters.

Take away:

The adoption of the internationally-accepted PDNA methodology will enable India to assess post disaster needs holistically since it will include the appropriate estimation of damages and losses which will be inputs to an in-depth impact assessment (macroeconomic, macro-social, and the cross-cutting issues).

An in-depth impact assessment will lead to the proper identification and prioritization of post-disaster needs that will include the 'build back better' principle.

A complete PDNA report will be the sound basis for the development of a recovery plan where the government and international development partners can collaborate in resource mobilization, implementation, and monitoring and evaluation.

Useful examples:

In more recent years, at least three damage and needs assessments have been conducted with assistance from the World Bank, the Asian Development Bank and the United Nations after the Bihar floods in 2008³, the floods in Uttarakhand⁴ and Cyclone Phailin in Odisha State⁵, both in 2013. While these assessments

³ See Bihar, Koshi Flood (2008); Needs Assessment Report, Government of Bihar, World Bank, Global facility for Disaster Reduction and Recovery (GFDRR), June 2010; also, see UNDP-IHD, Koshi Floods 2008: How we coped and what we need? Delhi, January 2009.

⁴ See India, Uttarakhand Disaster, June 2013, Joint Rapid Damage and Needs Assessment Report, Government of Uttarakhand, Asian Development Bank (ADB) and World Bank, 2013.

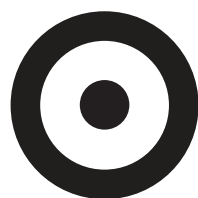
⁵ See India, Cyclone Phailin in Odisha, October 2013, Rapid Damage and Needs Assessment Report, State Government of Odisha, Asian Development Bank (ADB), and World Bank, 2013.

went beyond estimating relief stage requirements, the assessment methodologies that were used did not enable to obtain the value of production losses across the affected sectors, nor were all sectors of social and economic activity covered; furthermore, the data collected did not enable to estimate the macro-economic and personal-level impact of such disasters except in the case of 2008 Koshi floods, or the detailed estimation of recovery of production and personal income levels.

Frequently Asked Questions and suggestive points

- **How is Post Disaster Needs Assessment different from the existing Relief Assessment of India?**
 - The existing relief assessment system of India is primarily focused on immediate or emergency needs of the affected population.
 - PDNA assess damage and losses from disaster, its effect and impact and needs for recovery.
- **How is the PDNA process different from the rapid relief assessment process?**
 - Emergency relief assessment process starts immediately after a disaster while PDNA starts when rescue and relief activities are over or are tapering off. The PDNA should not hamper the rescue and emergency relief processes.
 - PDNA considers the outputs of the immediate relief assessment and other assessments undertaken immediately after a disaster.
- **Should the PDNA process be managed by the Relief Commissioner?**
 - Please refer to the Standard Operating Procedure of PDNA.
- **The house destroyed due to disaster was of 20 lakhs but relief assistance was only less than 20 lakhs. Why?**
 - The relief assistance provided in cash or kind is an ASSISTANCE and not a total COMPENSATION for the house. The objective is to assist the affected person to recover; not to 'pay' him/her of what he lost.
- **Explain difference between recovery, reconstruction and early recovery**
 - **UNISDR** defined recovery as 'Restoration, and improvement where appropriate, of facilities, livelihoods, and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.
 - **IFRC** has defined recovery and early recovery as follows: **Recovery**, in the context of disaster response, is a process that results in people's lives returning to normal in a way that they will be more resilient to future disasters. The extent to which people can recover after a disaster depends on the situation beforehand and how robust or resilient their resources are to withstand the effects of the disaster. For some, recovery will be relatively quick; for others it may take years. **Early recovery** is the process of people's lives returning to normal in the immediate aftermath of a disaster. It involves providing assistance to people in the early stages of disaster response in conjunction with the provision of relief, improving the effects of the relief and providing the basis for longer-term recovery. Early recovery enables people to participate more readily in longer-term recovery activities.

- **The World Bank** defined it as 'Decisions and actions taken after a disaster to restore or improve the pre-disaster living conditions of the affected communities while encouraging and facilitating necessary adjustments to reduce disaster risk. Focused not only on physical reconstruction, but also on the revitalization of the economy, and the restoration of social and cultural life'.
- It is important to consider **recovery** as a continuum rather than as a distinct phase of the disaster management cycle. Recovery usually begins in the early days of emergency relief efforts and continues downstream in form of development programmes, recovery continuum should be seen as stretching from pre-disaster planning, to relief and reconstruction to development.
- **Since the PDNA process takes time, it delays relief distribution. Is this correct?**
 - The immediate relief distribution should not be delayed because of PDNA. The PDNA process should start when the emergency phase is over or tapering is off. It is not intended to replace the relief distribution system.
 - PDNA output provides comprehensive information on damage, loss, effect, impact and needs and it is primarily intended for helping in medium-long term recovery and reconstruction.



Learning Unit 2:

The Conceptual Framework for Post-Disaster Needs Assessment

Note: Refer the LU2 of the Professional Training Module for technical content

In Learning Unit 2, the general concept of damages, losses, impacts and needs and their interrelation across sectors will be presented and explained to the participants/trainees. This part will prepare the participants/trainees for the lecture on the detailed post-disaster assessment of the various sectors.

Learning Unit 2 at a glance

	Learning Objective	• To explain key terms and concepts related to Post-Disaster Needs Assessment (PDNA). • To introduce the PDNA methodology including sectors, it's inter-linkages and cross-cutting issues of PDNA .
	Sessions	• Session 1: Concepts and Definitions. • Session 2: The Sectors for Assessment. • Session 3: Inter-sectoral Linkages. • Session 4: Cross-Cutting Issues.
	Duration	Total: 180 minutes • Key terms and concepts related to PDNA: 90 minutes. • Sectors in PDNA and the National System of Accounts for India: 30 minutes. • Inter-linkages between sectors and impact to economy and people: 20 minutes. • Cross-cutting issues in PDNA: 40 minutes.
	Tools and Methodology	• Training methods: Lecture, Case Study, Video and Group Work. • Material required: Projector, screen, laptop, speaker, chart paper and marker.
	Key Discussion Topics	• The basic definitions used in post-disaster assessment worldwide. The definitions are intended to orient the participants on what are considered damages and how they are valued compared to what India is currently using. • Introduce the concept of the changes in economic flows (or what are generally losses since most of them are negative flows). • The sectors as classified in the PDNA and the National System of Accounts for India. • The inter-relationships of the damages and losses across the sectors and their potential impacts to the economy and the people. • The potential impacts of damages and losses to other cross-cutting concerns like the environment, livelihood, gender, governance, migration, etc.

PDNA Trainer's Note

Session 1: Concepts and Definitions

Session at a glance

Session objective : To discuss concept and definitions related to post-disaster needs assessment.

Duration : 90 minutes.

Tools and Methodology : Training methods : Lecture, Discussion and Group work.
Material required : Projector, screen, laptop, flip chart, white board and marker.

Key discussion topic : Damage, Loss, Needs, Effect and Impact

1. Discuss the key assessments included in the PDNA methodology

- The PDNA methodology combines Damage and Loss Assessment (DALA) methodology, The Human Recovery Needs Assessment (HRNA) methodology and the Social Impact Assessment (SIA) methodology to assessing disaster effects, impacts, and needs.

2. Explain the difference between damage and loss (please ensure that participants are clear about the difference between these two concepts):

- **Damage:** Refers to the total or partial destruction of physical assets existing in the affected areas. Damage is measured in the estimated replacement value of the physical, durable assets that are destroyed or damaged.

Example: Damage Overview, Koshi, 2008, Bihar, India

The World Bank conducted a Needs Assessment in the aftermath of the 2008 Koshi Floods in Bihar, India. It covered only four sectors and some sectors that are normally covered in typical Needs Assessments were not been covered due to negligible damage in those sectors, paucity of time, prioritization of sectors by the Government of Bihar (GoB) and constraints of data availability.

Housing: According to GoB figures, 236,632 houses were fully or partially destroyed across the districts of Supaul, Madhepura, Saharsa, Araria, and Purnea. The estimated damage is Rs. 5,935 million (US\$ 134.9 million). Of these, the first three districts were the worst hit with over 95 percent of the reported damage.

Roads and Bridges: About 1800 kilometers of paved and unpaved roads and about 1100 bridges and culverts were destroyed in the floods. Maximum damages were reported in Supaul, Madhepura and Saharsa.;

Water Resources (Irrigation and Flood Protection): Extensive structural damage was caused to irrigation and flood protection infrastructure, including the Koshi barrage. More than 6 km of the main Eastern Koshi Canal was fully damaged, 3 km of the branch, and 1 km partially damaged. Over 150 km of the distributaries and sub-distributaries were fully damaged, as well as 730 km of the watercourses, 151 canal bridges, and 138 regulators.

Agriculture and Livestock: Over 350,000 acres of paddy, 18,000 acres of maize and 240,000 of other crops were adversely affected, impacting close to 500,000 farmers. Approximately 10,000 milk animals, 3000 draught animals, and 2500 small ruminants perished in the disaster.

Source: Government of Bihar & et al, 2010

- **Losses:** Negative changes in economic flows such as temporary decline or stoppage of production of goods and services, in comparison to non-disaster conditions, as well as possible temporary increases in production costs caused by the abnormal operation of production systems until full recovery and reconstruction is achieved.

Example: Definition of Damage and Losses, Post-Nargis Joint Assessment (PONJA), Myanmar

The Post-Nargis Joint Assessment (PONJA) conducted in the aftermath of the Cyclone Nargis of 2008 in Myanmar, defined damage and losses to assess the impact on each sector as follows.

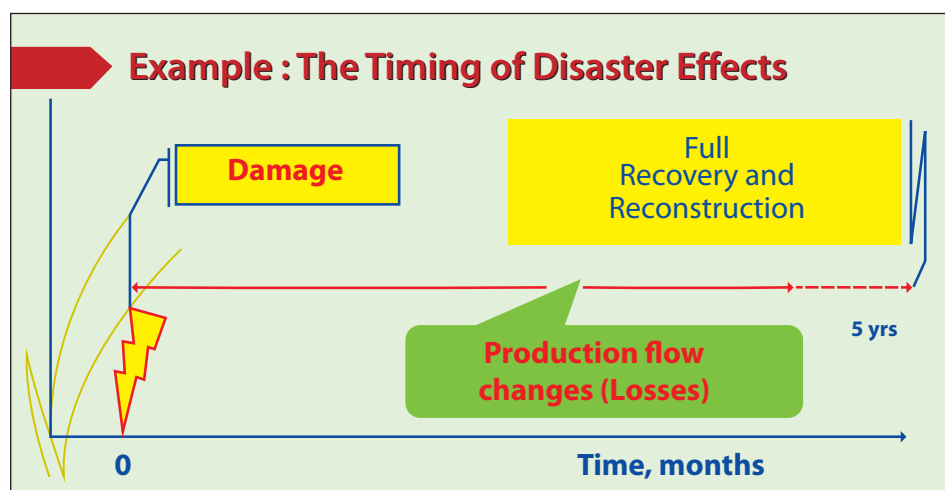
Damage: the estimated replacement value of totally or partially destroyed physical assets.

Losses: the estimated changes in the flow of the economy that arise from the temporary absence of the damaged assets; they include losses in production and higher costs in goods and services.

Source: TCG, 2008

3. Briefly introduce other frequently used terms in PDNA

- **Disaster effects:** includes damage to infrastructure and physical assets, economic losses, disruption of access to goods and services, disruption of governance and social processes, and increased risk and vulnerabilities.



- **Impact of disaster:** the consequences of disaster effects –**economic impact at macro and micro levels and human development impact** (please refer to the professional module for additional information about the two main elements for assessment).
- **Needs:** evidence-based estimations of financial requirements to achieve recovery and reconstruction of the affected areas and population based on the quantitative assessment of disaster effects and impacts.
 - *Recovery needs* involve a number of activities that would enable returning economic and living conditions to non-disaster conditions, including (i) recovery of personal and household income; (ii) rehabilitation of access and supply of basic services (such as health, education, food availability, water supply and sanitation, electricity, transport and communication, etcetera); and (iii) recovery of production (in agriculture, fishery, livestock, industry, commerce, etcetera).

- *Reconstruction needs* (often called physical recovery needs) involve the amounts of financing required to rebuild or replace all destroyed physical durable assets using disaster-resilient standards with a view to reduce disaster risk of the population and the impact of future disasters.

Example: Priorities of Recovery and Reconstruction, Nepal Earthquake, 2015

Short-term priorities include:

- Reconstruction of damaged DRR assets and improvements on BBB principle.
- Measures to improve preparedness, response, relief and logistics systems.
- Measures to strengthen information and communication capacities for relief, response and recovery.
- Measures to enhance multi-hazard risk monitoring, vulnerability assessment, risk information dissemination and awareness.

Medium to long term priorities include:

- Improvements in legal and institutional arrangements.
- Measures to mainstream DRR into the developmental sector, particularly housing, private and public infrastructure, social sectors (health and education), and livelihood.
- Measures to improve integration of climate change adaptation and DRR.

Source: PDNA, 2015

Group work

In order to practice the concept, the facilitator can present a scenario as follows:

- At Patna Railways Station, the Control Room was engulfed in a fire on 3rd July 2015. The train-signal system, communication system was out of order. Railways cancelled 45 trains on Day 1 of accident and 30 trains on Day 2. Railways set-up a temporary relief center and provided food to passengers for 2 days. Railways refunded to passengers. Also, railways hired 12 buses to transport passengers, who had urgency. Railways reconstructed the Control Office and bought equipment. Also, railways bought advanced fire control system.
- Participants should identify damage, loss and needs in the scenario and make a presentation.
- Result (Some items may be move from loss to damage based on the assumption):

c Damage:

- Control Room

• Loss:

- Train-signal system, communication system (if it was affected due to control room)
- Cancelled train
- Setting up Relief center
- Refund of ticket
- Hiring of buses

• Needs

- Reconstructed Control Office
- Purchase of equipment.
- Advanced fire control system

Session 2: The Sectors for Assessment

Session at a glance

Session objective : To understand sectors and sub-sectors for PDNA assessment.

Duration : 30 minutes.

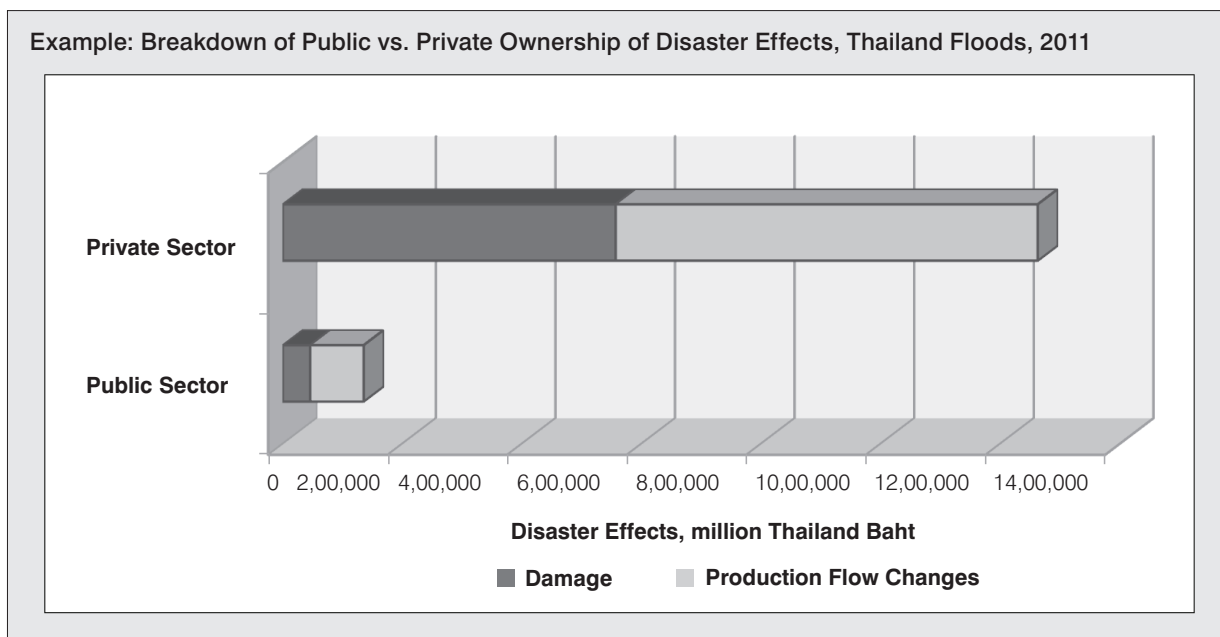
Tools and Methodology : Training methods: Lecture and Discussion.

Material required : Projector, screen, laptop, white board and marker.

Key discussion topics : Social, Infrastructure, Productive and Cross-cutting.

1. Stress the importance of including both the public and private sector domains in PDNA

- The current international practice requires the estimation of post-disaster recovery and reconstruction needs across all sectors of social and economic activity, in both public and **private sector domains**



2. Introduce the participants to the key sectors included in PDNA

Example: Compare Sectors Included in Uttarakhand Disaster, June 2013, India vs. Thailand Floods, 2011

The Joint Rapid Damage and Needs Assessment Report prepared by the Government of Uttarakhand, ADB and the World Bank covered the following sectors.

- Housing.
- Public Buildings.
- Roads and Bridges.
- Urban Infrastructure (Water Supply, Roads, Drains and Sewerage).
- Rural Water Supply and Sanitation.
- Irrigation.
- Livelihoods (Agriculture, Livestock, Fisheries, Tourism linked Livelihoods and MSME).
- Tourism Infrastructure.
- Energy.
- Forests and Biodiversity.

The main focus of the assessment was to estimate the damages to physical assets and the corresponding needs. The rapid assessment was broadly based on the Damage and Loss Assessment methodology (GoU and et al, 2013).

Source: PDNA, 2015

The assessment to measure the impact of Floods of 2011 on Thailand by the Government of Thailand, the World Bank and other Development partners covered 18 sectors and cross-cutting issues. The list of sectors is as follows:

Infrastructure

Transport; Flood control, drainage and irrigation; Telecommunication; Electricity; Water supply and sanitation.

Social

Health; Education; Housing; Cultural heritage; Social Protection; Social Impacts Assessment.

Productive

Agriculture; Industry and commerce; Tourism; Financial and insurance.

Economics

Macroeconomics; Livelihoods and Migrant workers.

Cross-cutting

Environment; Gender; Disaster Risk Management.

Source: The World Bank, 2012

- The **infrastructure sector** is composed mainly of transportation, power and water supply.
- The **productive sector** mainly consists of agriculture, commerce, manufacturing, tourism, and mining and quarrying.
- The **social sector** is composed of health, education and housing.
- The **cross-cutting concerns** that must be considered in the PDNA are the environment, culture, livelihood and gender, among others. The environment and culture are assessed separately while gender, livelihood, poverty/quality of life are embedded in the social impact assessment.

3. Explain the participants the linkages between the sectors of economic activity used in the System of National Accounts of India, and the identified PDNA sectors in India

- It is important to note that the sectors that will be assessed during the PDNA differ from the list of sectors of economic activity used in the System of National Accounts of India – please refer to the Handbook for additional information as well as a list of ministries and personnel responsible for each of the sectors during the post-disaster assessment.
- The use of the national accounting system is a pre-requisite for the valid application of the procedures for estimating disaster effects and impacts.

Session 3: Inter-sectoral Linkages

Session at a glance

Session objective : To under sectors and sub-sectors for PDNA assessment.

Duration : 20 minutes.

Tools and Methodology : Training methods: Lecture, Group work and Discussion.

Material required: Projector, screen, laptop, flip chart, white board and marker.

Key discussion topics : Inter-sector linkages, Direct linkage, Intermediary sectors, Transactions costs and Financial constraints

1. Raise awareness of participants about the inter-sectoral linkages that may affect sectors after disaster events

- Sectors do not operate in a vacuum and will likely be affected by changes of production in other sectors.
- Provide some examples to the participants:
 - Manufacturing firms that are dependent on agricultural products as raw inputs to production will experience a reduction in production if the agriculture sector is devastated by floods.
 - The number of tourist arrivals will decline if major airports were damaged by typhoons.
 - Access to social services like health (hospitals) and education (schools) will be cut if roads and bridges that link the people to facilities are destroyed.

2. Group work

- In order to practice the inter-sector linkages, the facilitator can conduct a small group work.
- Participants can be requested to select one sector or sub-sector such as power, agriculture, health, education, etc.
- Each group can identify the effect to other sectors/sub-sectors due to damage and loss to their selected sector or sub-sector.
- Group can share the findings.

Session 4: Cross-cutting Issues

Session at a glance

Session objective	: To discuss cross cutting issues in context of PDNA.
Duration	: 40 minutes.
Tools and Methodology	: Training methods : Lecture and Plenary. Material required : Projector, screen, laptop, white board and marker.
Key discussion topics	: Environment, Culture, Gender, Poverty and Quality of Life.

1. Introduce participants to the cross-cutting issues that are relevant when conducting PDNA

Environment:

a) *Briefly introduce the four groups of environmental assets.*

- Environmental assets can be divided in four groups: physical (climate, air, soil and water), biotic (human beings, flora and fauna), perceptual (landscape, scientific and cultural resources); and interactions between and among the above.

b) *Explain the current status of accounting for environmental assets and services.*

- Currently, the accounts of environmental assets and services are distributed throughout the individual, formal sectors of economic activity such as agriculture, forestry and fishing and water supply, sewerage and waste management.

c) *Introduce the possibility of introducing a “satellite account” on environment.*

- India is currently planning to introduce a “satellite account” on the environment in the national accounts – afterwards, environment could be considered as an individual sector of economic activity.

Culture:

a) *Introduce the existing categories for cultural related economic activities in the Indian system of national accounts.*

- In the national accounts of India, culture is included within Arts, Entertainment and Recreation.
- Existing categories: creative arts and entertainment, libraries, archives and other cultural activities, and sports, entertainment and recreation.

b) *Briefly introduce the additional categories suggested by UNESCO.*

- UNESCO suggested additional categories: built heritage and cultural/natural sites; moveable properties and collections; intangible cultural heritage; repositories of heritage (including museums, libraries, and archives); and cultural and creative industry.

c) *Draw attention to the difficulty of assessing the damages related to non-tangible cultural assets.*

- It is important to remember that there will be heritage facilities, artifacts and intangible cultural products and processes that are of particular spiritual or cultural significance and may yet never be able to be fully recovered or restored through reconstruction and so defy economic valuation.

Gender, Poverty and Quality of Life:

a) *Explain the difference between micro-level assessment and macro-level assessment:*

- *Micro-level assessment:* (i) household level is looking at changing roles and responsibilities, increased or decreased dependency (or burden of care) as a result of the disaster, changing patterns of income and consumption, changing risks to health and changing housing conditions and geographic location; (ii) individual level is looking at change in personal income (most significant indicator).
- *Macro-level assessment:* utilization of a selected number of indicators available at the national or state level that would be sensitive to disasters for use in measuring the impact of the disaster on the quality of life of the members of the community.

Example: Case Study Post Disaster Needs Assessment Cyclone Evan 2012, Samoa

Full case study can be found in the Professional Module under Learning Unit 2.

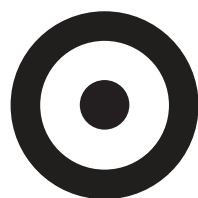
Topics to discuss:

- What methodology has been used in the Samoa PDNA?
- What has been the estimated economic impact of the Cyclone?
- What are the identified damages and what are the identified losses?
- What has been the social impact of the Cyclone?

Frequently Asked Questions and suggestive points

- Is loss of life is considered in the damage and loss?
 - PDNA does not consider loss of life in monetary terms when assessing damage and loss. The PDNA report provides information about number of deaths, injured, etc. with gender, age, income group, etc. segregation, if possible. Putting a monetary value to a human life raises several questions including ethical issues.
- How one can estimate loss of life in monetary terms?
 - Refer the above FAQ.
- If paddy is affected by a disaster, is it a damage or loss?
 - It depends, if paddy has been harvested then it is damage while if paddy crop is still in field and not ready for harvest, it is a loss.
- How to estimate psychosocial loss (invisible)?
 - It is captured in qualitative section/ narrative section of the PDNA report.

- Can damage be more than loss?
 - Yes.
- Is damage and loss equal to needs?
 - No. Needs will include build back better elements. For example, in case of the Nepal 2015 earthquake PDNA, the needs was less than the sum of damage and loss.
- Which value to use for estimating damage?
 - Repair of partially damaged structures, equipment other assets up to their pre-disaster condition.
 - Replacement of totally destroyed structures, equipment and other assets, valued at pre-disaster levels. The valuation can be estimated by:
 - The market value assets before they were destroyed.
 - Acquisition cost less depreciation.
 - Insurance valuation.



Learning Unit 3:

General Procedures in Undertaking a Post-Disaster Needs Assessment

Note: Refer the LU3 of the Professional Training Module for technical content

Learning Unit 3 introduces the general steps in conducting a PDNA. The required baseline information for each sector and its importance will be emphasized including the cautions that must be observed to avoid double counting within and across the sectors. The logical sequence from baseline information gathering up to estimation of needs will be explained to prepare the participants/trainees in the assessment of their sector of expertise.

Learning Unit 3 at a glance



- Learning Objective**
- To introduce general step in conducting a PDNA.
 - To understand required baseline information for each sector and its importance.
 - To understand the requirements of field assessment.
 - To understand assessment of disaster effects and impacts on each sector.
 - To determine the recovery needs.



- Sessions**
- Session 1: Baseline Information.
 - Session 2: Field Assessment.
 - Session 3: Aggregation of Data and Impact Assessment.
 - Session 4: Estimation of Needs.



- Duration**
- Total: 100 minutes**
- Introduction to general steps of a PDNA: 10 minutes.
 - Understand and develop baseline for assessment: 30 minutes.
 - Undertaking field assessment: 20 minutes.
 - Aggregation of Data and Impact Assessment: 20 minutes.
 - Estimation of Needs: 20 minutes.



- Tools and Methodology**
- **Training methods:** Lecture, Case Study and Group Work.
 - **Material required:** Projector, screen, laptop, chart paper and marker.



- Key Discussion**
- Livelihood, gender, governance, migration, etc.
 - Baseline information is pre-existing data on the assets, services provided and/or production capacities of natural resources or facilities in a certain area. They provide guidance to the sector assessment teams on the location of assets, the production and service capacities, etc. which will be the basis in the valuation of the disaster effects.
 - Field assessments should be conducted by trained personnel in their sector of expertise.
 - Overall macro-economic and social impact assessments are based on the aggregate effects and impacts on the various sectors.
 - Needs are identified based on the potential adverse impacts on the people and the economy if nothing is done to counter such identified potential impacts. Needs, therefore, become the main basis of a post-disaster recovery plan.

PDNA Trainer's Note

Session 1: Baseline Information

Session at a glance

Session objective	: To understand need of baseline information and to introduce the baseline data collection formats.
Duration	: 40 minutes.
Tools and Methodology	Training methods : Lecture and Discussion. Material required : Projector, screen, laptop, white board and marker.
Key discussion topics	General steps in PDNA, Format of baseline information for sectors, Accuracy vis-à-vis speed in PDNA, Composition of Assessment Team, Baseline data collection levels.

1. Explain the rationale behind the baseline assessment

- General pre-disaster conditions (social, economic, cultural and political) have to be identified which serve as a baseline to compare with the post-disaster situation in the affected areas.

2. Introduce the required information

- Generally, the information collected includes the following:
 - Pre-disaster demographic, socio-economic, geographic and cultural information.
 - Pre-disaster data for each sector;
 - Nature and extent of pre-disaster hazards, vulnerabilities and risks;
 - National, state and local (divisional, municipal, district, etc.) development plans, socio-economic goals in the annual, 5-year plans, other development plans, poverty reduction strategies.
- All relevant data should be disaggregated by sex, age, disability, characteristics if relevant to the identification of specific vulnerabilities and opportunities that women, girls, boys and men, and other vulnerable groups may encounter.

3. Explain what should be done in non-availability of baseline data

- Estimate a baseline data on the basis of discussion with key informants.
- Arrive at a baseline data on the basis of visual impressions of unaffected areas and its comparison with the affected areas, provided there are geo-referenced data corresponding to the images.
- In certain situations, where satellite imagery of pre-disaster situations is available, these images could be interpreted to develop sector-wise baseline data.

4. Explain usage of baseline data

- Baseline data helps in presenting a comparative analysis of pre-disaster and post-disaster situation. For example, the PDNA report for Cyclone Evan in 2012 in Samoa provided used baseline information

to present pre-disaster situation for all affected sectors before presenting the effect and impact of the Cyclone Evan to the particular sector.

For example, in Manufacturing and Commerce in Pre-disaster situation, Samoa.

The manufacturing sector includes the components of food and beverage manufacturing and other manufacturing activities. Its annual output represents 8.9 percent of the country's gross domestic product (GDP). The commerce sector, at both wholesale and retail levels, represents a significant fraction of the Samoan economy, estimated at 18.7 percent of the value of GDP.

In terms of employment, 2,465 persons are formally employed in the manufacturing sector and 3,530 persons in the commerce sector, or 4.9 and 7.1 percent respectively of the total labor force of the country. Needless to say, many more persons are informally involved in trading, as a supplementary income-earning activity.

In 2011, production in the manufacturing sector experienced an overall 14.7 percent decline in growth when compared to the previous year, mainly due to a slowdown in the "other manufacturing" category, though growth in the food and beverage industry was 1.4 percent. A relatively robust growth of 3.0 percent occurred in the commerce sector that year. Prospects for growth in 2012 were relatively good, but the Cyclone Evan disaster introduced negative impacts, which are to be felt mainly in 2013.

Session 2: Field Assessment

Session at a glance

Session objective : To provide an overview of field assessment approaches and its objective.

Duration : 20 minutes.

Tools and Methodology : Training methods : Lecture and Discussion.

Material required : Projector, screen, laptop, white board and marker.

Key discussion topics : Field visit, Sample survey, Effect on each sector.

1. Introduce the rationale behind the field assessment.

- Assessment of disaster effects
- Estimate the extent of destruction of physical assets and the negative effects on the production of goods and services arising from the disaster.
- Enables the estimation of the value or cost of the effects of the disaster (damage and production flow changes).

2. Discuss the information included in the field assessment.

- Damage to infrastructure and physical assets in all sectors, productive and social.
- Losses across sectors with regard to production flows, supply of all sectors as well as demand constraints.
- Disruption of service delivery and access to goods and services.

- Disruption of governance and social processes.
- Increased risks and vulnerabilities, and environmental impact.

3. Stress the difference between damage and losses again

- Damage: calculates the total or partial destruction of physical assets and infrastructure in the affected areas, in measures of physical units for all sectors (refers to infrastructure and physical assets in all sectors, productive and social).
- Losses: changes in economic flows arising from the disaster which continue until the achievement of full economic recovery and reconstruction - in some cases lasting for several years.

Example: Damage and Losses Due to Indian Ocean Tsunami 2004 in India

The Indian Ocean Tsunami of 26th December 2004 affected a number of countries in Asia and Africa including India. In India, 4 States and Union Territories were affected. The Asian Development Bank, the United Nations and the World Bank jointly conducted an assessment of the socio-economic and environmental impact of the Tsunami in 4 states and union territory (UT). The findings are summarized in the table below. It was not the final assessment. The assessment defined Damage (direct impact) as the impact on assets, stock and property valued at agreed replacement (as opposed to reconstruction cost) unit prices. Losses (indirect impact) referred to flows that will be effected, such as reduced income, increased expenditure over the time period until asset are recovered.

State/UT	Damage	Losses	Total
Andhra Pradesh	29.7	15.0	44.7
Kerala	61.7	39.1	100.8
Tamil Nadu	437.8	377.2	815.0
Pondicherry	45.3	6.5	51.8
Total	574.5	437.8	1012.3
<i>(in USD million)</i>			

Source: ADB et al, 2005

4. Discuss additional information that will be evaluated.

- Disruption of Social Service Delivery and Access to Goods and Services.
- Disruption of Governance and Social Processes.
- Increased risk and vulnerabilities.

Session 3: Aggregation of Data and Impact Analysis

Session at a glance

Session objective	: To introduce the process of data aggregation for estimating disaster effect and provide an overview of disaster impact.
Duration	: 20 minutes.
Tools and Methodology	Training methods : Lecture and Discussion. Material required : Projector, screen, laptop, white board and marker.
Key discussion topics	: Data aggregation, Macro economic analysis, Social impact analysis, Quality of life at individual and household level.

1. Introduce the process/methodology behind aggregation of data

- Aggregation of sectorial disaster effects, ensuring no double or multiple accounting, to estimate the total value of damage and production flow changes caused by the disaster.

2. Draw attention to the difference between disaster effects and disaster impacts

- The impacts of disaster are consequences of the effects.
- Discuss the example: Disaster effect vis-à-vis impact: Thailand Floods 2011.

Example: Disaster Effects Vis-à-vis impact: Thailand Floods 2011

Background: In 2010, Thailand was badly affected by floods and 66 of the country's 77 provinces were flooded. It led to loss of 680 lives and accumulated affected population was estimated at 13.57 million.

Disaster effects:

- The most affected crops were rice, sugar cane, cassava, sweet corn, maize, vegetables, and fruit trees (e.g., milk banana, guava, mango) planted in approximately 11,460,000 rai (1hectare= 6.25 rai) of land.
- Total number of livestock lost is about 29.34 million heads.
- The damage and loss to industry was 248 billion baht (Thai currency).
- The damage and loss to transport sector (road, air, air and water) was 30.5 billion baht.
- The electricity sector (power plants, sub-station and distribution networks) damage and loss was 8.9 billion baht.

Disaster impacts:

- The estimated tax revenue loss is around THB 66.5 billion, or 3.7 percent of the estimated pre-flood revenues.
- It will result in a reduction in real GDP growth in 2011 by 1.1 percent, increase real GDP growth in 2012 by 1.7 percent, and reduce in 2013 real GDP by 0.5 percent.
- The current account balance in 2011 is estimated to fall to USD 11.9 billion compared to USD 20.6 billion had the flood not happened.

Source: The World Bank, 2012

3. Discuss the impact of disasters on social and economic development

The impact of a disaster is defined as the consequences arising from the combination of destruction of physical assets and the disruption on production and access by the population of goods and services. Disaster impacts are to be measured at different levels of analysis: (i) the consequences of disaster effects on the overall production and growth of the economy or macro-economic impact; (ii) the consequences of disaster effects on the macro-social or human development conditions, and (iii) the consequences of disaster effects on the quality of life of individual persons or families. Do not forget to include the impact of disasters on cross-cutting issues such as environment.

- **Social development:**

- Decline in well-being, quality of life and human development; decline in personal or household income, and rise in costs of living; Increase in poverty levels and numbers.
- A disaster's impact on human development is known to persist long after physical reconstruction is complete. It is therefore essential that the impact on human development be accurately assessed so that the recovery strategies can be put in place to mitigate development reversals.
- Possible indicators: Human Development Index (HDI), the Hybrid HDI, the Inequality-adjusted HDI, the Multi-dimensional Poverty Index and the Gender Inequality Index.

Example: Effect of Indian Ocean Tsunami 2004 on Social Processes in India

The majority of those affected on the coast were fisher folk, who suffered the most damage in terms of housing and livelihoods with loss of dwelling units, household assets, and productive assets like boats and nets. The disaster has most adversely affected the livelihoods of those that were already poor. The vulnerability of these communities is accentuated by their indebtedness to big merchants and informal moneylenders with whom many had current borrowings, lack of access to markets and credit, absence of social security nets, and socio-political marginalization. The immediate need is the provision of livable temporary shelters for displaced people, and creating income-generating opportunities.

Relocation of affected people is an important question that must be addressed immediately. A key concern is that the impact of relocation on livelihoods should not increase vulnerability and thus defeat the very purpose of the relocation. Thus the states' recovery strategy will need to strike a balance between short and long term social security, livelihood and hazard risk reduction needs.

Source: ADB et al, 2005

Example: 2010 Pakistan Floods Impact on the MDGs

The 2010 Pakistan floods had following impacts on the Millennium Development Goals (MDGs).

- 5 million people have become undernourished in the affected, and the significant damage to crops has affected the livelihoods of 5.2 million workers. High food prices and reduced access to food will push more people into poverty (Goal 1).
- Almost half a million children are prevented from attending primary schools due to damage to the buildings as well as the use of schools as temporary shelters (Goal 2).
- 2.8 million under 5s developed acute respiratory diseases and diarrhea (Goal 4).
- Stagnant water is becoming a favorable habitat for malaria, and is thought to have affected 1 million people nationally (Goal 5 and 6).

Source: ADPC, 2012

- **Economic development:**

- Decline in overall production and growth; possible increase in inflation; deterioration of governance functions.
- To measure the impact on macro-economic variables, analyses are usually made of the post-disaster performance on gross domestic product (GDP), the balance of payments (BOP) and the fiscal sector.
- The attempt to include an estimation of the impact on personal and household well-being in contexts where productive activity is undertaken through the informal sector, subsistence farming and unpaid family work continues to pose a challenge.

Example: Case Study Macro-Economic Impact of 2004 Indian Ocean Tsunami on India

Full case study can be found in the Professional Module under Learning Unit 3.

Topics to discuss:

- How is the impact on expenditures defined?
- Why are the fiscal costs divided in two categories?
- Are any of the macro-economic impacts surprisingly?

Example: Effect of Gujarat Earthquake 2001 on Environment

The major direct environmental effect include:

- Debris and rubble removal and disposal, which has been estimated at 10 to 20 million metric tons (MT) in urban areas and 15 to 30 million MT in rural areas.
- Impacts and residual risks from damage to industrial facilities.
- Impact to water and water management resources.
- Impacts to municipal and industrial environmental infrastructures such as sewage and wastewater treatment.

A number of indirect environmental effects are also anticipated and, where appropriate, should be monitored and mitigated. The more significant indirect impacts include:

- Poorer sanitation and waste management practices.
- Increase in industrial pollution due to reconstruction activities requiring millions of tons of construction materials.
- Changes in land use due to need for rubble disposal sites and potential relocation of villages.

As all environmental effects and impact cannot yet be assessed, the development of a comprehensive environmental monitoring program becomes an important priority. Key sectors with yet unknown environmental impacts include: Potential impact of the earthquake on aquifers and groundwater movement and Potential impact on ecosystems.

Source: GoG et al, 2001

Session 4: Estimation of Needs

Session at a glance

Session objective	: To introduce the process for estimation of recovery and reconstruction needs and also types of needs .
Duration	: 20 minutes.
Tools and Methodology	: Training methods : Lecture and Discussion. Material required : Projector, screen, laptop, white board and marker.
Key discussion topics	: Recovery needs, Reconstruction needs, Process for reconstruction needs estimation.

1. Briefly explain the linkages between the baseline assessment, field assessment, data aggregation, impact assessment and recovery needs identification

The quantitative data obtained from the PDNA assessment of disaster effects and disaster impact need should be consolidated and presented in a manner that provides the comprehensive picture of all sectors and areas affected.

2. Introduce the four components that are determined for recovery needs.

- The reconstruction of damaged infrastructure and physical assets.
- The resumption of economic and social activities, service delivery and access to goods and services.
- The restoration of governance and social processes.
- Build back better and risk reduction.

Example: Case Study Hazard Risk Management Needs in 2004 Indian Ocean Tsunami Affected Areas in India

Full case study can be found in the Professional Module under Learning Unit 3.

Topics to discuss:

- Why have the hazard risk management needs been divided in short and medium term components?
- Is any of the numbers in the table surprisingly high or low?
- Are there any additional long-term measures that should be accounted for?

Example: Timeline for Joint Rapid Damage and Needs Assessment after Uttarakhand Floods, 2013

It is important to note that the main focus of the assessment was to estimate the damages to physical assets and the corresponding needs to five worst affected districts.

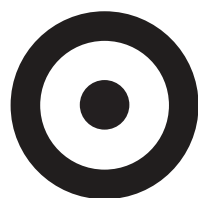
Time	Period Activity.
July 22-26	Mobilize sector teams and coordination with GoU.
July 29	Kick off meeting with the GoU (presentation to the mission team by GoU and sharing of information by officers from all line agencies and their contact details for further discussions).
July 30 - 31	Sector-wise meeting with line agencies for data collection.
August 01 - 04	Preparation of draft assessment report.
August 05 - 06	Filling up data gaps and updating of the report.
August 07	Wrap-up and presentation of report.

Source: GoU, 2013

Frequently Asked Questions.

- **What is timeline or duration in estimating damages and losses after disaster?**
 - The duration of a PDNA varies depending on the scale and magnitude of the disaster and other factors. Timely delivery of the assessment should be a guiding principle in the conduct of the PDNA.
- **What is the ideal time for starting PDNA?**
 - PDNA should not interfere with the humanitarian operations and resource mobilization processes. However, it is equally important to ensure that the PDNA is not delayed to the extent that the “window of opportunity” to influence and start recovery is lost, as also opportunities for prompt mobilization of resources.
- **Can you explain difference between disaster effect and impact?**
 - Disaster effects are the immediate results of a disaster (deaths, injuries, damages and losses) while impacts are the medium to long-term consequences of the effects (livelihoods, employment, incomes, social and macro-economic, as well as environmental, among others). The impact analysis is based on the assessment of the disaster effects and their consequences on the social and economic targets; sector development plans, and some emerging concerns. The analysis of the impact of the disaster provides the medium and long-term projection of the effects on the sector. The impact analysis forms the basis of the recovery strategy.
 - Disaster effects include:
 - Damage to infrastructure and physical assets in all sectors, productive and social.
 - Losses across sectors with regard to production flows, supply of all sectors as well as demand constraints.
 - Disruption of service delivery and access to goods and services.

- Disruption of governance and social processes.
- Increased risks and vulnerabilities, and environmental impact.
- Disaster impact include:
 - Macro-economic impact: It includes an estimation of the disaster's likely effects on economic performance. It measures the temporary macro-economic imbalances that may arise, as well as the potential temporary decline in employment, income and well-being of affected individuals and households.
 - Human development impact.
- **If Environment is a crosscutting issue then why it is sector?**
 - Environment is still evolving as a sector in many countries and in some countries it is a sector. Also, environment is linked with almost all sectors and hence treated as cross-cutting issue.
- **We do not have baseline information so how can we do PDNA?**
 - In those situations where the baseline data is not available in the census, sector or local surveys or sector and disaggregated reports, it may be necessary to estimate a baseline data on the basis of discussion with key informants. It could also be feasible to arrive at a baseline data on the basis of visual impressions of unaffected areas and its comparison with the affected areas, provided there are geo-referenced data corresponding to the images. In certain situations, where satellite imagery of pre-disaster situations is available, these images could be interpreted to develop sector-wise baseline data.
- **Can a disaster has positive impact?**
 - Yes. Flooding can increase productivity in some cases. Also, recovery and reconstruction can lead to boom in certain sectors in a certain area.



Learning Unit 4:

Sector Guidelines for Estimating Damages and Losses in Undertaking PDNA

Note: Refer the LU4 of the Professional Training Module for technical content

Learning Unit 4 introduced the various sectors that should be assessed in detail. Each sector with all its components will be discussed to emphasize their uniqueness. The required baseline information for each sector and its importance will be emphasized and followed by a step-by-step approach. Case studies/ exercises will be given to enable the participants to experience estimating damages and losses.

Learning Unit 4 at a glance



Learning Objective

- Assessment of the effects of disaster on individual sectors i.e. damages and changes in economic flows (losses) in the sector .



Sessions

- Introduction to sector assessment.
- Estimating Damages and Losses for individual sectors.
- Scenario based Group Exercise.



Duration

Total: 240 minutes

- Introduction to the sector assessment for specific sectors: 90 minutes.
- Group work and plenary on the estimation of damages and losses: 150 minutes.



Tools and Methodology

- **Training methods:** Lecture, Case Study, Video and Exercises.
- **Material required:** Projector, screen, laptop, speaker, India PDNA Handbook/ Assessment Formats, chart paper and marker.



Key Discussion Topics

- Damage and loss estimation of all 14 sectors.
- Required baseline information.
- Need for sectoral assessment.

PDNA Trainer's Note

Session 1: Introduction to the sector assessment for specific sectors:

Session at a glance

Session objective	: To introduce the process to estimate damage and loss for specific sector.
Duration	: 90 minutes.
Tools and Methodology	: Training methods: Lecture and Discussion. Material required: Projector, screen, laptop, white board and marker.
Key discussion topics	: Recovery needs, Reconstruction needs, Process for reconstruction needs estimation.

The process of estimation of damages, changes in economic flows (losses), impacts and needs are explained in detail in the Handbook. The following are the important points that must be remembered in each sector.



Agriculture Sector

The main sub-sectors that must be assessed in agriculture are crops, livestock, fisheries and forestry. The physical assets within this sector can be classified into six broad categories: a) Soil (agricultural land); b) irrigation system; c) agricultural infrastructure; d) agricultural machinery and equipment; e) agricultural stocks; and f) perennial crops. The assessment of damages will be on the effects of the assets while the economic flows should be based on the value of foregone production.

Example: Agricultural Sector: Damage and Needs, Uttarakhand Floods, 2013

Full case study can be found in the Professional Module under Learning Unit 4.

Topic to discuss:

- What kind of information has been collected to identify the damage and needs in the agricultural sector after the floods in Uttarakhand?



Mining and Quarrying Sector

The major minerals mined in India are classified into the following subdivisions:

1. Fuel minerals, including coal, lignite, petroleum and natural gas.

2. Metallic minerals: iron ore, manganese ore, bauxite, copper ore, gold and others.
3. Non-metallic minerals, including limestone, mica stone and others.

The value of damage in the mining and quarrying sector is to be estimated as the cost which is required to rebuild all destroyed assets and to replace damaged equipment which would normally involve the cost of draining by pumping of flooded underground mines and the removal of waste materials which may have occurred in adjacent lands. In the oil and gas sub-sector it may involve the cost of drilling new wells and that of replacing equipment and machinery to replace the destroyed ones, together with the cost of rebuilding or repairing any storage facilities and pipelines. The replacement cost of destroyed vehicles and other specialized equipment should be included as well.

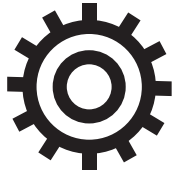


Manufacturing Sector

The manufacturing sector in India comprises the following industries, as per the System of National Accounts:

1. Food (meat, fish, fruits, vegetables and oils).
2. Dairy products.
3. Grain mills products.
4. Other food products.
5. Beverages.
6. Tobacco products.
7. Spinning, weaving and finishing of textiles.
8. Wearing apparel.
9. Leather and fur products.
10. Wood and its products.
11. Furniture.
12. Paper and printing.
13. Rubber, petroleum products.
14. Chemicals and chemical products.
15. Non-metallic products.
16. Basic metals.
17. Metal products and machinery.
18. Electrical machinery.
19. Other manufacturing, and
20. Transport equipment manufacturing.

Depending on the areas affected by the disaster, the assessment team for this sector must be able to know beforehand the types of industries and industries in the areas affected by the disaster.



Trade or Commerce Sector

The commerce sector includes wholesale trade, retail trade, sales and maintenance of vehicles, as well as hotel and restaurant services or tourism. Because of its relevance to development in India and its special characteristics, however, tourism will be excluded in this sector and will be dealt within a separate chapter.

Any post-disaster needs assessment should include the estimation of damage and sales decline in the public and private trade sector, and its subsectors, to ascertain disaster impact on the traders and estimate their recovery and reconstruction requirements. Leaving them out of the assessment is a way to live unattended a sizable fraction of the affected population, which would lose employment and income.

The assessment team for the commerce or trade sector should be aware that large commercial establishments make the highest percentage of sales in any given state or area, which fact should facilitate planning for conducting field visits and sample surveys. However, micro-sized to medium sized commercial establishments are always more numerous and usually generate more employment of personnel, and their analysis would require special attention. The latter consideration is very relevant for the case of informal traders which are usually the most affected by disasters and whose sales are not necessarily included in the national accounts; for this case, use may be made of special sample surveys that may be conducted in temporary shelter camps during the assessment.



Tourism Sector

The tourism sector is composed mostly of infrastructure and facilities that cater to tourists whether foreign or locals. Assets in the sector will include hotels, resorts as well as other natural attractions. The assessment team should undertake detailed field visits to obtain first-hand knowledge about the effects of the disaster on the sector's infrastructure and facilities and to obtain information to estimate sectorial production flow changes. During these field visits, the assessment team should hold special interviews with hotel and restaurant owners and tourism operators to obtain their views and determine their special needs for recovery and reconstruction, and to ascertain whether insurance is available and whether it covers both infrastructure and/or revenue losses.

Caution must be observed by the assessment team against the possibility of double counting. For example, some effects on the natural environment which are tourist attraction should not be counted here if they are assessed in the environment sector.



Housing Sector

In order to conduct a post-disaster assessment in the housing sector, it is important to know the number of dwellings that existed at sub-national levels before the disaster occurred. Information on the types of dwellings categorized by materials used in the construction of outer walls and roofs and the size of the dwelling is essential. The ownership structure is also important, defining privately or publicly owned and the headship of the owner by the sex of the owner (female or male). Where traditional ownership patterns exist, these should be described as well as any peculiar traditional building customs that may differ according to ethnicity, sex, religion or any other significant demographic characteristic. If the dwelling used for income earning purposes or is it owner-occupied? All of these characteristics need to be described.

Estimating the effects of the event on the housing sector requires the collection of data on the number, size (sq. meters) and type of houses partially or totally destroyed, including the contents therein and any other peripheral buildings that form part of the dwelling. Houses for rent must be identified too for purpose of assessing the losses of the owners.



Education Sector

In order to conduct an assessment of an event in the education sector, it is essential to know the number and typologies of the education facilities that exist at the national and state levels. It is important to understand the structure of the education system and the ownership arrangement, being able to categorize schools according to ownership: private, public, and combined ownership of public and private, or religious based. The normal number of classroom hours per day or annual days per student is also essential.

In addition to the infrastructure and assets of the sector, it would be important to present the socio-demographic characteristics of the population serviced by the sector, such as literacy levels and school enrolment rates and the proportion that is serviced by social programs such as school feeding programs. If the school is used by different age groups during the day of learning, this should be specified.



Health Sector

Even where the effects to the infrastructure and assets of the sector may have not been severe as a result of an event, the health sector may still be severely affected due to the increased demand for their services in the response to the event and the difficulty caused by the event, which may create challenges for the delivery of health services and access to services. The sector may also have to address the subsequent health threats which the population may face as a result of the disaster in view of changed environmental conditions.

In order to conduct an assessment of an event on the health sector, it is important to be able to paint a clear and concise picture of health care at the national and state levels, as it existed prior to the disaster. Such a description should entail the socio-demographic characteristics of the population with the main epidemiological indicators including incidence of different diseases relevant to the disaster situation.

The number of health facilities that exist at the national and State levels before the disaster occurred and the types of health facilities categorized by the nature of services which they provide and their location, should be presented. The ownership structure, defining privately or publicly owned, and the catchment area covered is important to present. The distribution of the services provided between the two sectors would be an important information.

Example: Estimating the Total Effects of a Disaster on the Health Sector, Flood 2013, Odisha, India

Government of Odisha, in their memorandum on Cyclone Phailin and the Subsequent Flood, October 2013, demonstrates the extent to which Health Sector officials must go to safeguard the health of the population. The report indicated that in order to restore health services in the affected areas, 185 medical teams and 338 medical relief centers were opened. Forty-seven medical officers, 132 paramedics were mobilized from medical colleges and unaffected areas to the districts such as Puri, Balasore, Bhadrak, Jajpur, Kendrapada, Mayurbhanj and Ganjam. Packets of ORS amounting to 1,249,670 and 9,655,000 Halogen tablets and 16, 700 ASVs were supplied. These items would require costing by the health sector assessment team so that an economic value could be applied to the additional expenditures of the health sector.

The costs for the removal of debris and sanitization of partially damaged facilities before use may also have to be taken into account. So, too the costs of removal and safe disposal of bio-hazardous materials from damaged hospitals.

When all estimates have been completed, only then can a true picture of the total effects of the event on the sector be discerned.



Culture Sector

UNESCO suggests further categories for examination when undertaking an assessment of the Culture Sector. These are: built heritage and cultural/natural sites; moveable properties and collections; intangible cultural heritage; repositories of heritage (including museums, libraries, and archives); and cultural and creative industry.

It is important to remember that there will be heritage facilities, artifacts and intangible cultural products and processes that are of particular spiritual or cultural significance and may yet never be able to be fully recovered or restored through reconstruction and so defy economic valuation. The value of such tangible and intangible heritage, may be measured more in terms of its intrinsic value and its impact on the members of the community who hold it dear or in high esteem.

A full description of the pre disaster situation should be undertaken detailing the number and location of the cultural assets, then the infrastructure should be categorized by the nature of facilities (i.e. materials used in construction, whether board, brick, mud), the size of the facilities and the furnishings and equipment, where specialized equipment is contained, to enable the assessment team to estimate the cost of repair or reconstruction.



Transport Sector

The system of national accounts for India includes the following sub-sector under the transport sector:

- Railway transport.
- Road transport.
- Water transport.
- Air transport, and
- Services incidental to transport.

Since there is a large volume of assets for each sub-sector, their types and classification must be known beforehand to enable the assessment team to expedite the assessment process. For instance, information must be at hand for the types of roads, bridges and ports in each of the affected state in India. This will give the assessment team time to gather information on the relative cost of repairs or replacement for the assets that were possibly affected. The assessment team to avoid double counting since the transport sector is usually very complex due to the different modes of transport for persons and cargo, and several ministries or departments are actually involved in the management and delivery of transport services must exercise caution.



Communications Sector

The India system of national accounts includes postal services, telecommunications, and miscellaneous communications under the sector of communications. The communications sector, as any other infrastructure sector, may sustain negative effects after the occurrence of disasters. On one hand, its physical assets – including premises, equipment, antennas, telephone lines and switchboards -- may face destruction (damage). On the other, it may face temporary disruptions in its production flows, including possible revenue decline and/or increases in its costs of operations. Enterprises that operate in the sector may be either publicly or privately owned.

In view of the fast evolution of specialized telecommunications equipment, it is possible that destroyed equipment may have to be replaced with more advanced technologies and higher unit costs. In this situation, the higher costs involved should be introduced when estimating reconstruction needs, and the value of damage should refer to the original cost of the destroyed equipment.

Production flow changes caused by the disaster in the sector may include a decline in the revenues collected from consumers due to the temporary unavailability of the services, and a possible temporary increase in operational costs of the systems.



The Electrical Sector

In accordance with the worldwide system of national accounts, the electrical sector comprises the following activities or components: a) generation of electricity in different types of power plants; b) transmission of electricity from the generation plants to the distribution grids; and c) distribution and sales of electricity to the end-users. Each of these components of the electrical sector may be owned and operated either by public sector or government-owned enterprises, or by privately owned companies. Despite their ownership, they may be affected by any type of disaster and must be included in the assessment of disaster effects, impacts and recovery needs. The various components of the electrical sector must be assessed.



Water Supply and Sanitation

According to the System of National Accounts, the water and sanitation sector covers four separate activities:

1. Water collection, treatment and supply;
2. Sewerage;
3. Waste collection, treatment and disposal activities; materials recovery; and
4. Remediation activities and other waste management services.

Under water collection, treatment and supply, the following activities are included: collection of water from rivers, lakes, wells, etcetera; collection of rainwater; purification of water for water supply purposes; treatment of water for industrial and other purposes; desalting of sea or groundwater to produce water as the principal product of interest; distribution of water through mains, trucks or other means; and, operation of irrigation canals. However, the provision of irrigation services through sprinkler systems and similar agricultural services are not included.

Under sewerage the following activities are included: operation of sewer systems or sewer treatment facilities; collecting and transporting of human or industrial wastewater from one or several users; as well as rainwater by means of sewerage networks, collectors, tanks and other means of transport; emptying and cleaning of cesspools and septic tanks, sinks and pits from sewage, and the servicing of chemical toilets; treatment of wastewater (including human and industrial wastewater, water from swimming pools, etcetera); and maintenance and cleaning of sewers and drains.

Waste collection covers both non-hazardous and hazardous waste. Under the first subdivision are included: collection of non-hazardous solid waste within a local area, such as from households and businesses;

collection of recyclable materials; collection of used cooking oils and fats; and collection of refuse in litter bins in public places. It also includes the collection of construction and demolitions waste; collection and removal of debris such as brush and rubble; collection of waste output from textile mills; and operation of waste transfer stations for non-hazardous waste. The second subdivision covers the collection of hazardous waste such as used oil from shipment or garages, bio-hazardous waste, used batteries and the operation of waste transfer stations for hazardous waste.



The Environment

The environment is not an institutional sector of economic and social activity; rather, the environment is an issue that cuts across all sectors of economic and social activity. The environment is not included in the worldwide system of national accounts which is what countries use to keep track of the production of goods and services in all sectors of activity. One of the reasons for such exclusion is the fact that not all environmental assets and services have market values. Some industrialized countries are making use of a satellite account for the environment, which are often called “green accounts”. India does not have as yet a satellite account for the environment.

For the purpose of assessment, environmental assets – which are subject to disaster-induced destruction – may be divided as follows:

1. Physical (climate, air, soil and water);
2. Biotic (human beings, flora and fauna);
3. Perceptual (landscape, scientific and cultural resources); and
4. Interactions between them.

Damage to the environment may be estimated as the value of fully or partially destroyed assets. If the destruction is permanent, the value of damage is equivalent to the commercial value of assets if there is a market for them. If there is no such a market and a reversal of the environmental change is deemed feasible, the value of damage may be indirectly estimated as the cost of rehabilitating the affected assets. As an example of this, if agricultural lands are completely destroyed and there is no possibility of rehabilitation (because of technical or economic reasons), the value of damage will be the value of the land. If there is hillside soil erosion, the value of damage may be estimated as the cost of stabilizing the slopes through soil conservation works.

The services that those environmental assets provide to the society and economy include:

1. Regulation of the water cycle;
2. Carbon sequestering;
3. Maintenance of the biodiversity;
4. Recreation, and
5. Degradation and transformation of waste.

If there is no existing market value for environmental services yet in India, it is possible to transpose the values obtained in other countries to the conditions of India using as a basis the characteristics of the

services and of the natural assets that render them possible. Therefore, special care must be exercised by the environment assessment team not to duplicate the estimations of damage and losses of the environment that have been made, or which are to be made, by the separate assessment teams that cover the formal or institutional sectors of social and economic activity that utilize the environment. Stating it differently, the environment assessment team should concentrate its efforts in estimating damage to natural or un-built resources and estimating losses in natural environment services only, to avoid double accounting of disaster effects.

Session 2: Damage and loss assessment

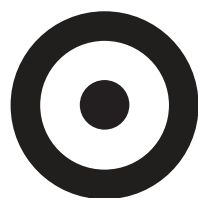
Session at a glance

Session objective	: To apply damage and loss assessment concept in a scenario for further improving the understanding of damage and loss assessment.
Duration	: 150 minutes.
Tools and Methodology	Training methods : Group work, Presentation and Plenary. Material required : Simulation exercise, Flip chart and marker.
Key discussion topics	: Damage and loss estimation. Sectors.

For conduct of the exercise, please refer to the exercise.

Frequently Asked Questions.

- **How can we estimate total number of houses damaged during PDNA?**
 - A number of tools are used which includes baseline information, field survey, sampling, etc.
- **If a damaged property is insured, should it be consider under damage and loss?**
 - Yes, it should be considered as a loss to insurance firms if they will pay it at full value. However, if the insurance company will pay only a certain percentage, the difference will be the damage to the property owner.
- **Is debris disposal after a disaster considered damage or loss?**
 - It should be considered under loss.
- **If an animal like cow, goat, buffalo, etc died in a disaster, should it come under damage or loss or both?**
 - The value of cow, goat, buffalo, etc. should be considered under damage. If animals are providing milk, then future lost revenue is considered is loss.
- **Simulation exercise do not have all data, hence can we make assumptions?**
 - Yes, assumptions can be made.
- **For damage estimation of a house, should we consider the cost of repair or replacement cost?**
 - If the house is damaged, the cost of repair to bring to the same stage before disaster will be considered as damage. If it is totally destroyed, the cost of replacement is the value of damage.



Learning Unit 5:

Aggregation of Disaster Effects and Impact Assessment

Note: Refer the LU5 of the Professional Training Module for technical content

Learning Unit 5 describes the procedures used at the international level, duly adapted to Indian conditions, for the estimation of disaster impact at the macro-economic, macro-social and personal/household levels. The estimation of disaster impact must be made following a consistent methodology that is based on the quantitative estimation of disaster effects at the level of formal sectors of economic and social activity and their valid aggregation. Such an evidence-based procedure ensures the reliability of results required for the assignation of post-disaster financial resources for recovery and reconstruction, be they at the State, national or international levels.

Learning Unit 5 at a glance



Learning Objective

- To estimate the disaster impact at the macro-economic.
- To estimate social impact assessment of a disaster.



Sessions

- Session 1: Impact assessment.
- Session 2: Environment Impact Assessment.
- Session 3: Social Impact Assessment.
- Session 4: Macroeconomic Impact Assessment.
- Session 5: Exercises.



Duration

Total: 210 minutes

- Impact assessment: 10 minutes.
- Environment impact assessment: 45.
- Sector Impacts (with Cross sectoral impacts): 45 minutes.
- Macroeconomic Impact Assessment: 20 minutes.
- Exercise: 90 minutes.



Tools and Methodology

- **Training methods:** Lecture, Case Study, Video and Exercises.
- **Material required:** Projector, screen, laptop, speaker, India PDNA Handbook/ Assessment Formats, chart paper and marker.



Key Discussion Topics

- Macroeconomic impacts are those that are related to indicators that affect the country or a region. They are the gross domestic product (GDP), gross state domestic product (GSDP), balance of payment (BOP), budget balance, employment, livelihood, inflation, food supply, etc.
- Social impacts are the consequences of the effects of the disaster to the people whether on a personal, household or community levels. They are mainly concerned about health, nutrition, education, poverty, migration, violence, child labor, etc.
- Cross-cutting issues/concerns are those that transcend beyond sectors like gender, environment, disaster risk reduction, etc.

PDNA Trainer's Note

Session 1: Impact assessment.

Session at a glance

Session objective	: To understand the application of damage and loss data for estimation of disaster effect and impact.
Duration	: 10 minutes.
Tools and Methodology	: Training methods : Lecture and Discussion. Material required : Laptop and projector.
Key discussion topics	: Damage and loss estimation. Duplication.

1. Explain the rationale behind aggregating damage and loss information from different sectors.

- Goal: Obtain the total value of effects caused by the disaster in the affected area or society.
- Objectives: (i) to learn the value of the global effects of the disaster; (ii) to obtain a quantitative basis for estimating the impact of the disaster on overall socio-economic development; (iii) to serve as the basis for the design or modification of public policies to lessen or shorten the impact of the disaster in the short to long term; (iv) to provide a first idea of priorities for recovery and reconstruction among sectors, and (v) to provide a quantitative basis for the estimation of the financial requirements for economic recovery and disaster-resilient reconstruction.
- Ensure that there is no double or multiple accounting.
- Boundaries between sectors may not be fully known to the individual sector assessment teams.

2. Briefly discuss typical duplication mistakes in damage and loss estimation.

- Production losses in agriculture, livestock and fishery sectors are estimated using unit prices at wholesale or retail market levels instead of farm gate prices.
- When the value of damage to the systems of water supply and electricity, located in adjacent streets to the housing units, are included in the value of damage to the housing sector; instead, the value of damage to housing should include only the damage to the water supply, sanitation and electricity components that are located within the housing units, while the damage to assets in the systems of water supply, sanitation and electricity distribution – which reach to the street adjacent to the housing units – are to be accounted for under the sectors of water, sanitation and electricity, respectively.

3. Introduce some of the common rules for accounting damage and losses.

- Damage and production flow changes to built-environmental assets and services should be included in the sectors of economic activity that utilize them while damage and production flow changes to natural environment assets and services should be accounted for under the environment.

- Damage to water and sanitation, electricity, transport and communications systems is to be included under the institutional sectors of water and sanitation, electricity, transport and communications, respectively, even if they are used by the tourism sector.
- Production flow changes in productive sectors that are caused by the interruption of basic services such as water supply or electricity are to be accounted under those production sectors; losses in revenues of water and sanitation and electricity enterprises that interrupt the provision of those services to consumers due to the disaster are accounted as production flow losses in the sectors of water and electricity, respectively.

Session 2: Environmental Impact Assessment.

Session at a glance

Session objective	: To understand application of damage and loss data for estimation of disaster effect and impact.
Duration	: 45 minutes.
Tools and Methodology	: Training methods : Lecture and Discussion. Material required : Laptop and projector.
Key discussion topics	: Air quality, Biodiversity, Ecology.

The facilitator should explain the following:

The assessment process should identify the impact on the following:

- Strategic wildlife areas and highly diverse ecological and biological areas;
- Areas important for the maintenance of species useful to agriculture, fish-farming, animal raising, etc.
- Biological corridors and areas of seasonal importance to the feeding or reproduction of one or more species.
- Woodlands, wetlands, etc. and the environmental services provided by these areas.
- Impacts on the population such as potential reduction of air and water quality, increase or over population of one specie that will be detrimental to the people (like mosquitoes, pests, etc.)
- Potential or added risk of businesses and the people from future disasters, etc

Key points to remember:

- Environmental impacts can affect the population directly and indirectly whether in the short run and long run.
- Direct short-term effects are visible and can be easily identified.
- In contrast, many indirect and usually long term environmental effects of disasters can involve changes in community structures and ecological processes that may not be well understood or visible.

Session 3: Social Impact Assessment

Session at a glance

Session objective : To understand how to conduct the social impact assessment process.

Duration : 45 minutes.

Tools and Methodology : Training methods : Lecture and Discussion.

Material required : Laptop and projector.

Key discussion topics : Primary, Secondary and Tertiary affect. Macro and micro level social impacts.

1. Introduce the Social Impact Assessment

- Assess the situation of the population as a result of a disaster.
- Understand demographic characteristics of the affected population.
- Understand the extent of the effects and the distribution of the affected population, at the level of the state, the districts and the panchayats or talukas (administrative districts).

2. Explain the difference among primary, secondary and tertiary affected persons

- Primary affected population is that category of population which are affected by the direct effects of the disaster and consists of the dead, the injured and the disabled (primary trauma victims), as well as those who suffer material losses as a direct and immediate consequence of the disaster (such as the homeless and displaced).
- Secondary affected persons are classified as those, living in the affected areas that have sustained losses in production, income and access to services.
- Tertiary affected persons are those who are sustaining higher costs of services (transport, water, sanitation and electricity) as a result of the disaster but may not be living in the affected areas.

3. Explain the difference between the micro-social impact assessment and the macro-social impact assessment

- Micro-level social impact:
 - Presented at the level of the household and that of individual persons.
 - Importance of ex-gratia payments in India.
 - Treatment of informal sector.
- Macro-social impact:
 - Possible indicators: number of children enrolled in school; number of families whose homes have been destroyed; number of houses with access to potable drinking water.

4. Briefly discuss the psychosocial dimension of disaster impacts

- Crises of a psychosocial nature are described as such because they involve situations where the psychological needs of the individual (i.e. psycho) are in conflict with the needs of society (i.e. social)

- Assess quality of services that may be required to support such persons suffering from some level of post-traumatic stress disorder or are affected by the 'disaster syndrome' and over what period of time.

Example: Treatment of Informal Sector in Impact Analysis

- Establish the average daily, weekly or monthly wages of informal sector workers by the different sectors.
- Collect from sector specialists the length of time disruption of process in their sectors are expected to continue.
- Estimate the loss of income earning by the informal workers in the sector.
- Analyze what the social and economic results may be on the well-being of the informal sector workers (identifying which group may be most at risk and which will have the most advantage) as a result of the combination of increased expenditure of households due to possible increased costs of food, transport and medical expenses and decreased earnings over a period of time.

Gender Impact Assessment

Gender impact assessment should be given special focus since the impacts of disasters on men and women are different.

Example: Psychosocial Dimensions of Responses to Disasters by Distress and Gender.

Source: Study on Psychosocial Trauma.

Distress	Female	Male
Death	Signs of hopelessness; Suicide ideation.	Suicide; Increased Consumption of alcohol; Inability to resume work;
Trauma	Weepiness, difficulty in decision making, unable to engage in loving relationships, intrusive memories, nightmares, sleeplessness; Reduced appetite.	Sleeplessness Abandonment of family; Dysfunctional behavior.

Personal and Household Levels Impacts

Disaster impact at the personal or household level includes the analysis of possible decline in personal and family income, the possible increase in costs of living, and the deterioration of several quantitative indexes or comparators that define the quality of life at that level. Such microanalysis provides the basis for defining and quantifying a set of activities designed with the purpose of recovering personal and family well-being.

Furthermore, in the aggregation of total effects, personal or household income decline and higher expenditures should not be included in the estimation of sectorial damage and production flow changes.

It must be recalled that the analysis of disaster impact at personal level represents a different point of view than that of the analysis of macro-economic impact, and that aggregating such personal effects would produce double accounting, as personal losses are already included under sectorial production losses and higher costs.

Session 4: Macroeconomic Impact Assessment

Session at a glance

Session objective : To understand usage of damage and loss data for macroeconomic impact assessment .

Duration : 20 minutes.

Tools and Methodology : Training methods : Lecture and Discussion.
Material required : Laptop and projector.

Key discussion topics : Gross Domestic Product, Revenue, Employment, Balance of Payment, Tax .

1. Provide general information about the Macroeconomic Impact Assessment

- Defined as the consequences of the effects of a disaster on the overall economic performance of the affected country or states.
- There is no single parameter – need for a number of individual analysis.
- Distinction between the impacts caused by the disaster itself and the subsequent impact of post-disaster activities or interventions aimed at recovery, reconstruction and risk reduction.
- Not all disasters cause macroeconomic impacts – however, the impact may be significant at household and individual level which would require counter measures.
- Disasters may have a negative impact on some sectors, while having a positive impact on other.

2. Discuss the sources of baseline information for Macroeconomic Impact Assessment

- Required information: historical data on the performance of the main macro-economic aggregates for the disaster-affected country and state, including gross domestic product (GDP or GSDP)), balance of payments (BOP), fiscal sector position and consumer price information for recent years; and, the most recent forecasts available on the same variables for the current and subsequent years of the disaster.

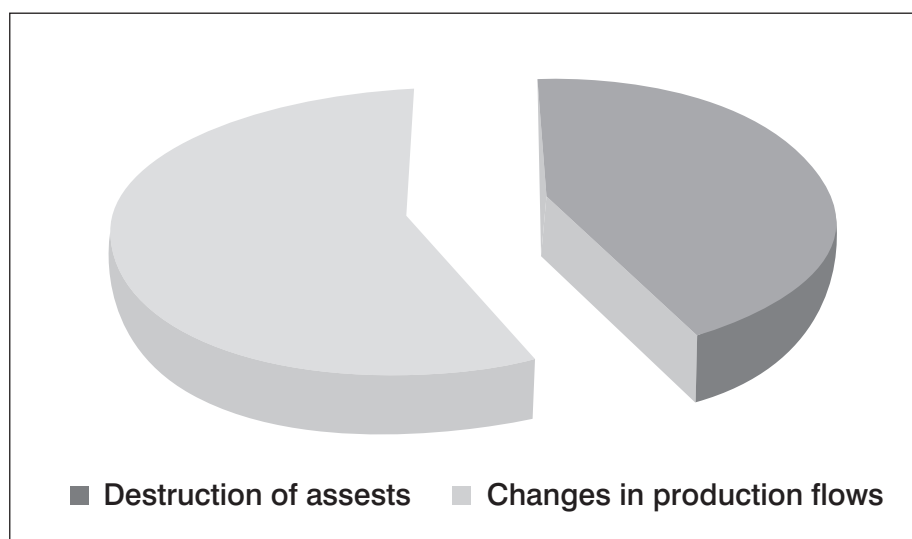
3. Explain the procedures for the estimation of macro-economic impact

- Three stages are required in order to determine any resulting negative or positive impact on the macro-economic performance of a country affected by a disaster:
 - (i) Considering only the isolated effects of the disaster in terms of changes in economic flows, and assuming no recovery and reconstruction interventions;

- (ii) Considering the positive impact of economic recovery activities, after the needs for economic recovery have been estimated separately for each of the sector teams; and.
- (iii) Considering the positive impact of disaster-resilient reconstruction, after the needs for reconstruction with risk reduction features have been estimated for each sector.

Example: GDP Impact Analysis after the 2000 Mount Merapi Volcanic Eruption in the Sleman District, Indonesia, 2010

	2009	2010	2011	2012
Non-Disaster GDP Performance				
GDP, real billion Rp	12,504	13,285	14,133	15,031
Forecasted annual growth rate, %	5.11	6.25	6.38	6.36
Disaster-Induced Losses				
Production decline, real billion Rp	-	229	-	585
Intermediate consumption production, real billion Rp		22	47	--
Losses in destroyed house ownership		...	...	...
Net production losses, real billion Rp	-	207	-	538
Post-Disaster Impact on GDP Performance				
Post-Disaster GDP, real billion Rp		13,079	13,595	15,031
Post-Disaster annual growth rate, %		4.60	2.33	6.36
Post-Disaster GDP Impact, %	-	1.65	-	4.05



4. Discuss the possible impact of disaster on

- gross domestic production performance.
- balance of payments.
- public sector finances.

Suggestive Exercises

Case Study: Analysis of Indian Ocean Tsunami 2004 Impact and Effect

The full case study can be found in the Professional Module under Learning Unit 5.

Discussion Points:

- What can be said about the damage and losses in the five most affected countries?
- What does the comparison between the disaster impacts on the different sectors show?
- What is a possible explanation for the following finding? – “The larger the economy of the affected country, the lower the economic impact from the disaster”

Session 5: Exercise on Disaster Effect and Impact

Session at a glance

Session objective : To apply disaster effect and impact concept in a scenario for further improving the understanding of effect and impact.

Duration : 90 minutes.

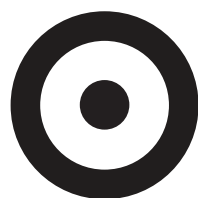
Tools and Methodology : Training methods: Group work, Presentation and Plenary.
Material required: Simulation exercise, Flip chart and marker.

Key discussion topics : Effect and Impact. Sectors.

For conduct of the exercise, please refer to the exercise.

Frequently Asked Questions

- Macroeconomic analysis is very difficult, so why it is covered in short in this PDNA training?
 - The objective is to introduce the concept of macroeconomic analysis as well as usage of damage and loss data by macroeconomic analyst for PDNA.
- Is social impact mainly a qualitative analysis in PDNA?
 - No. Social impact assessment uses qualitative as well as quantitative technique and analysis.
- How do we avoid double counting as sectors have overlaps?
 - As part of the PDNA steps, sectors representatives from all sector must coordinate and meet to discuss the areas and sectors covered to avoid double counting.



Learning Unit 6:

Estimation of Post-Disaster Recovery and Reconstruction Needs

Refer the LU6 of the Professional Training Module for technical content

Learning Unit 6 discusses the identification and prioritization of recovery needs based on the impact assessment. The 'build back better' principle will be highlighted in the development of the recovery framework.

Learning Unit 6 at a glance

	Learning Objective	• To identify and prioritize recovery needs based on the impact assessment. • To understand the development of the recovery framework using the 'build back better' principle.
	Sessions	• Session 1: Identification of Needs. • Session 2: Prioritization of Needs. • Session 3: Estimation of the Amount of Recovery Needs. • Session 4: Developing the Recovery Framework.
	Duration	Total: 180 minutes • Identification of needs: 15 minutes. • Prioritization of needs: 30 minutes. • Estimation of recovery needs: 30 minutes. • Disaster Recovery Framework (policy, program, implementation, M&E): 45 minutes. • Exercises: 60 minutes.
	Tools and Methodology	• Training methods: Lecture, Case Study, and Exercises. • Material required: Projector, screen, laptop, speaker, India PDNA Handbook/ Assessment Formats, chart paper and marker.
	Key Discussion	• Needs are the estimated financial requirements to bring about the recovery from the disaster. They are identified based on the potential adverse impacts to the people and the economy if nothing is done to counter such identified potential impacts. The identified needs as the main basis of a post-disaster recovery plan intended to: • Regain the people's personal income, access and provision of basic services, and of normal production levels of activity; and • Reconstruct destroyed assets including introduction of disaster risk reduction measures. • Recovery and reconstruction apply the 'build back better' principle. • The identified needs in each sector must be prioritized to enable decision makers to consider the most urgent priorities of all the sectors. • Consultations with the affected population and key stakeholders may be needed to come up with recovery strategies.

PDNA Trainer's Note

Session 1: Identification of Needs

Session at a glance

Session objective : To provide an overview of need estimation to bring back normalcy.

Duration : 15 minutes.

Tools and Methodology : Training methods : Lecture and Discussion.
Material required : Laptop and projector.

Key discussion topics : Build Back Better. Recovery. Reconstruction. Recovery strategy.

1. Discuss the identification of needs based on the damage, loss and need assessment

- In order to design the Recovery strategy, the quantitative data obtained from the PDNA assessment of disaster effects and disaster impact needs to be consolidated and presented in a manner that provides the comprehensive picture of all sectors and areas affected.
- Recovery needs are determined for four components:
 - The reconstruction of damaged infrastructure and physical assets.
 - The resumption of economic and social activities, service delivery and access to goods and services.
 - The restoration of governance and social processes.
 - Build back better and risk reduction.

Session 2: Prioritization of Needs

Session at a glance

Session objective : To discuss and identify criteria or mechanism for prioritization of recovery and reconstruction needs.

Duration : 30 minutes.

Tools and Methodology : Training methods: Lecture and Discussion.
Material required: Laptop and projector.

Key discussion topics : Criteria for prioritization.

Some key considerations to help facilitate prioritization are:

- The most urgent needs expressed by the affected population.
- People in vulnerable situations.

- Sequencing of needs, from the short-term to the medium and long term.
- Restoring to pre-disaster levels, followed by improvements.
- Actions that can yield early results effectively.
- Greater impact.
- Institutional and technical capacity.
- Geographic areas with urgent needs.
- Addressing key obstacles associated with sectors.

In prioritizing needs, the inter-linkages of the sectors should be considered in relation to the immediate recovery needs of the people and the economy as whole. For instance, to restore the access of people to health and educational facilities, roads and bridges connecting the people to hospitals and schools should be prioritized. Equally important, to restore the source of income and livelihood of people dependent on tourism, the repair of airports should be a priority to enable the arrival of tourists to normalize. It should be noted too that during the recovery phase, access is very important to start the reconstruction activities in the affected areas.

Sample format

Name of proposed project	Expected Impacts and Their Levels of Impact on Recovery								
	Economic impact			Equity and social impact			Sustainability		
	High	Medium	Low	High	Medium	Low	High	Medium	Low

Session 3: Estimation of the Amount of Recovery Needs

Session at a glance

Session objective	: To provide an overview of process for estimation of post-disaster recovery and reconstruction needs.
Duration	: 30 minutes.
Tools and Methodology	: Training methods: Lecture and Discussion. Material required: Laptop and projector.
Key discussion topics	: Recovery and Reconstruction Needs. Cost estimation.

1. Introduce the concept of recovery needs

- Needs are the estimated financial requirements to bring about the recovery from the disaster. They are identified based on the potential adverse impacts to the people and the economy if nothing is

done to counter such identified potential impacts. The identified needs become the main basis of a post-disaster recovery plan intended to:

- Regain the people's personal income, access and provision of basic services, and of normal production levels of activity; and.
- Reconstruct destroyed assets including introduction of disaster risk reduction measures.
- Recovery in a sector may not only address the reconstruction of the physical assets damaged as a result of the event but the identification of the measures which hasten the recovery process or supports the sector in meeting its financial and technical requirements.

Example: Recovery Continuum in Practice <i>Source: TGLL, 2015</i>		
	Recovery Continuum	Recovery Continuum: The Experience of Aceh-Nias
Disaster Response	0–10 Days Rescuing Life and Property	30 Days ACEH, JAKARTA, NEW YORK, GENEVA
Disaster Relief	0–25 Days Cash grants, food relief, restoring critical public services, temporary employment generation, emergency needs assessments	90 Days FOOD, WATER, MEDICAL CARE, ROOF, MOBILITY, EMPATHY, INFORMATION
Damage and loss assessment	14-45 Days Baseline data, physical damage, economic losses, impact, needs, disaster risk management	120 Days MOBILIZATION, DATA, ANALYSIS, PLANNING, CONFIRMATION, LEGITIMATION
Recovery and Reconstruction	20 Days to few Years Cash grants, asset replacement, temporary employment generation, infrastructure and microfinance projects, medium- and long-term planning	4 to 5 years BENEFICIARY CONFIRMATION, PLAN CALIBRATION, ORGANIZATION, IMPLEMENTATION, MONITORING AND EVALUATION

- As an example, the recovery needs of the health may include the cost of setting up and operation of alternative temporary health facilities until the destroyed ones have been rebuilt.
- The length of time required to achieve full recovery is a factor of not only the measures for financing of recovery but the capacity in related sectors such as the construction sector and infrastructure such as road or bridges which may affect access.

2. Introduce the Procedures for Estimation of Recovery and Reconstruction Needs

- *Production recovery*: estimated as a function of the estimated value of production losses arising from

the disaster; refer to the amounts of working capital that producers would need in order to restore pre-disaster production levels.

- *Service supply and access recovery*: value of recovery requirements for the supply and access to social and infrastructure services; refer to the amount required to cover higher costs of service operation and provision, arising due to the disaster (service providers) and to the transfer of higher costs of operation to the consumers (individuals/households).
- *Personal income*: the amount of income losses sustained by the affected labor force across all affected sectors of economic activity, formal or informal, as a result of the disaster; used to define the scope and financial requirements of special, “cash-for-work” schemes that may be part of reconstruction.
- *Physical recovery or reconstruction*: estimated value of damage, as obtained in all sectors across the board + the additional costs involved in introducing disaster risk reduction.

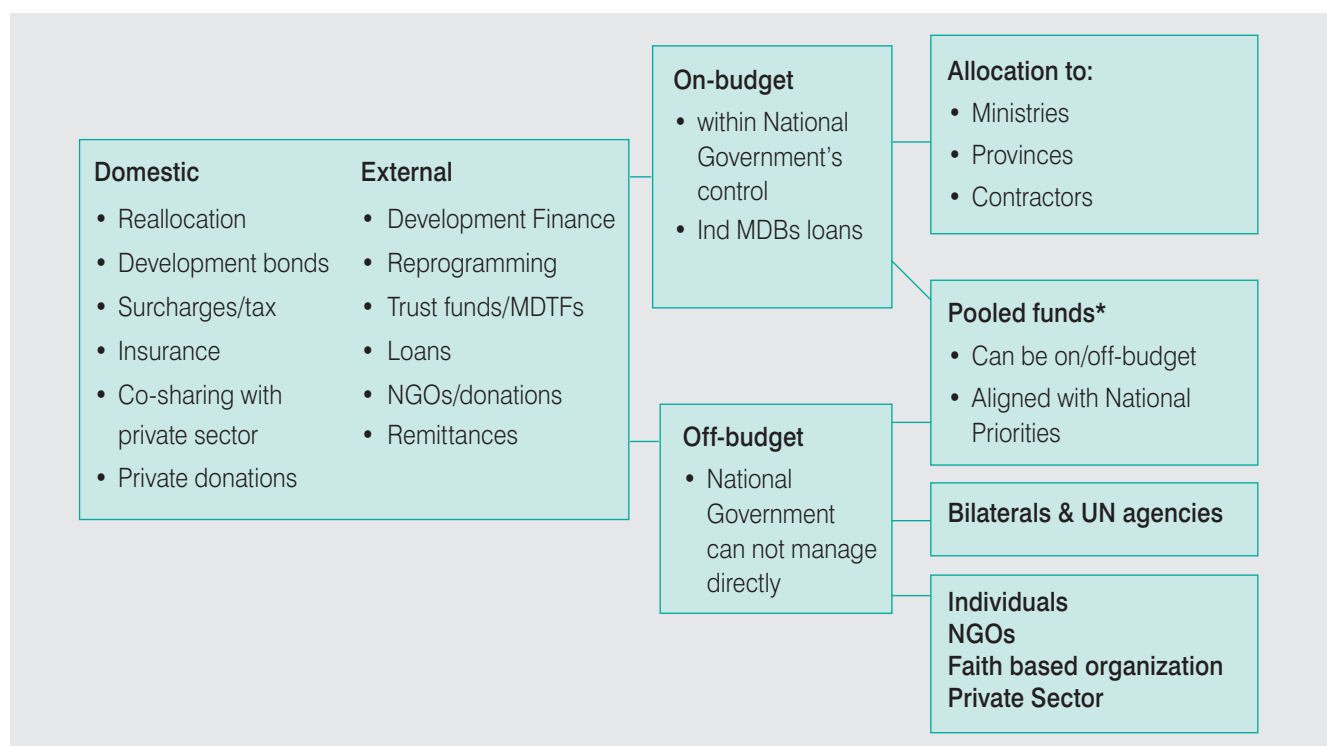


Figure 1 options of financing recovery

Example: Financing Recovery in Thailand after the 2004 Indian Ocean Tsunami

After the 2004 Indian Ocean tsunami, a major portion of R&R costs in Thailand was borne by the government. The overall budget for tsunami R&R was nearly USD 1.7 billion, out of which the government set aside USD 112 million for immediate relief, USD 73 million for rehabilitation measures, and initially USD 8.3 million for public infrastructure reconstruction. The country agreed to receive assistance from foreign governments only in the form of technical assistance, which amounted to around 10 percent of Thailand's recovery-related budget.

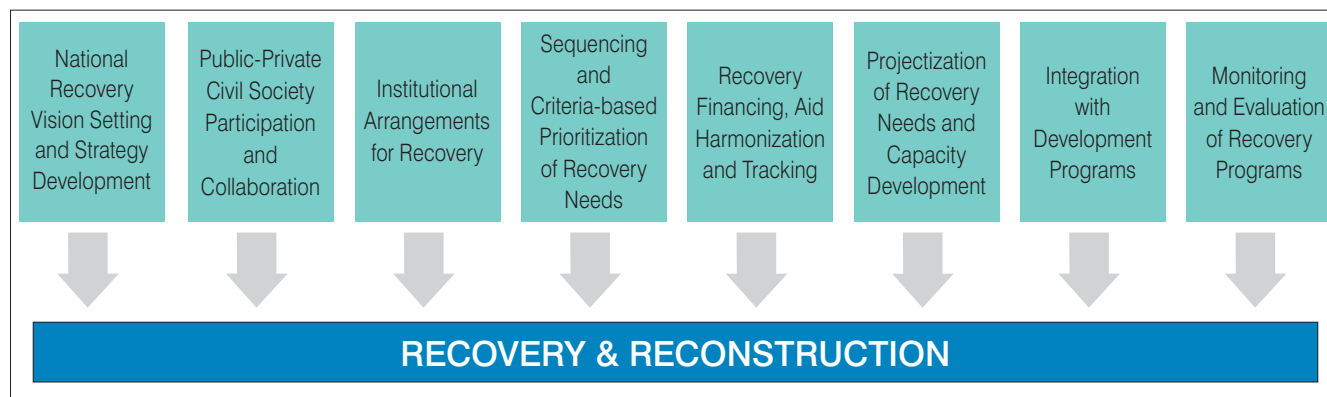
Source: ADBI, 2010

Session 4: Developing the Recovery Framework

Session at a glance

Session objective	: To discuss key elements of disaster recovery and reconstruction framework
Duration	: 45 minutes.
Tools and Methodology	: Training methods: Lecture and Discussion. Material required: Laptop and projector.
Key discussion topics	: Recovery framework. Recovery Plan, Sample Outline of Recovery Plan.

1. Introduce the Recovery Framework



Source: The World Bank and et al, 2014

- Should provide the guiding principles to be followed during the recovery phase and must be contained explicitly in the recovery plan.
- Includes frameworks and strategies.

The *strategies* can be through policy (like exempting the private sector from certain fees as incentive for them to start reconstruction) or through regulation (like establishing a 'no-build zone' or adoption of new disaster-resilient construction methods).

The *framework and strategies* can also include prospective measures like proposed legislation that will enhance the overall disaster risk management of the country or areas affected. It is always advisable to consult the affected people in developing the framework and strategies.

Example: M&E in 2004 Indian Ocean Tsunami Recovery Indonesia

Following the 2004 tsunami, Indonesia used its M&E system for performance based budgeting. Unlike the common government practice of basing budgets on the prior year's allocation, BRR allocated project funds on the basis of a sector's output and capacity to implement. The Recovery of Aceh and Nias (RAN) database was contracted by UNDP to support recovery monitoring. All project proposals were submitted through the database for review by BRR. Project concept notes (PCN) contained information on key performance indicators, funding source, sector, location, and budget allocation. The RAN database also recorded BRR approval. Prior to annual review meetings, project implementers reported on progress within the databases, so that BRR could provide consolidate reports to stakeholders.

Source: The World Bank et al., 2014

	Damage			Losses			Total effects		
	Value	Public	Private	Value	Public	Private	Value	Public	Private
Housing	45,908.0			37,889.0			83,797.0	37,889.0	
Education	13,051.0	8,911.0	4,140.0	1,798.0	1,654.0	144.0	14,849.0	10,614.0	4,235.0
Health	1,684.0	728.8	954.6	2,133.0	898.6	1,234.4	3,817.0	2,861.8	2,189.0
Culture	4,428.8	2,415.0	2,013.8	3,076.5	8.5	3,068.0	7,505.3	5,491.5	5,081.8
Agriculture crops	5,184.0		5,184.0	31,135.0		31,135.0	36,319.0	31,135.0	36,319.0
Livestock	344.0		344.0	2,771.0		2,771.0	3,115.0	2,771.0	3,115.0
Fishery	137.0		137.0	809.0		809.0	946.0	809.0	946.0
Water resources development	8,715.0	8,715.0	17,430.0	37,889.0		37,889.0	46,604.0	46,604.0	55,319.0
Manufacturing	513,881.0		513,881.0	493,258.0		493,258.0	1,007,139.0	493,258.0	1,007,139.0
Banking and finance	943.0		943.0	115,276.0	74,075.8	41,200.2	116,219.0	115,276.0	42,143.2
Tourism	5,134.4	403.1	4731.3	89,673.4		89,673.4	94,807.8	90,076.5	94,404.7
Electricity	3,185.8	760.7	2,425.1	5,715.6	4,623.8	1,091.8	8,901.4	6,476.3	3,516.9
Water and sanitation	3,497.0		3,497.0	1,984.0		1,984.0	5,481.0	1,984.0	5,481.0
Transport	23,538.0	23,538.0		6,938.0	6,788.0	150.0	30,476.0	30,476.0	150.0
Communications	1,289.6	506.5	783.1	2,558.3	1,090.6	1,467.7	3,847.9	3,064.8	2,250.9
Environment	375.0	47.0	328.0	178.0	165.0	13.0	553.0	225.0	341.0
Total	631,295.6	46,025.1	556,791.9	883,081.8	89,304.3	705,888.5	1,464,377.4	879,011.9	1,262,631.5

	Damage			Losses			Total effects		
	Value	Public	Private	Value	Public	Private	Value	Public	Private
Housing	45,908.0			37,889.0			83,797.0	37,889.0	
Education	13,051.0	8,911.0	4,140.0	1,798.0	1,654.0	144.0	14,849.0	10,614.0	4,235.0
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Case Study: M&E Mechanisms in Cyclone Nargis Recovery Program, Myanmar

The full case study can be found in the Professional Module under Learning Unit 6.

Questions for discussion:

- What is the difference between the periodic reviews and the social impact monitoring?
- Why were the periodic reviews carried out?
- Discuss the status of shelter repair. Has the recovery in the housing sector been successful?
- What are the key contents included in the SIM?

	Damage			Losses			Total effects		
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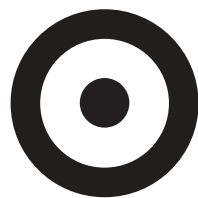
Frequently Asked Questions

• What criteria to be used to prioritize the needs?

- Priority setting should always reflect the unique conditions and needs of the country concerned and is based on prioritization criteria specific to the country context.
- Some key considerations to help facilitate prioritization:
 - The most urgent needs expressed by the affected population.
 - Population sub-groups in vulnerable situations or those who are at particular risk.
 - Sequencing of needs, from the short-term to the medium and long term.
 - Restoring to pre-disaster levels, followed by improvements.
 - Actions that can yield early results effectively (within 18 months).
 - Comparative advantages.
 - Opportunities for greater impact.
 - Institutional and technical capacity.
 - Geographic areas with urgent needs.
 - Current or near future milestones (e.g. elections).
 - Addressing key obstacles associated with sectors.
 - Recovery initiatives that contribute to peace where relevant.

• Is Build Back Better part of needs?

- Build Back Better is included while estimating recovery needs so that recovery is sustainable. Also, it provides an opportunity to lay down long term risk reduction process.



Conducting a scenario-based exercises

Facilitator Instructions

GENERAL INTRODUCTION

- A. The following group exercises are an integral part of the regional and national training courses on Post-Disaster Needs Assessment (PDNA) in India.
- B. The exercises will make use of the “India PDNA Handbook”, which each participant must use during the exercise.
- C. The exercises will be based on a fictional (yet realistic) post-disaster cyclone scenario in “Somepradesh” state in India.
- D. The exercises will be conducted to consolidate participant learning after the technical presentations, in the following order:
 - Learning Unit 4. Sector Guidelines for Undertaking PDNA.
 - Exercise 1: Estimating Sector Disaster Effects.
 - Learning Unit 5. Aggregation of Disaster Effects and Impact Assessment.
 - Exercise 2: Assessing Disaster Impacts.
 - Learning Unit 6. Estimation of Post-Disaster Recovery and Reconstruction Needs.
 - Estimating and Prioritizing Needs within the Sectors.

* EXERCISES STARTS *

Starting the Exercise

Before the exercises start, the facilitator will group participants into the corresponding sectors indicated in the “India PDNA Handbook” as follows:

- **Productive Sectors**
 - Agriculture, Livestock, Fisheries and Forestry.
 - Mining and Quarrying.
 - Manufacturing.

- Trade and Services.
- Tourism.
- (The Environment).
- (Macro-Economic Impact Estimation).
- **Infrastructure Sectors**
 - Transport.
 - Communications.
 - Electrical.
 - Water Supply and Sanitation.
- **Social Sectors**
 - Housing.
 - Education.
 - Health.
 - Culture.
 - (Social Impact Estimation).

Note: participants' grouping will depend on their job responsibilities (e.g. Agricultural Officer would work in the Agriculture sector group) or their interest/enthusiasm in a particular sector.

Once in the groups, the facilitator will request participants to read “**Background: Pre-Disaster Socio-Economic District Profile**”.

Exercise 1: Estimating Sector Disaster Effects

The first part of the scenario will involve the estimation of damages and losses where the macro-economic impact estimation team and environment team will join the productive sectors, while the social impact assessment team will join the social sectors.

Working in respective sector groups, participants will review the pre- and post-disaster information provided, and complete the following tasks:

1. Estimate the damages and losses and put it in the summary table for Panigarh District.
2. Show the basis for the calculation of the damages and losses for each item.
3. Present and explain your results to the group.

Note: Participants will use the assessment procedures and tables presented in the India PDNA Handbook, and may decide to present results verbally or using flipcharts.

Exercise 2: Assessing Disaster Impacts

The second part of the scenario involves analyzing the results of the sector disaster effects assessment in order to understand and explain the potential disaster impacts. For this exercise, the macro-economic

impact estimation, social impact assessment, and environment assessment teams will have their own tasks.

Working in respective sector groups, participants will be requested to complete the following tasks:

1. Assess the potential impacts:

A. For the productive, infrastructure and social sectors:

- Based on the estimated damages and losses, assess potential impacts to the economy and the people.
- What baseline information was lacking to make a more in-depth impact assessment?

B. For the macro-economic impact estimation:

- What are the potential impacts on the macroeconomic indicators? Enumerate the indicators that will be affected.
- What baseline information was lacking to make a more in-depth impact assessment?

C. For the social impact assessment:

- What are the potential impacts on the people that were affected by the disaster? Enumerate the indicators that will be affected.
- What baseline information was lacking to make a more in-depth impact assessment?

D. For the environment assessment:

- What are the potential environmental impacts based on the information from the sectors?
- What baseline information was lacking to make a more in-depth impact assessment?

2. Present and explain your results to the group.

Note: Participants will use the assessment procedures and tables presented in the India PDNA Handbook, and may decide to present results verbally or using flipcharts.

Exercise 3: Estimating and Prioritizing Needs within the Sectors

The third part of the scenario involves reviewing the results of the disaster effects (Exercise 1) and the potential impacts (Exercise 2), in order to understand and explain the estimated and prioritized needs within each sector. For this exercise, the macro-economic impact estimation, social impact assessment, and environment assessment teams will have their own tasks.

Working in respective sector groups, participants will be requested to complete the following tasks:

1. Estimate and prioritize needs within the sector.

A. For the productive, infrastructure and social sectors:

- Based on the impact assessment, identify qualitatively (the types of activities/projects) the needs of the sector. (It is not necessary to quantify the amounts).

- Given that the initial budget for entire recovery is limited, prioritize the needs identified for the sector by activities/projects.

B. For the macro-economic impact estimation:

- What are the priority sectors that must be rehabilitated? Why?

C. For the social impact assessment:

- What are the priority projects that must be implemented? Why?

D. For the environment assessment:

- What are the priority projects that must be implemented? Why?

2. Present and explain your results to the group.

Note: Participants will use the assessment procedures and tables presented in the India PDNA Handbook, and may decide to present results verbally or using flipcharts.

*** EXERCISES ENDS ***

SCENARIO-BASED TRAINING EXERCISES: POST-DISASTER NEEDS ASSESSMENT IN INDIA

Facilitator Instructions

GENERAL INTRODUCTION

- The following group exercises are an integral part of the regional and national training courses on Post-Disaster Needs Assessment (PDNA) in India.
- The exercises will make use of the “India PDNA Handbook”, which each participant must use during the exercise.
- The exercises will be based on a fictional (yet realistic) post-disaster scenario in a district in India.
- The exercises will be conducted to consolidate participant learning after the technical presentations, in the following order:

After Learning Unit 4. Sector Guidelines for Undertaking PDNA.

Exercise 1: Estimating Sector Disaster Effects.

After Learning Unit 5. Aggregation of Disaster Effects and Impact Assessment.

Exercise 2: Assessing Disaster Impacts.

After Learning Unit 6. Estimation of Post-Disaster Recovery and Reconstruction Needs.

Estimating and Prioritizing Needs within the Sectors.

*** EXERCISES STARTS ***

Starting the Exercise.

Before the exercises start, the facilitator will group participants into the corresponding sectors indicated in the “India PDNA Handbook” as follows:

- **Productive Sectors**

- Agriculture, Livestock, Fisheries and Forestry.
- Mining and Quarrying.
- Manufacturing.
- Trade and Services.
- Tourism.
- (The Environment).
- (Macro-Economic Impact Estimation).

- **Infrastructure Sectors**

- Transport.
- Communications.
- Electrical.
- Water Supply and Sanitation.

- **Social Sectors**

- Housing.
- Education.
- Health.
- Culture.
- (Social Impact Estimation).

Once in the groups, the facilitator will request the participants to read “Background: Pre-Disaster Socio-Economic District Profile”.

Exercise 1: Estimating Sector Disaster Effects.

The first part of the scenario will involve the estimation of damages and losses where the macro-economic impact estimation team and environment team will join the productive sectors, while the social impact assessment team will join the social sectors.

Working in respective sector groups, participants will review the pre- and post-disaster information provided, and complete the following tasks:

1. Estimate the damages and losses and put it in the summary table for Panigarh.
2. Show the basis for the calculation of the damages and losses for each of the item.
3. Present and explain your results to the group.

Note: Participants will use the assessment procedures and tables presented in the India PDNA Handbook, and may decide to present results verbally or using flipcharts/ppts.

Exercise 2: Assessing Disaster Impacts.

Using the results of the first exercise, the second part of the scenario involves analyzing the damages and losses (disaster effects) in the sector in order to understand and explain the potential disaster impacts. For this exercise, the macro-economic impact estimation, social impact assessment, and environment assessment teams will have their own tasks.

Working in respective sector groups, participants will be requested to complete the following tasks:

1. Assess the potential impacts:

A. For the productive, infrastructure and social sectors:

- Based on the estimated damages and losses, assess potential impacts to the economy and the people.
- What baseline information was lacking to make a more in-depth impact assessment?

B. For the macro-economic impact estimation:

- What are the potential impacts on the macroeconomic indicators? Enumerate the indicators that will be affected.
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C. For the social impact assessment:

- What are the potential impacts on the people that were affected by the disaster? Enumerate the indicators that will be affected.
- What baseline information was lacking to make a more in-depth impact assessment?

D. For the environment assessment:

- What are the potential environmental impacts based on the information from the sectors?
- What baseline information was lacking to make a more in-depth impact assessment?

2. Present and explain your results to the group.

Note: Participants will use the assessment procedures and tables presented in the India PDNA Handbook, and may decide to present results verbally or using flipcharts.

Exercise 3: Estimating and Prioritizing Needs within the Sectors.

The third part of the scenario involves reviewing the results of the disaster effects (Exercise 1) and the potential impacts (Exercise 2), in order to understand and explain the estimated and prioritized needs within each sector. For this exercise, the macro-economic impact estimation, social impact assessment, and environment assessment teams will have their own tasks.

Working in respective sector groups, participants will be requested to complete the following tasks:

1. Estimate and prioritize needs within the sector.

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- Given that the initial budget for entire recovery is limited, prioritize the needs identified for the sector by activities/projects.

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D. For the environment assessment:

- What are the priority projects that must be implemented? Why?

2. Present and explain your results to the group.

Note: Participants will use the assessment procedures and tables presented in the India PDNA Handbook, and may decide to present results verbally or using flipcharts/ppts.

*** EXERCISES ENDS ***

Background: Pre-Disaster Socio-Economic District Profile

A. Background

The state of Somepradesh was hit by a cyclone, which had strong winds at 175 kph and caused extensive flooding resulting to damages and losses to infrastructure and other sectors in 10 Districts including Panigarh.

Ten (10) post-disaster needs assessment (PDNA) teams were created to conduct post-disaster assessments, one for each district.

Your team was assigned to assess the disaster impacts in Panigarh.

B. Profile of Panigarh

1. Demography

Table 1. Information about the District.

Name of District:			
Poverty incidence (%)	40%		
Maternal mortality rate:	20/10,000		
Infant mortality rate:	30/10,000		
Demography	Male	Female	Total
• Total Population	70,000	80,000	150,000
• Total Number of Those Below 5 years old	15,000	10,000	25,000
• Total Number of Those Above 60 years old	30,000	35,000	65,000
• Total Number of Differently-Abled	1,000	2,000	3,000
Household Description	Male	Female	Total
• Average size	3	2	5
• Average Number of Children	2	1	3
• Average Number of Those Below 5 years old	1		1
• Average Number of Children in School	1	1	
• Average Number of Those Above 60 years old		1	1
Prevalence of malnutrition (%)			10%
Total Number of Families/Households	% of Total	Total Number	
• Headed by Male	90%	27,000	
• Headed by Female	10%	3,000	
• With sanitary toilets		29,000	
• Without sanitary toilets		1,000	
• With electricity		25,000	
• Without electricity		5,000	
• Belonging to ethnic minority group		5,000	

2. Social Services

Table 2. Social services in the District

Name of District:									
Public Basic Services	Quantity	Capacity	Power Source		Source of Potable Water Supply				
		Persons	Electricity	Others	Type 1	Type 2	Type 3	Type 4	Type 5
Primary School	5	5,000	X			x			
High School	3	5,000	x						x
University	1	2,000	x						x
Health centers	5	250	x						x
Hospitals	1	500	x						x
Other Bldgs.									
District Hall	1	200							x
Fire station	1	50	x						x
Police station	1	50	x						x

- Capacity of basic services refers to enrolment in schools and the number of patients per day at the medical facilities.
- For water supply source:
 - Type 1 is sourced from a spring;
 - Type 2 is individual well with hand pump;
 - Type 3 is shared community well;
 - Type 4 is community faucet;
 - Type 5 is piped-in faucet.

3. Sources of income

Table 3. Main Sources of Income of Households.

Name of District:					
Main Sources of Income	Number of Households	Average Monthly Income (Rs)	Average Value of Assets per Household (Rs)	Number of People	
				Male	Female
Self-employed:					
1. Farming	15,000	6000	12,000	12,000	3,000
2. Fishing	5,000	6000	9000	3,000	2,000
3. Livestock Growing	1,000	5400	12,000	800	200
4. Poultry Growing	1,000	4800	12,000	800	200
5. Microenterprises	1,000	4200	12,000	300	700
6. Trading (shops and stores)	3,000	7200	18,000	200	800
7. Services	1,000	6000	12,000	600	400
8. Transport workers	2,000	7800	18,000	1,900	100
Employed					
1. Daily wage laborers	1,000	9000	24,000	600	400
2. Skilled workers (Mining)	300	15,000	36,000	300	0
3. Professionals	5,000	30,000	300,000	4,000	3,000
4. Others					
Other sources					
1. Pension	1,000	6000	36,000	800	200
2. Outside remittance	50	12,000	30,000	20	30



Agriculture, Livestock, Fisheries and Forestry

- Agricultural crops are mostly rice and vegetables.
- There is one commercial coffee plantation that employs 100 people as coffee pickers.
- Livestock and poultry are mostly backyard in nature.
- One irrigation facility is existing.
- Panigarh supplies 30% of the rice in Somepradesh.

Baseline information:

Name of District:								
Sub-sector (Hectares)	Area planted	Average yield for the year	Farm gate price	MSP	Production cost	Number of farmers or growers		
	(Kg/ Hectare)	(Rs/unit)	(Rs/unit)	(Rs/ Hectare)	Families	M	F	
Crops								
Rice	2 M	5,000	25/kg	15/Kg	30,000	15,000	12,000	3,000
Vegetables	500	500	20/kg		12,000	5,000	3,000	2,000
Permanent Crops								
Coffee	100	10,000	300/kg		900,000	100	10	80

Based on the field visit, the following were noted:

- 800 hectares of rice farm were affected. The rice was planted only 2 months before the cyclone occurred. It is estimated that production per hectare will be reduced by 30% because of the cyclone.
- Coffee production is expected to be reduced by 20% for the year.
- 500 kg of harvested vegetables were totally washed away by the floods.
- 10,000 kg of harvested rice were totally destroyed.

- e) 3 km of irrigation canal were partially damaged and needs repair estimated at Rs. 6,00,00,000. While the irrigation is under repair and losses from irrigation fees is estimated to be Rs. 18,00,000.
- f) 50 full grown cattle (valued at Rs. 30,000 each); 100 pigs (valued at Rs. 6,000 each) and 70 goats (valued at Rs. 4,800 each) died from the floods.
- g) 300 chickens (valued at Rs. 60 each) and 100 ducks (valued at Rs. 90 each) were declared to be missing and presumed dead.
- h) Veterinary medicines worth Rs. 60,000 and pesticides worth Rs. 12,000 were destroyed.
- i) 20 tractors were damaged with a total estimated repair cost of Rs. 3,00,000.

Exercise 1:

1. Estimate the damages and losses and put it in the summary table for Panigarh.
2. Show the basis for the calculation of the damages and losses for each item.
3. Present and explain your results to the group.



Mining and Quarrying

- There are 2 mining companies in the district, one for copper and one for gold.
- Copper output amounts to 160 Tons/year while gold output is 0.09 Tons/year, which are both exported.
- Chemicals used in mining operations leaked into the river during the flood.

Baseline information

District Name						
Company Name 1						
Ownership	Public () Private ()					
Employees	Male	95	Female	12		
Production	Average Output / Year (Tons)					
A. Fuel minerals	Coal	Lignite	Petroleum	Natural Gas	Others	
B. Metallic Minerals	Iron	Manganese	Bauxite	Copper	Gold	Others
				160		
C. Non-Metallic Minerals	Limestone	Mica Stone	Others			
Company Name 2						
Ownership	Public () Private ()					
Employees	Male	18	Female	3		
Production	Average Output / Year (Tons)					
A. Fuel minerals	Coal	Lignite	Petroleum	Natural Gas	Others	
B. Metallic Minerals	Iron	Manganese	Bauxite	Copper	Gold	Others
					0.09	
C. Non-Metallic Minerals	Limestone	Mica Stone	Others			

Based on the field visit, the following were noted:

1. The gold mine equipment was affected by the cyclone needing Rs 60,00,000 for repair.
2. Production in the gold mine will be reduced by 20% for 8 months.
3. The tunnel of the copper collapsed which will need Rs 6,00,00,000 to reconstruct.
4. The copper and gold mines operations will totally stop for 3 months.
5. Workers in the copper mines will be temporarily out of job while the production is stopped.

Exercise 1:

1. *Estimate the damages and losses and put it in the summary table for Panigarh.*
2. *Show the basis for the calculation of the damages and losses for each of the item.*
3. *Present and explain your results to the group.*



Manufacturing

- Aside from mining, the other main manufacturer in the district is the drinking water bottling company which earns total revenues of Rs 60,00,000 a month and employing 2,000 people with an average salary of Rs 12,000 a month.
- There are 20 small meat processing companies employing 1,000 people in total, earning a total of Rs 3,00,000 a month. Their source of raw materials are from the livestock in the District.
- There are 10 micro enterprises engaged in leather goods processing businesses (whose source of raw materials are from the livestock in the District) employing 1,500 people. Their total income per month is estimated at Rs 1,00,000.
- There are 50,000 informal rural people engaged in handicrafts in the district earning revenues at an average of Rs 4,000 per month.
- There are a 20,000 informal urban people in the district engaged in simple food processing which they sell at the markets, each earning Rs 300 per day.

Name of District:								
Type of firm in the Formal Sector	Number							
	Micro		Small		Medium		Large	
	Public	Private	Public	Private	Public	Private	Public	Private
A. Manufacturing								
Food (meat, fish, fruits, vegetables and oils)				20				
Dairy products								
Grain mills products								
Other food products								
Beverages (Water bottling)						1		1
Tobacco products								
Spinning, weaving and finishing of textiles								

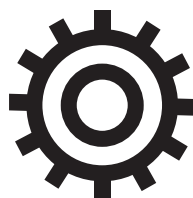
Wearing apparel								
Leather and fur products		10						
Wood and wood products								
Furniture								
Paper and printing								
Rubber, petroleum products								
Chemicals and chemical products								
Non-metallic products								
Basic metals								
Metal products and machinery								
Electrical machinery								
Other manufacturing								
Transport equipment manufacturing								
Others								
TOTAL								
	Micro			Small				
Type of firms in the Informal Sector	Number of Businesses		Number of People Employed		Number of Businesses		Number of People Employed	
Food processing			20000					
Handicrafts			30,000				20000	
Others (Enumerate)								
TOTAL								

Based on the field visit, the following were noted:

1. The water bottling company will be closed for 2 months since its equipment was damaged needing Rs 6,00,000 to repair. The workers will have no work for a month.
2. The food processors experienced damages in their plants requiring a total of Rs 4,00,000. The expected revenue is projected to decline by 60% for 3 months.
3. The leather processors lost their equipment valued at Rs 1,00,000. Their expected revenues will decline by 10% in 1 month.
4. All of the people earning a living from the informal sector are totally out of work for at least 1 month. 80% of them do not have capital to re-establish their micro-businesses.

Exercise 1:

1. *Estimate the damages and losses and put it in the summary table for Panigarh.*
2. *Show the basis for the calculation of the damages and losses for each of the item.*
3. *Present and explain your results to the group.*



Trade and Services

- There are 1,000 wholesalers in the district each earning an average of Rs. 3,00,000 revenue per month.
- There are 10,000 retailers in the district each earning Rs. 1,80,000 a month. These retailers in the district employ a total of 30,000 people with an average salary of Rs. 12,000 a month.
- There are 5 gasoline stations in the district each earning revenue at an average of Rs. 9,00,000 per month.
- There are about 25,000 people in the informal sector working as vendors, carpenters, repairmen, etc., earning about Rs. 300 per day.

Name of District:								
Type of firm in the Formal Sector	Number							
	Micro		Small		Medium		Large	
	Public	Private	Public	Private	Public	Private	Public	Private
A. Wholesale Trade								
Agricultural products				200		800		
Food, beverages, tobacco								
Household goods								
Machinery, equipment, and supplies								
Others (e.g. fuels)								
B. Retail Trade								
Non-specialized shops		5000		3500		1500		
Food, beverages, tobacco								
Automotive fuels				5				
ICT equipment								
Household equipment								
Recreation, reading, games								

Others								
C. Trade and Repair of Motor Vehicles								
Motor vehicle sale								
Motor vehicle repair/ maintenance								
Others								
B. Other Services								
Financial services								
Construction								
Restaurants								
Others								
TOTAL								
Type of firms in the Informal Sector	Micro			Small				
	Number of businesses		Number of Employed		Number of businesses		Number of Employed	
Retail trade			8000				2000	
Repairs			5000					
Restaurants			3000				1000	
Others			1000					
TOTAL								

Based on the field visit, the following were noted:

- 1,000 wholesalers closed their shops for 1 week while 150 retailers closed their shops for 2 weeks.
- The 5 gasoline stations closed for 1 week to clean debris from its premises, which cost Rs 30,000 each of the gasoline stations.
- Except for the carpenters, all of the people earning a living from the informal sector are totally out of work for at least 1 month. 80% of them do not have capital to re-establish their micro-businesses.

Exercise 1:

- 1. Estimate the damages and losses and put it in the summary table for Panigarh.*
- 2. Show the basis for the calculation of the damages and losses for each of the item.*
- 3. Present and explain your results to the group.*



Tourism

- In Panigarh, 20,000 tourists arrive per month to worship in a famous temple.
- From these tourists, hotels earn on the average of Rs. 6,00,000 per month and other guesthouses earn Rs. 1,80,000 per month.
- On an average, a foreign tourist stays 3 days in the district and, aside from hotels, it is estimated that a foreign tourist spends Rs. 1,200 per day on food items.

Name of District:							
Establishment	Number of Establishments by Ownership		Type of Structure (in numbers)				
		1 to 4 Floors			5 and More Floors		
		All Concrete	Concrete and Wood	Wood and Bamboo	All Concrete	Concrete and Wood	
	Private	Public					
Accommodation							
Hotels	13	2					
Heritage Hotels							
Apartment Hotels							
Guest Houses	22						
Homestay / Bed & Breakfast							
Spas							
Others							
TOTAL							
Tourist restaurants							
Restaurants	3						
Mobile food service							
Event catering							
Beverage serving service							
Others							
TOTAL							

Based on the field visit, the following were noted:

1. The temple was heavily damaged needing Rs. 2,00,000 to repair and will be closed for 6 months.
2. Only 5 hotels have minor damages needing repair amounting to Rs. 60,000 each.
3. Tourist arrival is expected to be reduced by 80% for six months, which is expected to reduce the income of hotels and guesthouses by 90% for six months.
4. There are about 300 people, mostly from the informal sector, who earn a total of Rs. 1,80,000 a month tourism services. They are expected to lose 90% of their income for 6 months.

Exercise 1:

1. *Estimate the damages and losses and put it in the summary table for Panigarh.*
2. *Show the basis for the calculation of the damages and losses for each of the item.*
3. *Present and explain your results to the group.*



Environment

- There are 1,00,000 hectares of protected forest area in the district where only 500 families of indigenous people are allowed to stay and cultivate the land.
- A large watershed area is vital for the district's water supply.

Baseline information

Name of District:				
Environmental Assets (name)	Number of Environmental Assets by Ownership		Area (hectare)	Pre-Disaster Description and Characteristics
	Private	Public		
Forests (primary, secondary, mixed, mangrove, others)				
Mangroves		X	10	
Protected Areas (wildlife sanctuaries, national parks, wetlands, coral reefs, others)				
Protected mixed forests		X	100000	
Other Environmental Assets (areas of importance: high biodiversity, breeding grounds, endangered species, landscape/ recreation)				
TOTAL				

Based on the field visit, the following were noted:

- a) 50,000 hectares of the protected forest area suffered from severe landslide, which will need Rs. 3,00,00,000 to reforest in a year.
- b) The watershed was partially covered by debris, which will need Rs. 60,00,000 to clean within 3 months.
- c) 10 hectares of mangroves were destroyed needing Rs. 60,00,000 to re-plant.

Exercise 1:

- 1. Estimate the damages and losses and put it in the summary table for Panigarh.*
- 2. Show the basis for the calculation of the damages and losses for each of the item.*
- 3. Present and explain your results to the group.*



Transport

- There are various types of roads and bridges in Panigarh.
- There are 2 bus companies based in Panigarh; one government company and one private company.
- The airport is also located in Panigarh, which service the passengers going to other 5 provinces including foreign tourists.
- The concrete roads and steel and concrete bridges connect Panigarh with other districts of Somepradesh. It is also among the main connection to neighboring countries. The wooden bridges are important means of access of rural farmers from their farms to the town center.

Baseline information

Name of District:									
Type of Roads	Total Length by classification (Km)					Average Replacement Cost	Average Repair Cost	Average Number of Users per Month	
	Exp.	N.H.	S.H.	M.D.R	Rural	(Rs/Km)	(Rs/Km)	Persons	Vehicles
Water-Bound Macadam	70					30,00,000	6,00,000	3,00,000	1,00,000
Black Top		100				18,00,000	3,00,000	2,00,000	50,000
Cement Concrete			100			6,00,000	1,20,000	50,000	10,000
Motorable				50		3,00,000	60,000	20,000	1,000
Non-motorable									
Others									
Types of bridges	Number by classification					Replacement Cost	Average Repair Cost	Average Number of Users per Month	
	Exp.	N.H.	S.H.	M.D.R	Rural	(Rs/m)	(Rs/m)	Persons	Vehicles
Steel	5					3,00,00,000	18,00,000	3,00,000	1,00,000
Concrete	15					1,20,00,000	6,00,000	2,00,000	50,000
Wood		30				30,00,000	1,20,000	50,000	10,000
Others									

The following are the types of roads/bridges:

- Exp. means Express road or bridge.
- N.H. means National Highway or bridge.
- S.H. means State Highway or bridge.
- M.D.R. means Major District Road or bridge.
- Rural means rural or other road or bridge.

Based on the field visit, the following were noted:

1. The following roads and bridges were damaged and need repair:
 - 10 km of water-bound macadam roads.
 - 20 km of black top roads.
 - 80 km of cement concrete roads.
 - 40 km of motorable roads.
 - 1 steel bridge.
 - 5 concrete bridges.
 - 20 wooden bridges.
2. The roofs of 2 public bus terminals were blown off by strong winds needing Rs. 3,00,000 each for repair.
3. 10 buses from the government bus company were submerged in flood waters needing Rs. 18,00,000 to repair.
4. 5 buses from the private bus company were submerged in flood waters needing Rs. 6,00,000 to repair.
5. 200 private cars were damaged needing a total of Rs. 30,00,000 to repair them all.
6. Because of the damages to the buses and roads and bridges, the government bus company is expected to lose Rs. 12,00,000 income for 2 months while the private bus company is expected to lose Rs. 6,00,000 for 2 months.
7. The runway of the airport was full of debris, which will cost Rs. 6,00,000 to clear.
8. Runway lights were submerged in floodwaters, which will need Rs. 30,00,000 to repair.
9. The airport will be closed for 2 weeks, which is expected to reduce the airport's income amounting Rs. 60,00,000.
10. About 50 km of railroad tracks were damaged needing Rs. 60,00,00,000 worth of repair. It will take 1 month to repair the track, which will cause the loss of Rs. 60,00,000 revenue losses. The train carries food supply to the state capital.

Exercise 1:

1. *Estimate the damages and losses and put it in the summary table for Panigarh.*
2. *Show the basis for the calculation of the damages and losses for each of the item.*
3. *Present and explain your results to the group.*



Communications

- There is only one company which provides both telephone and internet services in the district.

Baseline information

Name of District:						
Name of Company	Ownership		Services provided			
	Public	Private	Postal services	Land telecommunication	Wireless telecommunication	Other systems
Company A		X		X	X	
TOTAL						

Based on the field visit, the following were noted:

1. 50 towers of the telephone and internet company fell down due to strong winds which will need a total of Rs. 6,00,000 to repair.
2. The telephone and internet company earns revenues amounting to Rs. 1,80,00,000 a month.
3. All telephone and internet services will be unavailable for 1 month due to repairs.
4. For 3 months, the company will use electric generators, which will cost them an additional amount of Rs. 60,00,000 in operating costs.

Exercise 1:

1. *Estimate the damages and losses and put it in the summary table for Panigarh.*
2. *Show the basis for the calculation of the damages and losses for each of the item.*
3. *Present and explain your results to the group.*



Electrical

- There is one coal power plant in the district which generates electricity supplied to other districts earning revenues of Rs. 60,000,000 a month while extra electricity is exported to Myanmar worth Rs. 18,00,00,000 per month in revenues. This power plant is a joint venture between the government and a foreign company. This company also distributes the electricity it generates.
- The electricity from this power plant provides the power needed by all government offices, private businesses including the schools and hospitals as well as the electricity needed by the water company.

Baseline information

Name of District:					
Name of Power Company	Power Demand Forecast (Kw-Hr)				Rate
	Current Year	Year 1	Year 2	Year 3	Rs/ KW-Hr
Company					
a. Residential	5,000 KW-Hr	5,100	5,200	5,300	6/KW-Hr
b. Commercial	3,000 KW-Hr	3,100	3,200	3,300	9/KW-Hr
c. Industrial	2,000 KW-Hr	2,100	2,200	2,300	12/KW-Hr

Based on the field visit, the following were noted:

1. 2 turbines were damaged which will need Rs. 60,00,000 to repair.
2. Repair to damaged structures will require Rs. 1,80,00,000.
3. Due to the destruction caused by the cyclone:
 - o The demand for residential electricity for the current year will be reduced by 20%.
 - o The industrial and commercial demand will be reduced by 10% in the current year.
 - o The expected demand for the following years after the disaster will be unchanged.
4. The company cannot provide electricity for 1 week and it cannot export electricity for 1 month.
5. Some of the coal in the stockyard were carried by the floods to the river.

Exercise 1:

1. Estimate the damages and losses and put it in the summary table for Panigarh.
2. Show the basis for the calculation of the damages and losses for each of the item.
3. Present and explain your results to the group.



Water Supply and Sanitation

- There is one commercial water supply company that provides water to 5 states with monthly revenue of Rs. 60,00,000.
- In Panigarh, it provides water to 60% of the households, all government offices, private businesses, schools, hospitals and other institutions.
- The other 40% of the households in Panigarh rely on rural water supply systems which is provided free by the government.

Baseline information

Commercial water supply.

Name of District:									
Name of water supply system:									
Population connected to system (%)	60%								
Ownership	Public () Private ()								
Water Users and Supply	Water Demand Forecast (Liters per year) and Rates (Rs per Liter)								
	Current year			Year 1			Year 2		
	Users	Volume (L/Yr.)	Rate (Rs/L)	Users	Volume (L/Yr.)	Rate (Rs/L)	Users	Liters (L/Yr.)	Rate (Rs/L)
a. Residential	18,000	10 crore	6						
b. Commercial	10,000	5 crore	9						
c. Industrial	1,000	3 crore	12						

Rural water supply

Name of District:					
Type of Water Supply	Number by Ownership		Number of Users	Average construction cost	Average repair cost
	Public	Private	Families	Rs	Rs
Type 1: Open well	100		2,000	30,000	18,000
Type 2: Closed well with hand pump	300		5,000	42,000	30,000
Type 3: Closed well with storage and electric water pump and tap stands	150		5,000	120,000	60,000

Based on the field visit, the following were noted:

For commercial water supply:

1. The water treatment facility was damaged which will need Rs. 60,00,000 to repair.
2. Repair to damaged structures will require Rs. 3,00,00,000.
3. Due to the destruction of houses, the demand for residential water supply for the current year will be reduced by 20%.

For rural water supply:

1. 10 open wells were contaminated which require Rs. 18,000 each to be restored. No physical repairs are needed.
2. 5 hand pumps were damaged needing repairs.
3. 2 Type 3 water systems valued at Rs. 30,000 each were totally destroyed which needs to be replaced.
4. The clearing of debris in the water sources will require Rs. 6,00,000.

Exercise 1:

1. *Estimate the damages and losses and put it in the summary table for Panigarh.*
2. *Show the basis for the calculation of the damages and losses for each of the item.*
3. *Present and explain your results to the group.*



Housing

- There are 40,000 households in the Panigarh.
- Most of the families living in the far rural areas are farmers with Type 1, Type 2, Type 3 and Type 4 housing.
- 2,000 families living in Type 1 houses are in flood-prone riverbanks.

Baseline information

Name of District:							
Housing typology		Number of houses	Ownership (%)		Number of houses for rent	Average number of occupants	
Types	Description		Male	Female		Female	Male
Type 1	Grass/thatch/bamboo etc.	10,000	99	1	0	3	3
Type 2	Plastic/ Polythene	7,000	99	1	0	3	3
Type 3	Mud/unburnt brick	5,000	99	1	100	2	3
Type 4	Wood	5,000	90	10	100	2	3
Type 5	Stone not packed with mortar	2,000	90	10	100	2	2
Type 6	Stone packed with mortar	1,000	90	10	200	2	2
Type 7	G.I./ metal/asbestos sheets	1,500	80	20	100	2	2
Type 8	Burnt brick	2,500	80	20	100	2	2
Type 9	Concrete	5,000	70	30	200	1	2
Type 10	Others	1,000	70	30	100	1	2
Total							

Name of District:										
Particulars	Values (in Rs) of Various Types of Housing									
	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8	Type 9	Type 10 (Others)
Average Value of Contents	500	750	1,000	3,000	5,000	7,000	10,000	12,000	15,000	20,000
Average rent per month			50	100	150	250	300	400	500	600
Average replacement cost	1,000	1,500	3,000	5,000	7,000	10,000	15,000	17,000	40,000	50,000
Average repair cost	200	200	300	500	700	800	1,000	2,000	5,000	7,000

Based on the field visit, the following were noted:

- 7,000 Type 1 houses, 5,000 of Type 2 houses and 1,000 of Type 3 houses were totally destroyed. The contents of these houses were also totally destroyed.
- 2,000 Type 4 houses, 500 Type 5 houses, 100 Type 6 houses and 50 Type 7 houses were partially damaged. No house contents were damaged.
 - 100 of the partially damaged Type 5 houses are for rent which will take 1 month to repair before they can be rented out again.
 - 30 of the Type 7 houses that were partially damaged are for rent which will take 2 months to repair before they can be rented out again.
- There are no damages to Type 9 and Type 10 houses but the total cost of clearing the debris within their premises will amount to Rs. 30,00,000.

Exercise 1:

- Estimate the damages and losses and put it in the summary table for Panigarh.*
- Show the basis for the calculation of the damages and losses for each of the item.*
- Present and explain your results to the group.*



Education

Baseline information

- There are pre-primary, primary schools, secondary schools and a training institute in the District.
- 5 of the primary schools are located along the riverbank, which are flood-prone.

Name of District:										
Total number of enrolled students	Male		Female							
Type of facilities	Number			Total	Average number of students				Average number of teachers	
Educational facilities	Public	Private	Religious		Public		Private		Public	Private
					Male	Female	Male	Female		
Pre-Primary School	20	5			400	410	100	120	12	8
Primary School	20	2			500	510	300	320	30	28
Secondary School	20	2			550	500	320	300	35	32
University										
Training Institutes	1				300	200				
Voc./Training School										
Others										
TOTAL										

Based on the field visit, the following were noted:

1. The roofs of 5 public primary schools were blown off by the cyclone, which will need a total of Rs. 30,00,000 to repair.
2. 10,000 books were washed away by the floods, which will need Rs. 60,00,000 to replace.
3. 5, 000 school desks need repair amounting to Rs. 30,00,000.
4. 10 old computers valued Rs. 6,000 each were totally destroyed.
5. The total estimated cost in the cleaning of debris within the primary school premises is Rs. 6,00,000.
6. The training institute's damaged equipment will need Rs. 30,00,000 for repair.
7. Overtime pay for teachers to catch up with lost number of school days is estimated to reach Rs. 12,00,000.

Exercise 1:

1. *Estimate the damages and losses and put it in the summary table for Panigarh.*
2. *Show the basis for the calculation of the damages and losses for each of the item.*
3. *Present and explain your results to the group.*



Health

- In District Panigarh, there is high incidence of malnutrition among children below 5 years old.
- Maternal mortality and child mortality in rural areas is above the national average.
- Vaccination is carried out through the health centers spread across the district.
- Regular services are provided free of cost at the health centers are pre-natal and neo natal check-ups.
- Common diseases treated at the health clinics are diarrhea, pneumonia, influenza, wound infections, snakebites, accidents and other similar medical conditions.
- For serious illnesses, people go to the hospitals in the town center, which is about 50 km from the rural areas.
- 3 of the health centers are located in landslide-prone areas.

Baseline Information

Name of District:									
Type of medical facilities	Number		Total	Average number of clients per day				Average number of medical staff	
	Public	Private		Public		Private		Public	Private
				Male	Female	Male	Female		
Health Center									
Primary health center	15			50	150			3	
Community health center									
Others									
Hospitals									
District/ General/ Taluk hospital	1	1		100	300	75	200	8	12
Ayurvedic hospital									
Others									
Other Facilities									
Anganwadi centers									
Medical laboratories									
Others									
Total									

Based on the field visit, the following were noted:

1. 10 government primary health centers were damaged needing a total of Rs. 3,00,00,000 for repair. Vaccines worth Rs. 60,00,000 was totally destroyed by the floods. Vaccination and pre-natal services will not be rendered for at least 2 months.
2. 1 private hospital has damages on its delivery room needing Rs. 60,00,000 for repair. The repair will take 1 month, which will cause Rs. 12,00,000 in lost revenues. An ambulance was damaged which will cost Rs. 60,000 to repair. One CT scan on the ground floor was damaged by the flood and needs Rs. 3,00,000 for repair.

Exercise 1:

1. *Estimate the damages and losses and put it in the summary table for District Panigarh.*
2. *Show the basis for the calculation of the damages and losses for each of the item.*
3. *Present and explain your results to the group.*



Culture

- There are 10 temples, which are the places of worships in the Panigarh district.
- There is one museum which houses the districts antiques and historical artifacts earning Rs. 1,20,000 per month from entrance fees.

Baseline information

Name of District:					
Cultural Assets	Number of Cultural Assets by Ownership		Description	Average visitors / month	Average fee/ spend per visitor
	Private	Public			(Rs)
Creative arts and entertainment					
Libraries, archives and other cultural activities					
Museum		1		2,000	60
Sports, entertainment and recreation					
Other cultural assets (specify)					
Religious temples	10			350	30
Natural Formations					
TOTAL					

Based on the field visit, the following were noted:

1. One temple was heavily damaged needing Rs. 1,20,00,000 to repair and will be closed for 6 months.
2. The roof of the museum was blown away needing Rs. 6,00,000 to repair. Since the museum was damaged, it is expected to remain close for 2 months.
3. The cleaning of the artifacts submerged in the floods will require Rs. 3,00,000 to repair.

Exercise 1:

1. *Estimate the damages and losses and put it in the summary table for District Panigarh.*
2. *Show the basis for the calculation of the damages and losses for each of the item.*
3. *Present and explain your results to the group.*

Assessing Disaster Impacts

Exercise 2: Assessing Disaster Impacts

The second part of the scenario involves analyzing the results of the sector disaster effects assessment in order to understand and explain the potential disaster impacts. For this exercise, the macro-economic impact estimation, social impact assessment, and environment assessment teams will have their own tasks.

Working in respective sector groups, participants will be requested to complete the following tasks:

1. Assess the potential impacts:

A. For the productive, infrastructure and social sectors:

- Based on the estimated damages and losses, assess potential impacts to the economy and the people.
- What baseline information was lacking to make a more in-depth impact assessment?

B. For the macro-economic impact estimation:

- What are the potential impacts on the macroeconomic indicators? Enumerate the indicators that will be affected.
- What baseline information was lacking to make a more in-depth impact assessment?

C. For the social impact assessment:

- What are the potential impacts on the people that were affected by the disaster? Enumerate the indicators that will be affected.
- What baseline information was lacking to make a more in-depth impact assessment?

D. For the environment assessment:

- What are the potential environmental impacts based on the information from the sectors?
- What baseline information was lacking to make a more in-depth impact assessment?

2. Present and explain your results to the group.

Note: Participants will use the assessment procedures and tables presented in the India PDNA Handbook, and may decide to present results verbally or using flipcharts/ppts.

Estimating and Prioritizing Needs within the Sector.

Exercise 3: Estimating and Prioritizing Needs within the Sectors

The third part of the scenario involves reviewing the results of the disaster effects (Exercise 1) and the potential impacts (Exercise 2), in order to understand and explain the estimated and prioritized needs within each sector. For this exercise, the macro-economic impact estimation, social impact assessment, and environment assessment teams will have their own tasks.

Working in respective sector groups, participants will be requested to complete the following tasks:

1. Estimate and prioritize needs within the sector.

A. For the productive, infrastructure and social sectors:

- Based on the impact assessment, identify qualitatively (the types of activities/projects) the needs of the sector. (It is not necessary to quantify the amounts).
- Given that the initial budget for entire recovery is limited, prioritize the needs identified for the sector by activities/projects.

B. For the macro-economic impact estimation:

- What are the priority sectors that must be rehabilitated? Why?

C. For the social impact assessment:

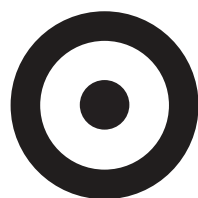
- What are the priority projects that must be implemented? Why?

D. For the environment assessment:

- What are the priority projects that must be implemented? Why?

2. Present and explain your results to the group.

Note: Participants will use the assessment procedures and tables presented in the India PDNA Handbook, and may decide to present results verbally or using flipcharts/ppts.



Learning Unit 7:

Improving Training and Facilitation Skills for PDNA

At the end of the training, the participants will utilize the knowledge gained throughout the training to practice their facilitation skills on the PDNA.

Learning Unit 7 at a glance



Learning Objective

- To improve the training skills of the participants in preparation of their future roles as trainers at the State level.



Sessions

- Session 1: Introduce the participants to the training skills requirement for PDNA .
- Session 2: To create and deliver an effective presentation using Power Point.
- Session 3: Explain the role of trainers to plan and manage PDNA training.



Duration

Total: 2 days



Tools and Methodology

- **Training methods:** Lecture, Case Study, Video, Simulation exercise and Exercises.
- **Material required:** Projector, screen, laptop, speaker, chart paper and marker.



Key Discussion

- An effective instructor is able to enlist suitable techniques and methods for training arrangements. It is important to utilize a range of learning techniques (Visual, Hearing, Feeling) and methodologies along with practical factors such as seating patterns, which can assist in the development of a suitable learning environment for training skills to be honed.
- Delivering a well-planned and well-executed presentation can help the facilitator convey key messages and support the training process.
- Effective planning and management go hand-in-hand with the content of a training session. Practical and logistical considerations including the identification of a suitable training location, identification of appropriate participants and facilitators/trainers are important factors in organizing a successful training session.

PDNA Trainer's Note

Session 1 : PDNA Training Skills and Requirement.

Session at a glance

Session objective : To discuss and identify key training skills required for facilitating PDNA Training Course.

Duration : 180 minutes.

Tools and Methodology : Training methods : Lecture, Group work and Plenary.
Material required : Laptop, projector, Flip chart, white board., speaker.

Key discussion topics : Adult learning principle. Audience, Energizer. Participation.

Effective Training Characteristics: What does effective training look like?

1. Research based and rooted in adult learning theory.
2. Integrated into the organization's goals and values.
3. Includes a high level of new content.
4. The learning has clear outcomes.
5. Focuses on the real-world needs of the participants.
6. Participants see the training as a means to strengthen their effectiveness.
7. Involves collaborative problem solving.
8. The material connects with participant experience.
9. The participants feel they are part of a learning community.
10. The participants understand that they are valued for their learning efforts.
11. Involves shared learning where the participants can talk directly and meaningfully to one another.
12. Structured so that participants have adequate time to assimilate the material and then apply it.
13. Participants have ongoing updates, support, and practice.
14. Participants can see how the new learning has an impact on what they do.

Session Building As you plan out what you want your participants to do consider the following:

1. Match your content to the needs of the group. It is important to challenge your participants and move towards new learning. Adult learners learn best when the material is thought provoking.
2. Carefully outline your session. There is nothing more frustrating for busy adult learners than a meeting or learning event that meanders or feels random. Most learners want to know where they are going, how they are going to get there, and the milestones they can expect on their journey together. Of course

the facilitator must remain flexible to develop unexpected topics that emerge from the participants. Nevertheless, the overall flow of the workshop must be clear and sacred.

3. Be certain that your agenda has a lively pace to it.
4. Construct the learning event so that it has a sense of wholeness. This means it should have a beginning, middle, and end.
5. Depending on the length of the session, include various exercises and activities that are both meaningful and consistent with your participants. It is always a good idea to get the participants out of their chairs on occasion. Be certain that you allow enough time for the activities to unfold fully but not drag.
6. When you introduce an activity make certain that it has a clear and meaningful context. This means making it perfectly clear why the participants are doing the activity (objective); how it fits in with the overall flow of learning; and what they will get out of the activity (debrief each activity so that the participants can articulate what they have learned).
7. Be certain that you include enough to keep the session lively. However, identify particular agenda items that you could shorten or eliminate in case you run short of time. If you edit on your feet, do not jeopardize the “wholeness” of the training or the goals.
8. Ask yourself if your materials are visually appealing. When a participant enters the training room, he or she should see that this will be a place of learning.
9. Use PowerPoint in moderation. Don't put your notes on slides--make them readable, relevant, brief, uncluttered, and visually appealing.
10. Build in adequate break time. Be careful not to break the power of an activity by disrupting it with a break.
11. Since everyone learns and retains information differently, design your training using a variety of delivery methods.

Active Learning

Educational psychologists show that people remember:

- 10% of what we READ.
- 20% of what we HEAR.
- 30% of what we SEE.
- 50% of what we SEE & HEAR.
- 70% of what we DISCUSS.
- 75% of what we PRACTICE.
- 80% of what we EXPERIENCE.
- 95% of what we TEACH others.

Utilizing a Range of Learning Techniques (Visual, Hearing, Feeling – VHF).

The human brain stores information in 'Very High Frequency' – VHF, as visual, hearing or feeling data. In order to ensure that all participants can be engaged in the sessions, the facilitators can utilize a range of learning techniques and tools.

Technique	Messages/contents	Tools
Visual (V)	Pictures, scenes, images, logos, diagrams, graphs, charts, photos, drawings	Flip chart, PowerPoint presentation, whiteboard, props and accessories, video clips, imaging
Hearing (H)	Words, music, sound, accents, conversations	Music, sound effects, audio gimmicks, onomatopoeia
Feeling (F)	Emotions, smells, tastes, tactile experiments, pain/comfort	Music (emotion/mood setting), handouts, verbal descriptions, anecdotes, metaphors, parables

Based on the study referenced, the classroom experiment demonstrated that, when tested after 24 hours, participants' recall of a **V** message (80 correct answers) and an **F** message (79 correct answers) was almost twice as good as their recall of an **H** message (45 correct answers).

Facilitation Skills – 6 Ps

In order to deliver effective training which engages the participants for learning, the facilitator can be guided by the "6Ps" as shown below:

1. Plan

Content – each session has clear objectives, subject matter, and key points.

Visual aids – photos and videos should support the presentations.

Exercises – group questions and exercises should support the session learning objectives.

2. Prepare

Lesson plan – which serves as a "road map" and keeps the facilitator in sequence.

Visual aids - should be high quality, well done, and relevant to the session.

Practice - Physical run through with aids and equipment.

3. Personal

Dress – which is appropriate to participants and comfortable for the facilitator.

Potential distractions – avoid bringing unnecessary items to the session e.g. jewellery, pointer, pens, money; unless part of the session.

Attitude - a positive and upbeat attitude which is clear to the participants.

Perception – individual participant perceptions are understood, especially during exercises.

4. Presentation

Energy – the facilitator is enthusiastic, has a positive attitude, and can convince the audience.

Style - the style is relaxed and natural.

Activity - the facilitator uses and adjusts appropriate movement, standing, sitting, position, notes, and microphone.

Equipment – the facilitator knows how to use equipment, tries it, and checks before the training. The facilitator should be prepared if the equipment fails.

Handouts – only use and distribute handouts when appropriate, avoid distractions.

5. Presence

Voice – the facilitator avoids monotone speech, and checks inflection and speed.

Vocabulary - the facilitator understands the audience backgrounds, and uses the appropriate words.

Pace – the facilitator monitors the speed of information delivery, and seeks feedback.

Non-verbal – the facilitator seeks feedback, as approximately 65% communication is non-verbal: use of hands, eyes, and body.

Communication – the facilitators is aware of communication filters and barriers.

6. Participation

Exercises – sessions may include exercises to reinforce learning, and give feedback about learning progression.

Feedback – the facilitator makes use of feedback to reinforce learning, and adjusts the presentation if necessary.

Active listening - the facilitator encourages reflection, paraphrases participant questions, uses “boomerang questions”, and ask questions.

Giving instructions – instructions are precise, concise, complete, to ensure all participants are doing the same thing.

Common Communication Barriers

As guided by the “6Ps”, communication is the essential component of training and facilitation. Common challenges for communication during training include:

- Rate of speech.
- One-way communication.
- No feedback.

- No visual contact.
- No common language.
- No common frame of reference.
- Ideas presented in a way which is not logical.
- Too much information in a short time .
- Redundancy.
- Frustration on the part of communicators (facilitator and participants).

Training Methods

Different training methods may vary in terms of their effectiveness as shown in the figure below.

Ranking of methods depending on TEACHING GOALS (1 = high, 8 = low)						
METHOD	KNOWLEDGE ACQUISITION	ATTITUDE CHANGE	PROBLEM-SOLVING SKILLS	INTER-PERSONAL SKILLS	PARTICIPANT ACCEPTANCE	KNOWLEDGE RETENTION
CASE STUDY	4	5	1	5	1	4
WORKSHOP	1	3	4	4	5	2
LECTURE	8	7	7	8	7	3
GAMES	5	4	2	3	2	7
FILMS	6	6	8	6	4	5
PROGRAMMED INSTR.	3	8	6	7	8	1
ROLE-PLAYING	2	2	3	1	3	6
T GROUP	7	1	5	2	6	8

Source J. Newstrom 'Evaluating Effectiveness of Training Methods

Source: John Townsend (2000)

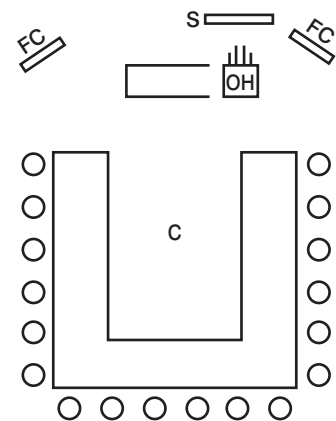
Seating Patterns

Appropriate seating patterns can encourage learning environment.

1. U-Shape

Advantages

- Businesslike.
- Facilitator can walk around the 'U'.
- Generally provides good participant visibility.
- Standard seating arrangement, therefore non-threatening.



Disadvantages

- Somewhat formal; requires ice-breaking.
- Some participants masked by audio visual equipment.
- Front participants constantly at 60-90 (neck ache).
- Rear participants are far from the screen/flip chart.

FC – Flip chart/ OH – Over Head or Projector/ S – Screen/ C – Center.

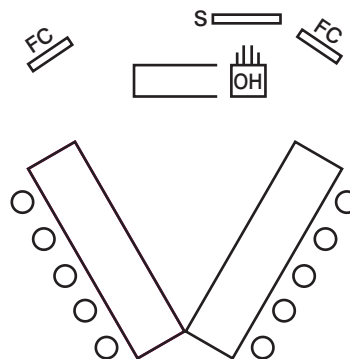
2. V-Shape

Advantages

- Best pattern for visibility/avoidance of neck ache.
- Optimum facilitator/participant contact.
- Less formal and intimidating than 'U'.

Disadvantages

- Space requirement (only small groups).



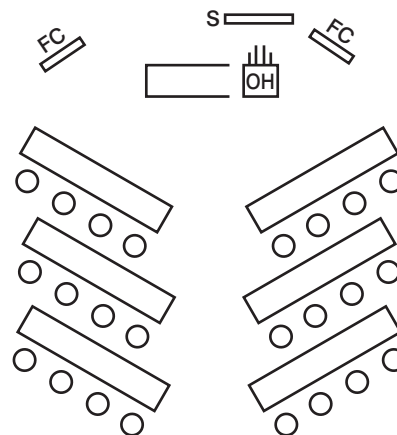
3. Herring Bone

Advantages

- Space effective for large numbers.
- All participants at good angle to screen/flip chart etc.
- Facilitator can walk down 'spine'.

Disadvantages

- Several participants masked by others.
- Reminiscent of school.
- Encourages dysfunctional groupings.
- Rear participants far from screen/flip chart etc.
- Relatively poor participant/facilitator contact.



4. Bistro

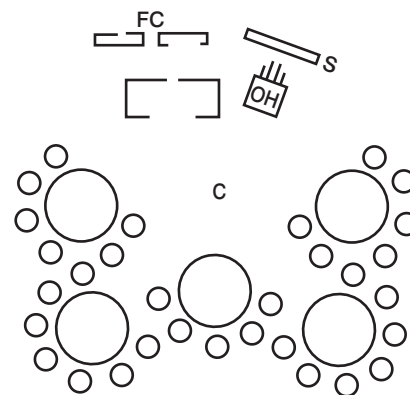
Advantages

- Ideal for teambuilding sessions and small group workshops.
- Informal: encourages maximum trainee participation/identification.

- Original: encourages open-mindedness.
- Facilitator can circulate.

Disadvantages

- Some participants will have poor visibility or maybe constantly sitting at an angle to the screen/flip chart.
- May foster lack of attention and encourage side conversations.
- Encourages splinter group identification.



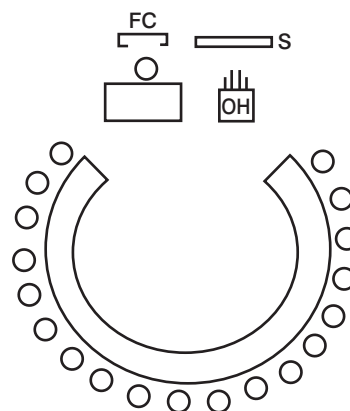
5. Circle

Advantages

- Ideal for sensitivity training sessions.
- Encourages maximum participant involvement.
- Excellent facilitator/participant contact.
- Minimum side conversation; no informal group formation.

Disadvantages

- Difficult to find table which can be set up in a circle.
- Some participants have poor visibility/neck ache.
- Without suitable tables participant may feel unnecessarily exposed.
- Less formal style may affect concentration level.



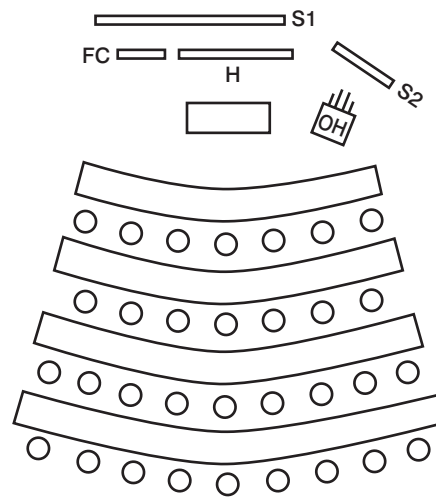
6. Amphitheatre

Advantages

- If room is well designed, excellent visibility and acoustics.
- Very space effective.
- Good for lecture-type presentations.

Disadvantages

- Very poor trainer/participant contact.
- Difficult to set up unless room is designed with permanent setting.
- Back rows must be elevated.
- Very university-like.



Source: John Townsend (2000).

References

John Townsend (2000). The Trainer's Pocketbook (formerly the Instructor's Pocketbook). 8th Edition.

A Brief Guide to Preparing Presentations (using PowerPoint)

Delivering an effective and clear presentation is an important part of the training procedure - it allows the trainer to convey course content and important messages to participants. Therefore, being familiar with basic principles of using presentation tools such as PowerPoint can greatly assist the ToT process.

Selecting a font

It is recommended to select a clear font style which is appropriate for the content of the slides. Likewise, it is useful to select a clear color font and size which can easily be read and matches with the selected background for slides. For instance, black text on a white background will always be the best but also the most boring choice. Try to select suitable color combinations between text and backgrounds which are easy on the eyes for your readers.

- Keep the design very basic and simple. It shall not distract.
- *Pick an easy to read font face.*
- Carefully Select font sizes for headers and text.
- Leave room for highlights, such as images or take home messages.
- Decorate scarcely but well.
- Restrict the room your design takes up and don't ever let the design restrict your message.
- **Consistently** use the same font face and size on *all slides*.
- Match colour.
- Carefully use color to highlight your message!
- Don't weaken the color effect by using too many colors.
- Make a brilliant choice: match colors for design and good contrast to highlight your message.

Selecting content

When selecting content, the 'KISS!' principle can be applied, that is, 'Keep It Straight and Simple!'. Therefore, slides should try to feature only keywords or ideas rather than long sentences. In this respect, it is important to remember that the slides are there to support the presentation and not to replace the message which will be delivered by talking to your audience. Adding images or figures can be useful but it is important that these are appropriate and add some value to your presentation. Effective presentations often find a way to emphasize or summarize key points or messages - some presenters like to give their participants a final 'take home' message.

Keep It Straight and Simple.

- **Keywords only.**
- **No Sentences!**
- **Never read your slides, talk freely.**

Remember that your slides are only there to support, not to replace your talk! you'll want to tell a story, describe your data or explain circumstances, and only provide keywords through your slides. If you read your slides and if you do it slow and badly, the audience will get bored and stop listening.

Delivering your presentation

It is important to know your audience beforehand, considering the following questions can help you as the presenter to pitch your content appropriately:

- What do they know?
- What do you need to tell them?
- What do they expect?
- What will be interesting for them?
- What can you teach them?
- What will keep them focused?

Practicing or rehearsing your presentation can help familiarize the presenter with the content of their slides, some other tips and techniques to bear in mind are:

- Know your slides inside out - well enough to speak freely.
- Speak with confidence – loud and clear.
- Don't speak too fast.
- Maintain eye contact with the audience for effect where possible.

*“Read not your power point, but your audience.
Understand not only your topic, but the dynamics of the group.
Focus more on asking the right questions, rather than always providing the right answers.
Finish not only your input, but also the group’s output.
More than teach, train!”*

- Anonymous-

Group exercise:

- Participants should be requested to form small group comprising of 4-5 members and requested to identify key skills, which they would require for conducting PDNA sessions.
- Each group can present the findings and facilitators can discuss it in plenary.

Session 2: Create and deliver an effective presentation

Session at a glance

Session objective	: To discuss and identify key training skills required for facilitating PDNA Training Course.
Duration	: 120 minutes.
Tools and Methodology	: Training methods: Lecture, Group work and Plenary Material required: Laptop, projector, Flip chart, white board. speaker.
Key discussion topics	: Target group, Non-verbal communication, Visuals and Facilitation.

The facilitator should share the following key points for effective presentation:

- Presentation is all about participants/target group, which means every aspect of presentation should be geared towards the audience.
- There should be one core message of the presentation. Other points, pictures, examples etc are used to reinforce the key message.
- Key issues in facilitation are:
 - Plan opening carefully.
 - Stay focused on topics.
 - Listen attentively.

- Make participants feel valued.
- Respond gracefully.
- Encourage participation.
- Learning names of participants.
- The presentation should start with a bang & grab the attention of participants as first few seconds are the most crucial. It can be done through using some startling Statistics, Story or insightful Question.
- The content of the presentation should be Clear, Simple, Progressive and Consistent.
- Non-verbal issue like voice modulation, volume and pause are very important. In addition, a good eye contact with participants is equally significant.
- Handling query during a session is very important.
- The presenter should exude positive vibes and enthusiastic about the topic. It can create positive environment.
- The facilitator should reach the training venue well in advance and should be acquainted with gadgets, training hall, participants, etc.
- Practice is very important.
- Some key challenges
 - Nervous during first few seconds/minutes.
 - Fail to set the tone/authority at the start.
 - Hands in pocket.
 - Presenter's position.
 - Not acquainted with training environment.
 - No eye contact.
 - Read slides/Unidirectional.

Group exercise:

- Facilitator can show video on presentation and facilitation. For video refer training kit.
- Participants should be requested to form small group comprising of 4-5 members and requested to identify key features of good presentation and facilitation in the video.
- Each group can present the findings and facilitators can discuss it in plenary.

Session 3: PDNA Training planning.

Session at a glance

Session objective : To identify key steps in preparation for conducting PDNA training course.

Duration : 180 minutes.

Tools and Methodology : Training methods : Lecture, Group work and Plenary
Material required : Laptop, projector, Flip chart, white board.

Key discussion topics : Steps for PDNA training preparation.

In order to plan and facilitate a successful training, a number of tasks have to be done before, during and after the actual training event. The following sections will provide some guidance on the role and responsibilities of the training coordinator/organizer.

Before the Training

When organizing a training event, most of the work has to be done before the actual training event. A training coordinator/organizer will be responsible for all of the following tasks:

1. Identification of training location

The location of the training has to be determined. Will the training be done at national level, state level, or district level? Furthermore, how many people will join the training? Based on this information, a suitable training location will be selected. A training venue should be big enough to house all participants and should have the necessary equipment available that will be needed for the training. The training location should be inspected by the training coordinator to ensure that all requirements are met.

2. Identification and invitation of participants

Identification of the right participants is crucial for a successful training event. Depending on the targeted participants the training structure may change. Criteria for participant selection should be developed based on desired qualifications of potential PDNA specialists by sector. As soon as the identification of key participant has been finalized, it is important to invite the participants to ensure that they will have time to attend the training event. The invitation should include key information about the training event and participants should be interested in attending the event after reading the invitation information.

3. Identification of facilitators

Facilitators are of utmost importance when organizing a training. Every training event requires a specific set of trainers. Make sure that the expertise of the facilitators match with the objectives of the training event. Ideally, a PDNA facilitator database by sector including contact information and key expertise of different persons will be established to facilitate the identification of facilitators in the future. The identified facilitators should be contacted in advance to check availability and interest. Travel logistics, training agenda and general information of the training location will be informed to the assigned facilitators. If possible, a training briefing could be organized with all facilitators to discuss any remaining issues and the overall facilitation of the training.

4. Preparation of training budget

A detailed training budget has to be prepared including the costs for the training venue, the resource persons, the participants and costs related to field visits and any materials that need to be bought for the training. It is important to be as detailed as possible to ensure that the actual costs are in line with available funds.

5. Compilation of reference documents

During the training, certain documents such as PDNA handbooks and other relevant documents (case studies, exercises, group work, etc.) will probably be distributed. It has to be ensured that all documents are available before the training in the required language and are printed in a sufficient number.

6. Organization of field trip (if applicable)

The training may include a field trip that needs to be inspected and organized before the training. A possible destination of the field trip needs to be identified and all related logistics (transportation, budget, etc.) have to be organized beforehand. A local organization or the local government may be able to support the field trip.

During the Training

During the training, it has to be ensured that the opening and closing ceremony are conducted in an appropriate manner and that the overall training facilitation runs according to plan. During the training event, the feedback of participants and facilitators that can be included in the training report should be collected. A quiz or pre- and post-test should be prepared before the training that can be used to evaluate the learning impact of the training. Training energizers and icebreakers can be used during sessions and after breaks to create relaxed and friendly learning environment. At the end of the training, the possible next steps can be discussed and agreed among the participants. The training certificates should be prepared and distributed before the closing ceremony.

After the Training

After the training, all involved facilitators and organizers should receive a thank you note to appreciate their engagement and support of the training event. Furthermore, a training report should be prepared including the feedback of the participants and facilitators, the results of the pre and post-test as well as recommendations for improvements. Based on the training feedback, it may be necessary to revise some of the training materials to improve the training for future occasions.

Group exercise:

- Facilitator should request the participants to identify one topic related to PDNA for presentation.
- Participants use presentation and facilitation skill to conduct the session on the selected topic.
- Facilitator and other participants can provide feedback.
- After presentation by all participants or selected participants, the facilitator should consolidate all the learning.

Checklist: Planning and Conducting the Training Course;

Timeline	4 weeks before	3 weeks before	2 weeks before	1 week before	DURING TRAINING	1 week after	2 weeks after	Long-term
Training Arrangements	Identify training location		Coordinate with state or district level for training arrangements		Check training arrangements	Send thank you note to		
Facilitators	Identify session facilitators	Contact facilitators to check availability		Training briefing	Support facilitation			
Participants	Identify criteria for participant selection	Confirm participant list	Send invitations to participants		Use ice-breakers and energizers			
Budget		Prepare budget			Settle expenses			
Field Trip (if applicable)	Identify possible destination	Organize field trip		Check field trip arrangements	Facilitate field trip			
Training materials			Check availability of all training materials		Explain documents if necessary			Support revision of training materials based on feedback
Evaluation					Collect feedback and conduct pre/post test	Compile feedback and write training report	Share training report with relevant people/agencies	

Proposed Agenda

Day No.	Learning Unit	Number of Hours	Topic	Methodology
1	1		Opening ceremonies	Lecture Discussions Exercises
			The present post-disaster assessment in India	
			1. Disaster Response Funds guidelines	
			2. The Relief memorandum	
			3. Other protocols	
	2		The PDNA conceptual framework	
			1. Concepts and definitions.	
			2. The sectors for assessment.	
			3. Inter-sectoral linkages.	
			4. Crosscutting issues.	
2	3		Standard procedures in undertaking a PDNA	
			1. Baseline information	
			2. Field Assessment	
			3. Aggregation of data	
			4. Estimation of needs	
	4		Sector Assessments	
			1. The productive sector	
3	4		Sector Assessments	
			2. The social sector	
			3. The infrastructure sector	
			4. Cross-cutting issues	
			5. Other issues	
			6. Exercises	
4	5		Aggregation of disaster effects and impact assessment	
			1. Summary of damages and losses	
			2. Macroeconomic impact assessment	
			3. Social impact assessment	
			4. Exercises	
			5. Gender impact assessment	
5	6		Estimation of post-disaster recovery needs	
			1. Identification of needs	
			2. Prioritization of needs	
			3. Estimation of the amount of recovery needs	
			4. Developing the recovery framework	
	7		Improving Training and Presentation Skills for PDNA	Lecture Practice
			1. Principles of Training Skills	
			2. Brief Guide to Prepare Presentations (using PowerPoint)	
			3. Training Planning and Management	

Generic Checklist IPDNA Training Events

TASKS	RESPONSIBLE ORGANIZATION/ PERSON	DATE INITIATED	DATE OF COMPLETION	REMARKS
A. Preparatory Tasks				
1. Get confirmation on dates				
2. Prepare budget for trainings				
3. Identification of workshop venue				
4. Development of concept note				
5. Identify possible participants				
B. Letters of Invitation/Facilitators/Contracts				
1. Prepare invitation letters for Participants Facilitators/Presenters (if applicable)				
2. Send out letters of invitation				
3. Identification and invitation of speakers for opening and closing ceremony				
4. Follow-up re: Invitation				
5. Prepare welcome letters for participants during check-in/ registration				
C. Agenda and training materials				
1. Prepare training agenda				
2. Review training documents (PDNA Handbook, Professional Module, ToT Module, PPT handouts)				
3. Preparation for logistic arrangements: - Print training documents - Name plates - Name badges - Stationery 1 Laptop, 1 Printer - CD/USB for distribution				
4. Identify additional resource materials (print if necessary)				

D. Training venue arrangements				
1. Confirm details with training venue (meeting room & meeting package)				
2. Arrange accommodation (if necessary)				
3. Arrange travel logistics (if necessary)				
4. Design of backdrop				
E. Logistics and Equipment Rental				
1. Purchase of office supplies				Markers, pens, paper, sticky notes
2. Photo documentation during the training				
3. Setup meeting room; backdrop, LCD and screen, computers and printers, internet facility, meeting folders, bags and reference materials				
4. Training registration				
F. Budget/Finance				
1. Monitor and maintain budget over expenditures				
2. Identify any advance payments (e.g. training venue)				
3. Request for Cash Advance/ Request for Payment • Travel/Air Ticket costs for reimbursement • Meeting package cost • Accommodation • Per diem • Logistics costs				Get official receipts from participants for reimbursement
G. Training Reports/Documents				
1. Preparation of training report				
2. Preparation of financial report				
3. Development of database of trainers and trained individuals				

Pre/Post Test PDNA Training

Pre-Test of PDNA & Recovery Course: Day 1

Name: _____

Department: _____

/ 10

Instruction: On Day 1, participants will see a PowerPoint, with 10 multiple-choice questions. For each question, participants should circle one answer. At the end of the test, participants give the completed form to the Course Coordinator for marking.

Question 1	a	b	c	d
Question 2	a	b	c	d
Question 3	a	b	c	d
Question 4	a	b	c	d
Question 5	a	b	c	d
Question 6	a	b	c	d
Question 7	a	b	c	d
Question 8	a	b	c	d
Question 9	a	b	c	d
Question 10	a	b	c	d

Post-Test of PDNA & Recovery Course: Day 3

Name: _____

Department: _____

/ 10

Instruction: On Day 3, participants will see a PowerPoint, with 10 multiple-choice questions. For each question, participants should circle one answer. At the end of the test, participants give the completed form to the Course Coordinator for marking.

Question 1	a	b	c	d
Question 2	a	b	c	d
Question 3	a	b	c	d
Question 4	a	b	c	d
Question 5	a	b	c	d
Question 6	a	b	c	d
Question 7	a	b	c	d
Question 8	a	b	c	d
Question 9	a	b	c	d
Question 10	a	b	c	d

Participants' Feedback

Instruction: Calculate the average participant feedback and write in the table.

Day	Learning Unit	AVERAGE SCORE		FACILITATORS NAME
		Content	Facilitation	
1	Learning Unit 1.The present post-disaster assessment in India - Disaster Response Funds guidelines - The Relief memorandum - Other protocols			
	Learning Unit 2.The PDNA conceptual framework - Concepts and definitions - The sectors for assessment - Inter-sectoral linkages - Cross-cutting issues			
1/2	Learning Unit 3.Standard procedures in undertaking a PDNA - Baseline information - Field Assessment - Aggregation of data - Estimation of needs			
	Learning Unit 4. Sector Assessments The productive sector			
2	Learning Unit 4. Sector Assessments (Cont.) - The social sector - The infrastructure sector - Cross-cutting issues - Other issues - Exercise			
3	Learning Unit 5. Aggregation of disaster effects and impact assessment - Summary of damages and losses - Macroeconomic impact assessment - Social impact assessment - Exercises - Gender impact assessment - Personal and household levels impacts			

Day	Learning Unit	AVERAGE SCORE		FACILITATORS NAME
		Content	Facilitation	
3	Learning Unit 6. Estimation of post-disaster recovery needs • Identification of needs • Prioritization of needs • Estimation of the amount of recovery needs • Developing the recovery framework			
4/5	Learning Unit 7.Improving Training and Presentation Skills for PDNA • Principles of Training Skills • A Brief Guide to Prepare Presentations (using PowerPoint) • Training Planning and Management			

Instruction: Write down the most common and interesting participant feedback.

Good comments and recommendation?

Improvement needed and recommendation?

Annex-1: Training Exercise – Baseline Table

AGRICULTURE, LIVESTOCK, AND FISHERIES

Table 1. Baseline information on agricultural crops and forest products

Name of District:							
Sub-sector	Area planted	Average yield for the year	Farm gate price	Production cost	Number of farmers or growers		
	(Hectares)	(Kg/Hectare/Yr.)	(Money Value/unit)	(Money Value/Hectare)	Families	M	F
Crops							
a. Rice							
b. Legumes							
c. Oilseed crops							
d. Culinary crops							
e. Corn							
f. Vegetables							
g. Others							
Permanent Crops							
a. Coconut							
b. Coffee							
c. Rubber							
d. Sugarcane							
e. Cotton							
f. Tea							
g. Fruit crops							
h. Others							
Forestry							
a. Teak							
b. Timber							
c. Others							

Table 2. Baseline information on fisheries

Name of District:							
Sub-sector	Area	Average yield for the year	Farm gate price	Production cost	Number of farmers or fishers		
Fisheries	(Hectares)	(Kg/Hectare/Yr.)	(Money Value/unit)	(Money Value/Hectare)	Families	M	F
Inland fisheries							
Prawn farming							
Sweet water fishing							
Maintaining fisheries tools							
Others							
Open-sea fishing	N.A.	Average yield for the year	Farm gate price	Production cost (Money Value)	Number of fishermen		
					Families	M	F

Table 3. Baseline information on livestock and poultry

Name of District:							
Sub-sector	Area planted	Average yield for the year	Farm gate price	Production cost	Number of farmers or growers		
Livestock	Heads	(Kg/Yr.)	(Money Value/Kg)	(Money Value/Unit)	Families	M	F
a. Cattle							
b. Pig							
c. Goat							
d. Buffalo							
e. Others							
Poultry	Heads	(Kg/Yr.)	(Money Value/Kg)	(Money Value/Unit)	Families	M	F
a. Chicken							
b. Ducks							
c. Others							

Table 4. Baseline information on other agricultural products

Name of District:						
Sub-sector	Average yield for the year	Farm gate price	Production cost	Number of farmers or growers		
Agri Products	(Units/Yr.)	(Money Value/Unit)	(Money Value/Unit)	Families	M	F
a. Milled rice						
b. Value-added products						
c. Processed vegetables						
d. Fruit Syrup, Jam, Cordial						
Other Products						
a. Eggs						
b. Milk						
c. Honey						
d. Others						

Table 5. Irrigation Facilities

Name of District:							
Name of Irrigation Facility	Areas Irrigated	Length	Cost Per Meter	Monthly Income From Fees	Ownership		Number of beneficiaries
	Hectares	Meters	(Money Value/ m)	(Money Value)	Public	Private	Farmers
TOTAL							

Table 6. Agricultural Assets

Name of District:						
Assets	Quantity	Average Replacement Value	Ownership		Number of Private Owners	
		Money Value	Private	Public	Male	Female
Physical Assets						
a. Agriculture land						
b. Storage buildings						
c. Animal shelter						
d. Rice mills						
e. Warehouse						
f. Others						
Equipment and machinery						
a. Tractor						
b. Hand tractor						
c. Thresher						
d. Inter-cultivator						
e. Reaper						
f. Plow						
g. Combined harvesters						
h. Dryers						
i. Seed processing plants						
j. Others						
Stocks and raw materials						
a. Rice						
b. Legumes						
c. Oilseed crops						
d. Culinary crops						
e. Corn						
f. Seeds						
g. Fertilizer						

h. Pesticides						
i. Veterinary supplies						
j. Others						
Forestry and Plantations						
a. Trees (enumerate)						
b. Orchards						
c. Others						
Other Equipment						
a. Honey production						
b. Milk production						
c. Egg production						
d. Others						
Fisheries						
a. Boats						
b. Engines						
c. Fishing tools and supporting materials						
d. Traps and Cages						
e. Gears						
f. Production of fish feed and Production of Fish embryo						
g. Properties of natural lake						
h. Fisheries lands						
i. Maintaining fisheries tools						
j. Others						

COMMERCE AND INDUSTRY

Table 1. Baseline information of commerce and industry facilities in a District

Name of District:								
Type of firm in the Formal Sector	Number							
	Micro		Small		Medium		Large	
	Public	Private	Public	Private	Public	Private	Public	Private
A. Industry								
Construction materials								
a. Cement								
b. Tiles								
c. Others								
Beverages								
a. Beer								
b. Soft drinks								
c. Others								
Chemicals								
a. Pharmaceutical								
b. Paints								
c. Others								
Agro-industry								
a. Food processing								
b. Paper								
c. Others								
Others								
a. Oil and gas								
b. Garments								
c. Tobacco								
d. Others								
B. Trading								
a. Vehicles								

b. Gasoline								
c. Computers								
d. Other retail shops								
C. Services								
a. Finance								
b. Repair shops								
c. Construction								
d. Restaurants								
e. Other services								
TOTAL								
Type of firms in the Informal Sector								
a. Trading								
b. Services								
c. Food processing								
d. Others								
TOTAL								

WATER AND SANITATION

Table 1. Baseline information on assets in the commercial water supply sector

Name of District:									
Name of water supply system:									
Ownership	Public ()			Private ()					
Water Users and Supply	Water Demand Forecast (Liters per year) and Rates (MONEY VALUE per Liter)								
	Current year			Year 1			Year 2		
	Users	Volume (L/Yr.)	Rate (Money Value/L)	Users	Volume (L/Yr.)	Rate (Money Value/L)	Users	Liters (L/Yr.)	Rate (Money Value/L)
a. Residential									
b. Commercial									
c. Industrial									
d. Others									
Water supply structures									
	Total Capacity (Liters)	Operating cost (Money Value/Liter)		Average Repair Cost (Money Value)		Average Replacement Cost (Money Value)			
a. Treatment plants									
b. Storage									
c. Distribution									
d. Other sub-systems									
Equipment									
	Average Replacement cost (Money Value/Equipment)			Unit Costs of Repair (Money Value/Equipment)					
a.									
b.									
c.									

Table 2. Baseline information on rural water supply in a district

Name of District:					
Type of Water Supply	Number by Ownership		Number of Users	Average construction cost	Average repair cost
	Public	Private	Families	Money Value	Money Value
Type 1: Open well					
Type 2: Closed well with hand pump					
Type 3: Closed well with storage and electric water pump and tap stands					
Type 4: Others					

ROADS

Table 1. Baseline information for roads and bridges

Name of District:									
Type of Roads	Total Length by classification					Average Replacement Cost	Average Repair Cost	Average Number of Users per Month	
	N.R.	S.R.	D.R.	T.R.	Others	(Money Value/Km)	(Money Value/Km)	Persons	Vehicles
Concrete									
Asphalt									
Bituminous									
Graveled									
Earth									
Type of Bridges	Number by classification					Replacement Cost	Average Repair Cost	Average Number of Users per Month	
	N.B.	S.B.	D.B.	T.B.	Others	(Money Value/m)	(Money Value/m)	Persons	Vehicles
Steel									
Concrete									
Wood									
Others									

Table 2. Baseline information for the transportation-related government buildings and structures

Name of District:						
Types of structures		Average Replacement Cost per Square Meter (Money Value)	Average Repair Cost per Square Meter (Money Value)			
Types	Name of Building or Structure		Roof	Wall	Floor	Others
Type 1	Single floor					
Type 2	2 to 5 floors					
Type 3	6 to 10 floors					
Type 4	Over 10 floors					
Type 5	Other Structures					

Table 3. Baseline information on the equipment and supplies

Name of District:			
Equipment and Supplies	Unit Costs (in Money Value)		
	Average acquisition value per unit	Average replacement cost per unit	Average repair cost per unit
Heavy equipment			
a. Bulldozers			
b. Graders			
c. Loaders			
d. Trucks			
e. Others (Enumerate)			
Other equipment			
a. Communication			
b. Security			
c. Others (Enumerate)			
Materials and supplies			
a. Furniture			
b. Computers			
c. Others (Enumerate)			

Table 4. General types of land transportation assets

Name of District:					
Land transportation	Number		Average Replacement Cost (Money Value/ Unit)	Average Repair Cost (Money Value/ Unit)	Average Operating Cost (Money Value/ Km)
	Public	Private			
Cars					
Motorcycles					
Bicycles					
Others					
Buses					
1. Company 1					
2. Company 2					
3. Company N					
Taxis					
1. Company 1					
2. Company 2					
3. Company N					
Trucks					
1. Company 1					
2. Company 2					
3. Company N					
Other vehicles					

Table 5. Assets in the air transportation sub-sector

Name of District:					
Air Transportation	Number		Average Replacement Cost (Money Value/Unit)	Average Repair Cost (Money Value/ Unit)	Average Operating Cost (Money Value/ Km)
	Public	Private			
Aircrafts					
a. Airplanes					
b. Helicopters					
c. Others					
Structures:					
a. Type 1					
b. Type 2					

c. Type 3					
d. Type 4					
e. Type 5					
Equipment and machinery					
a. Navigation equipment					
b. Baggage handling					
c. Security equipment					
d. Others (enumerate)					
Materials and supplies					
Other assets					

Table 6. Assets in the water transportation sub-sector

Name of District:					
Water Transportation	Number		Average Replacement Cost (Money Value/ Unit)	Average Repair Cost (Money Value/Unit)	Average Operating Cost (Money Value/ Km)
	Public	Private			
Watercrafts					
a. Ships					
b. Ferries					
c. Others					
Structures:					
a. Type 1					
b. Type 2					
c. Type 3					
d. Type 4					
e. Type 5					
Equipment and machinery					
a. Navigation equipment					

b. Baggage handling					
c. Security equipment					
d. Others (enumerate)					
Materials and supplies					
Other assets					

Table 7. Assets in the rail transportation sub-sector

Name of District:					
Rail Transportation	Number		Average Replacement Cost (Money Value/Unit)	Average Repair Cost (Money Value/Unit)	Average Operating Cost (Money Value/Km)
	Public	Private			
Trains					
Tracks					
Structures:					
a. Type 1					
b. Type 2					
c. Type 3					
d. Type 4					
e. Type 5					
Equipment and machinery					
a. Navigation equipment					
b. Baggage handling					
c. Security equipment					
d. Others (enumerate)					
Materials and supplies					
Other assets					

GOVERNMENT INFRASTRUCTURE

Table 1. Baseline information for the related costs of buildings and structures

Name of agency:						
Name of District:						
Types of structures		Average Replacement Cost per Square Meter (Money Value/SqM)	Average Repair Cost per Square Meter (Money Value/SqM)			
Types	Offices		Roof	Wall	Floor	Others
Type 1	Single floor					
Type 2	2 to 5 floors					
Type 3	6 to 10 floors					
Type 4	Over 10 floors					
Other Structures						
Type 5	Warehouses					
Type 6	Garage					
Type 7	Others (Enumerate)					

Table 2. Baseline information on the equipment, machinery and supplies

Name of Agency:			
Name of District:			
Equipment, machinery and Supplies	Costs (in Money Value)		
	Average acquisition value per unit	Average replacement cost per unit	Average repair cost per unit
a. Elevators			
b. Computers			
c. Air conditioners			
d. Furniture			
e. Others (Enumerate)			

EDUCATION

Table 1. Baseline information of educational facilities in District

Name of District:							
Type of facilities	Number		Total	Average number of students			
Educational facilities	Public	Private		Public		Private	
				Male	Female	Male	Female
Kindergarten/ pre-school							
Primary School							
Secondary School							
University							
Training Institutes							
Training School							
Others							
TOTAL							

Table 2. Baseline information of unit cost of educational facilities in a District

Name of District:						
Particulars	Values (in Money Values)					
	Pre-school	Primary School	Secondary School	University	Technical Institutes	Others
Average replacement cost of:						
a. Structures						
b. Roof per square meter						
c. Wall per square meter						
d. Floor per square meter						
e. Desks						

f. Computers						
g. Books						
h. Chalk boards						
i. Other educational materials, equipment and furnishings						
Average repair cost of:						
a. Structures						
b. Roof per square meter						
c. Wall per square meter						
d. Floor per square meter						
e. Desks						
f. Computers						
g. Books						
h. Chalk boards						
i. Other educational materials, equipment and furnishings						
Average fees/ revenue:						
a. Average revenue per month						
Construction/ repair period	In days					
a. Average construction period						
b. Average repair period						

HEALTH

Table 1. Baseline information of medical facilities in a District

Name of District:							
Type of facilities	Number		Total	Average number of clients per day			
Medical facilities	Public	Private		Public		Private	
				Male	Female	Male	Female
Health clinics							
Hospitals							
Medical laboratories							
Others							
Total							

Table 2. Baseline information of unit cost of medical facilities in a District

Name of District:						
Particulars	Values (in Money Values)					
	Clinics		Hospitals		Medical laboratories	Others (Specify)
	Single Floor	Multi-floor	Single Floor	Multi-floor		
Average replacement cost of:						
a. Structure						
b. Roofing per square meter						
c. Wall per square meter						
d. Flooring per square meter						
e. Electrical installation						
f. Plumbing						
Average repair cost of:						
a. Structure						
b. Roofing per square meter						
c. Wall per square meter						

d. Flooring per square meter						
e. Electrical installation						
f. Plumbing						
Average fees / revenue:						
a. Average fee/s per client per visit						
b. Average revenue per day or month						
Construction/ repair period	In days					
a. Average construction period						
b. Average repair period						

Table 3. Baseline information of unit cost of medical equipment and supplies in a district or city

Medical Equipment and Supplies	Unit Costs (Money Values)		
	Average acquisition value per unit	Average replacement cost per unit	Average repair cost per unit
a. CT Scan			
b. X-ray machine			
c. MRI machine			
d. Other equipment (Specify)			
e. Medicines			
f. Other medical supplies			
g. Furniture			
h. Others			

HOUSING

Table 1. Baseline information of housing types in a District

Name of District:					
Housing typology		Number of houses	Number of houses for rent	Average number of occupants	
Types	Description			Female	Male
Type 1	Shanties (wood, grass, cardboard)				
Type 2	Teak, hardwood, other wood; single floor				
Type 3	Teak, hardwood, other wood; two floors and above				
Type 4	Reinforced Concrete and wood single floor				
Type 5	Reinforced concrete and wood; two floors and above				
Type 6	Reinforced concrete and brick pillar; mid-rise housing				
Type 7	Others				
Total					

Table 2. Baseline information for the related costs of various types of housing units

Name of District:								
Particulars	Values (in Money Values) of Various Types of Housing							
	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Others
Average replacement cost of:								
a. Structure								
b. Roofing per square meter								
c. Wall per square meter								
d. Flooring per square meter								

e. Electrical installation								
f. Plumbing								
Average repair cost of:								
a. Structure								
b. Roofing per square meter								
c. Wall per square meter								
d. Flooring per square meter								
e. Electrical installation								
f. Plumbing								
Average contents / rent								
a. Average Value of Contents								
b. Average rent per month								
Construction / repair time:	In Days							
a. Average construction period								
b. Average repair period								

CULTURE

Table 1. Baseline information of culture/tourist/religious facilities in a District

Name of District:						
Establishments	Number of Establishments by Ownership	Type of Structure				
		1 to 4 Floors			5 and More Floors	
	Private	All Concrete Public	Concrete and Wood	Wood and Bamboo	All Concrete	Concrete and Wood
Hotels						
Guest houses						
Resorts/Spas						
Guest Houses						
TOTAL						
Natural formations			Description			
a. Formation 1						
b. Formation N						
Cultural sites			Description			
a. Site 1						
b. Site N						
Others (Specify)						
TOTAL						

ENVIRONMENT

Table 1. Baseline information on special environmental areas of concern and their description

Name of District:	
Types of Areas	Pre-disaster description
Areas important for the maintenance of natural systems (egg-laying, hatching, birthing and breeding areas; water collection areas, vital support systems).	
Protected areas or ecosystems (official or private).	
Strategic wildlife areas and highly diverse biological areas such as those where plants or animals can be used for repopulation and ecological restoration, medical research, areas of endemic plants or animals or habitats, etc.	
Areas important for the maintenance of species useful to agriculture, fish-farming, animal raising, etc.	
Biological corridors and areas of seasonal importance to the feeding or reproduction of one or more species.	
Highly productive habitat for rare or endangered species (woodland, wetland, estuary, reef, etc.);	
Areas of aesthetic landscape and recreational value.	
Others	

Annex 2 – PDNA Training Group Exercise

Background

- India was hit by a 275-kph cyclone which caused extensive flooding and damage to infrastructure to ten (10) provinces.
- Ten (10) PDNA teams were created to conduct post-disaster assessments, one for each province.
- Your team was assigned to assess the disaster impacts in province X.
- Your team decided to start the assessment on Panigarh.

Profile of Panigarh

3. Demography

Table 1. Information about the District

Name of District:			
Poverty incidence (%)	40%		
Maternal mortality rate:	20/10,000		
Infant mortality rate:	30/10,000		
Demography	Male	Female	Total
• Total Population	70,000	80,000	150,000
• Total Number of Those Below 5 years old	15,000	10,000	25,000
• Total Number of Those Above 60 years old	30,000	35,000	65,000
• Total Number of Differently-Abled	1,000	2,000	3,000
Household Description	Male	Female	Total
• Average size	3	2	5
• Average Number of Children	2	1	3
• Average Number of Those Below 5 years old	1		1
• Average Number of Children in School	1	1	
• Average Number of Those Above 60 years old		1	1
Prevalence of malnutrition (%)			10%
Total Number of Families/Households	% of Total	Total Number	
• Headed by Male	90%	27,000	
• Headed by Female	10%	3,000	
• With sanitary toilets		29,000	
• Without sanitary toilets		1,000	
• With electricity		25,000	
• Without electricity		5,000	
• Belonging to ethnic minority group		5,000	

4. Social Services

Table 2. Social services in the District

Name of District:									
Public Basic Services	Quantity	Capacity	Power Source		Source of Potable Water Supply				
		Persons	Electricity	Others	Type 1	Type 2	Type 3	Type 4	Type 5
Primary School	5	5,000	X						X
High School	3	5,000	x						x
University	1	2,000	x						x
Health centers	5	250	x						x
Hospitals	1	500	x						x
Others									

Note in filling out Table 2.

- Capacity of basic services refers to enrolment in schools and the number of patients per day at the medical facilities.
- For water supply source
 - Type 1 is sourced from a spring;
 - Type 2 is individual well with hand pump;
 - Type 3 is shared community well;
 - Type 4 is community faucet;
 - Type 5 is piped-in faucet.

5. Sources of income

Table 3. Main Sources of Income of Households

Name of District:					
Main Sources of Income	Number of Households	Average Monthly Income (US\$)	Average Value of Assets per Household (US\$)	Number of People	
				Male	Female
Self-employed:					
1. Farming	15,000	100	200	12,000	3,000
2. Fishing					
3. Livestock Growing	1,000	90	200	800	200

4. Poultry Growing	1,000	80	200	800	200
5. Microenterprises	1,000	70	200	300	700
6. Trading (shops and stores)	3,000	120	300	200	800
7. Services	1,000	100	200	600	400
8. Transport workers	2,000	130	300	1,900	100
9. Others					
Employed					
1. Daily wage laborers	1,000	150	400	600	400
2. Skilled workers					
3. Professionals	5,000	500	5,000	4,000	3,000
4. Others					
Other sources					
1. Pension					
2. Outside remittance					

Agriculture

- Agricultural crops are mostly rice and vegetables.
- There is one commercial coffee plantation that employs 100 people as coffee pickers.
- Livestock and poultry are mostly backyard in nature.
- One irrigation facility is existing.
- Panigarh supplies 30% of the rice in Province X.

Baseline information:

Name of District:							
Sub-sector	Area planted	Average yield for the year	Farm gate price	Production cost	Number of farmers or growers		
	(Hectares)	(Kg/ Hectare)	(US\$/unit)	(US\$/ Hectare)	Families	M	F
Crops							
a. Rice	2 M	5,000	1.2/kg	\$500	15,000	12,000	3,000
b. Vegetables	500	500	1/kg	\$200	5,000	3000	2,000
Permanent Crops							
a. Coffee	100	10,000	5/kg	\$15,000	100	10	80

Based on the field visit, the following were noted:

- a) 800 hectares of rice farm were affected. The rice were planted only 2 months before the cyclone occurred. It is estimated that production per hectare will be reduced by 30% because of the cyclone.
- b) Coffee production is expected to be reduced by 20% for the year.
- c) 500 kgs of harvested vegetables were totally washed away by the floods.
- d) 10,000 kgs of harvested rice were totally destroyed.
- e) 3 km of irrigation canal were partially damaged and need repair estimated at 1M US\$. While the irrigation is under repair, losses from irrigation fees is estimated to be 30,000 US\$.
- f) 50 full grown cattle (valued at \$500 each); 100 pigs (valued at \$100 each) and 70 goats (valued at \$ 80 each) died from the floods.
- g) 300 chickens (valued at \$1 each) and 100 ducks (valued at \$1.50 each) were declared to be missing and presumed dead.
- h) Veterinary medicines worth US\$ 1,000 and pesticides worth US\$ 200 were destroyed.
- i) 20 tractors were damaged with a total estimated repair cost of US\$ 5,000.

Exercise 1:

- 1. Estimate the damages and losses and put it in the summary table for Panigarh.**
- 2. Show the basis for the calculation of the damages and losses for each of the item.**
- 3. Present and explain your results to the group.**

Health

- In Panigarh, there is high incidence of malnutrition among children below 5 years old.
- Maternal mortality and child mortality in rural areas is above the national average.
- Vaccination is carried out through the health clinics spread across the district.
- Regular services are provided free at the health clinics are pre-natal and neo natal check-ups.
- Common diseases treated at the health clinics are diarrhea, pneumonia, influenza, wound infections, snake bites, accidents and other similar medical conditions.
- For serious illnesses, people go to the hospitals in the town center which is about 50 km from the rural areas.
- 3 of the health centers are located in landslide-prone areas.

Baseline Information

Name of District:							
Type of facilities	Number		Total	Average number of clients per day			
	Public	Private		Public		Private	
				Male	Female	Male	Female
Health clinics	15			50	150		
Hospitals	1	1		100	300	75	200
Medical laboratories							
Others							
Total							

Based on the field visit, the following were noted:

- 10 government rural health clinics were damaged needing a total of US\$ 500,000 for repair. Vaccines worth US\$ 100,000 was totally destroyed by the floods. Vaccination and pre-natal services will not be rendered for at least 2 months.
- 1 private hospital has damages on its delivery room needing US\$ 100,000 for repair. The repair will take 1 month which will cause US\$ 20,000 in lost revenues. An ambulance was damaged which will cost US\$ 1,000 to repair. One CT scan on the ground floor was damaged by the flood and needs US\$ 5,000 for repair.

Exercise 1:

1. Estimate the damages and losses and put it in the summary table for Panigarh.
- 2 Show the basis for the calculation of the damages and losses for each of the item.
3. Present and explain your results to the group.

Education

Baseline information

- There are pre-schools, primary schools, secondary schools and a training institute in the District.
- 5 of the primary schools are located along the river bank which are flood-prone.

Name of District:							
Type of facilities	Number		Total	Average number of students			
Educational facilities	Public	Private		Public		Private	
				Male	Female	Male	Female
Kindergarten/ pre-school	20	5		400	410	100	120
Primary School	20	2		5,000	5,100	300	320
Secondary School	20	2		5,500	5,000	320	300
University							
Training institutes	1			300	200		
Others							
TOTAL							

Based on the field visit, the following were noted:

1. The roofs of 5 public primary schools were blown off by the cyclone which will need a total of US\$ 50,000 to repair.
2. 10,000 books were washed away by the floods which will need US\$ 100,000 to replace.
3. 5, 000 school desks need repair amounting to US\$ 50,000.
4. 10 old computers valued US\$ 100 each were totally destroyed.
5. The total estimated cost in the cleaning of debris within the primary school premises is US\$ 10,000.
6. The training institute's damaged equipment will need US\$ 50,000 for repair.
7. Overtime pay for teachers to catch up with lost number of school days is estimated to reach US\$ 20,000.

Exercise 1:

1. *Estimate the damages and losses and put it in the summary table for Panigarh.*
2. *Show the basis for the calculation of the damages and losses for each of the item.*
3. *Present and explain your results to the group.*

Power

- There is one dam in District X which generates electricity supplied to 5 other provinces earning income of \$ 1 a month while extra electricity is exported to Thailand worth \$3 million per month in revenues. This dam is a joint venture between the government of India and a foreign company. This company also distributes the electricity it generates.
- The electricity from this dam provides the power needed by all government offices, private businesses including the schools and hospitals as well as the electricity needed by the water company.

Baseline information

Name of District:					
Name of Power Company	Power Demand Forecast (Kw-Hr)				Rate
	Current Year	Year 1	Year 2	Year 3	US\$/ KW-Hr
Company					
a. Residential	5,000 KW-Hr	5,100	5,200	5,300	0.10/KW-Hr
b. Commercial	3,000 KW-Hr	3,100	3,200	3,300	0.15/KW-Hr
c. Industrial	2,000 KW-Hr	2,100	2,200	2,300	0.20/KW-Hr

Based on the field visit, the following were noted:

1. 2 turbines were damaged which will need US\$ 100,000 to repair.
2. Repair to damaged structures will require US\$ 300,000.
3. Due to the destruction caused by the cyclone:
 - The demand for residential electricity for the current year will be reduced by 20%.
 - The industrial and commercial demand will be reduced by 10% in the current year.
 - The expected demand for the following years after the disaster will be unchanged.
4. The company cannot provide electricity for 1 week within India and it cannot export electricity to Thailand for 1 month.

Exercise 1:

1. *Estimate the damages and losses and put it in the summary table for Panigarh.*
2. *Show the basis for the calculation of the damages and losses for each of the item.*
3. *Present and explain your results to the group.*

Water Supply

- There is one commercial water supply company that provide water to 5 provinces with a monthly revenue of US\$ 100,000.
- In Panigarh, it provides water to 60% of the households, all government offices, private businesses, schools, hospitals and other institutions.
- The other 40% of the households in Panigarh rely on rural water supply systems which is provided free by the government.

Baseline information

Commercial water supply

Name of District:									
Name of water supply system:									
Ownership	Public () Private ()								
Water Users and Supply	Water Demand Forecast (Liters per year) and Rates (US\$ per Liter)								
	Current year			Year 1			Year 2		
	Users	Volume (L/Yr.)	Rate (US\$/L)	Users	Volume (L/Yr.)	Rate (US\$/L)	Users	Liters (L/Yr.)	Rate (US\$/L)
a. Residential	18,000	100M	0.10						
b. Commercial	10,000	50M	0.15						
c. Industrial	1,000	30M	0.20						

Rural water supply

Name of District:					
Type of Water Supply	Number by Ownership		Number of Users	Average construction cost	Average repair cost
	Public	Private	Families	US\$	US\$
Type 1: Open well	100		2,000	500	300
Type 2: Closed well with hand pump	300		5,000	700	500
Type 3: Closed well with storage and electric water pump and tap stands	150		5,000	2,000	1,000

Based on the field visit, the following were noted:

For commercial water supply:

1. The water treatment facility was damaged which will need US\$ 100,000 to repair.
2. Repair to damaged structures will require US\$ 500,000.
3. Due to the destruction of houses, the demand for residential water supply for the current year will be reduced by 20%.

For rural water supply:

1. 10 open wells were contaminated which require US\$ 300 each to be restored. No physical repairs are needed.
2. 5 hand pumps were damaged needing repairs.
3. 2 Type 3 water systems valued at US\$ 500 each were totally destroyed which needs to be replaced.
4. The clearing of debris in the water sources will require US\$ 10,000.

Exercise 1:

1. *Estimate the damages and losses and put it in the summary table for Panigarh.*
2. *Show the basis for the calculation of the damages and losses for each of the item.*
3. *Present and explain your results to the group.*

Housing

- There are 30,000 households in the Panigarh.
- Most of the families living in the far rural areas are farmers with Type 1 or Type 2 housing.
- 2,000 families living in Type 1 houses are in flood-prone riverbanks.

Baseline information

Name of District:					
Housing typology		Number of houses	Number of houses for rent	Average number of occupants	
Types	Description			Female	Male
Type 1	Shanties (wood, grass, cardboard)	10,000	0	3	3
Type 2	Mainly Wooden single floor	7,000	0	3	3
Type 3	Mainly Wooden two floors and above	5,000	100	2	3
Type 4	Mainly Concrete and Wood single floor	5,000	100	2	3
Type 5	Mainly Concrete and Wood two floors and above	2,000	100	2	2
Type 6	Concrete mid-rise housing units	1,000	200	2	2
Total					

Name of District:								
Particulars	Values (in US\$) of Various Types of Housing							
	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Others
a. Average Value of Contents	200	500	2,000	5,000	10,000	15,000		
b. Average rent per month			50	100	150	250		
c. Average replacement cost	1,000	6,000	10,000	20,000	50,000	5M		

Based on the field visit, the following were noted:

1. 7,000 Type 1 houses were totally destroyed with a present value at US\$ 500 each. The contents of these houses were also totally destroyed.
2. About 2,000 Type 1 houses were found be located along river banks that are flood- prone.
3. 2,000 Type 2 houses were partially damaged needing a total value of US\$ 1 million to repair. No house contents were damaged.
4. 500 Type 3 houses were damaged needing a total of 50 million US\$ to repair. No house contents were damaged.
5. 50 of the damaged Type 3 houses are for rent which will require 1 month to repair before they can be rented out again.
6. There are no damages to Type 5 and Type 6 houses but the total cost of clearing the debris within their premises will amount to 50,000 US\$.

Exercise 1:

1. *Estimate the damages and losses and put it in the summary table for Panigarh.*
2. *Show the basis for the calculation of the damages and losses for each of the item.*
3. *Present and explain your results to the group.*

Transportation

- There are various types of roads and bridges in Panigarh.
- There are 2 bus companies based in Panigarh; one government company and one private company.
- The airport is also located in Panigarh which service the passengers going to other 5 provinces including foreign tourists.

- The concrete roads and steel and concrete bridges connect the Province to other provinces. They are also among the main connection of Laos to Vietnam and Thailand.
- The wooden bridges are important means of access of rural farmers from their farms to the town center.

Baseline information

Name of District:									
Type of Roads	Total Length by classification (Km)					Average Replacement Cost	Average Repair Cost	Average Number of Users per Month	
	N.R.	P.R.	D.R.	V.R.	Others	(US\$/Km)	(US\$/Km)	Persons	Vehicles
Concrete	70					50,000	10,000	300,000	100,000
Asphalt		100				30,000	5,000	200,000	50,000
Bituminous									
Graveled			100			10,000	2,000	50,000	10,000
Earth				50		5,000	1,000	20,000	1,000
Type of Bridges	Number by classification					Replacement Cost	Average Repair Cost	Average Number of Users per Month	
	N.B.	P.B.	D.B.	V.B.	Others	(US\$/m)	(US\$/m)	Persons	Vehicles
Steel	5					500,000	30,000	300,000	100,000
Concrete	15					200,000	10,000	200,000	50,000
Wood		30				50,000	2,000	50,000	10,000
Others									

- The following are the types of roads/bridges:
 - NR/NB means national roads/national bridges.
 - PR/PB means province roads/province bridges.
 - DR/DB means district roads/district bridges.
 - VR/VB means village roads/village bridges.
 - Others can be pathways or footpaths; or makeshift bridges.

Based on the field visit, the following were noted:

1. The following roads and bridges were damaged and need repair:
 - 10 km of concrete roads.
 - 20 km of asphalt roads.
 - 80 km of graveled road.
 - 40 km of earth road.
 - 1 steel bridge.
 - 5 concrete bridges.
 - 20 wooden bridges.
2. The roofs of 2 public bus terminals were blown off by strong winds needing US\$ 5,000 each for repair.
3. 10 buses from the government bus company were submerged in flood waters needing US\$ 30,000 to repair.
4. 5 buses from the private bus company were submerged in flood waters needing US\$ 10,000 to repair.
5. 200 private cars were damaged needing a total of US\$ 50,000 to repair them all.
6. Because of the damages to the buses and roads and bridges, the government bus company is expected to lose US\$ 20,000 income for 2 months while the private bus company is expected to lose US\$ 10,000 for 2 months.
7. The runaway of the airport was full of debris, which will cost US\$ 10,000 to clear.
8. Runway lights were submerged in floodwaters, which need US\$ 50,000 to repair.
9. The airport will be closed for 2 weeks, which is expected to reduce the airport's income amounting US\$ 100,000.

Exercise 1:

- 1. Estimate the damages and losses and put it in the summary table for Panigarh.**
- 2. Show the basis for the calculation of the damages and losses for each of the item.**
- 3. Present and explain your results to the group.**

Exercise 2: After the introduction of Impact Assessment for the Sectors

- ***Based on the estimated damages and losses, assess potential impacts to the economy and the people.***
- ***What baseline information was lacking to make a more in-depth impact assessment?***

Exercise 3: Estimate and prioritize needs within the sector.

- *Based on the impact assessment, identify qualitatively (the types of activities/projects) the needs of the sector. [No need to quantify the amount].*
- *Given that the initial budget for entire recovery is limited, prioritize the needs identified for the sector by activities/projects.*

Exercise 4: (For the Government personnel training only)

Justify the priority needs of the sector (Role play)

- *Each sector participant will be asked to present his sector's priority needs to the Minister of Finance and Minister of Economic Planning whose roles will be played by 2 participants.*
- *At the end of the exercise, the Government (participants) must be able to agree what activities or projects will be funded.*

ABOUT THE INSTITUTE

National Institute of Disaster Management (NIDM) constituted on 30.10.2006 under The Disaster Management Act 2005 has been entrusted with the responsibility for planning and promoting training and research in the area of disaster management, documentation and development of national level information base relating to disaster management policies, prevention mechanism and mitigation measures. Re-designated from the National Centre for Disaster Management of the Indian Institute of Public Administration on 16th October 2003, NIDM is steadily marching towards the mission of making a disaster resilient India by developing and promoting a culture of prevention and preparedness at all levels.

FUNCTIONS

Under The Disaster Management Act 2005, the Institute, has been entrusted with the following functions:

- Develop training modules, undertake research and documentation in disaster management and organize training programmes
- Formulate and implement a comprehensive human resource development plan covering all aspects of disaster management
- Provide assistance in national level policy formulation
- Provide required assistance to the training and research institutes for development of training and research programmes for various stakeholders
- Provide assistance to the State Government and State training institutes in the formulation of State level policies, strategies, disaster management framework and any other assistance as may be required for capacity building
- Develop educational materials for disaster management including academic and professional courses
- Promote awareness among stakeholders including college or school teachers and student, technical personnel and others associated with multi-hazard mitigation, preparedness and response measures
- Undertake, organize and facilitate study courses, conferences, lectures, seminars within and outside the country to promote the aforesaid objectives
- Undertake and provide support for publication of journals, research papers and books as well as establish and maintain libraries etc.



Resilient India - Disaster free India

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