INFRASTRUCTURE SECTOR

COMMUNITY INFRASTRUCTURE

PDNA GUIDELINES VOLUME B

GFDRR
Global Facility for Disaster Reduction and Recovery
WORLD BANK GROUP


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CONTENTS

ACRONYMS AND ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
BBB	Build Back Better
BOP	Balance of Payments
CBO	Community-based Organizations
CSO	Civil Society Organizations
DALA	Damage and Loss Assessment
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EU	European Union
GBV	Gender-based violence
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
GIS	Geographical Information Systems
HCT	UN Humanitarian Country Team
HDI	Human Development Index
HIV	Human Immunodeficiency Virus
HRNA	Human Recovery Needs Assessment
IDP	Internally Displaced Person
IFIS	International Finance Institutions
INEE	Inter-Agency Network for Education in Emergencies
MDG	Millennium Development Goals
MDTF	Multi-Donor Trust Fund
NGO	Non-Government Organization
PDNA	Post-Disaster Needs Assessment
PLHIV	People Living with HIV and AIDS
PRSP	Participatory Rural Appraisal
RBPF	Poverty Reduction Strategy Paper
RF	Results-Based Planning Framework
RS	Recovery Framework
TOR	Recovery Strategy
UN	Terms of Reference
UNAIDS	United Nations
UNCT	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Country Team
UNDAC	United Nations Development Programme
UNDAF	United Nations Disaster Assessment and Coordination
UNOSAT	United Nations Development Assistance Framework
WASH	United Nations Operational Satellite Applications Programme
WB	Water, Sanitation and Hygiene
WHO	World Bank
PRA	World Health Organization

INTRODUCTION

This guide is intended to support and facilitate post disaster recovery of community infrastructure with particular emphasis on:

- Systematic assessment of the nature, type and extent of the disaster's effect on the community infrastructure in the affected regions;
- Determination of the consequences on the community infrastructure, the aggregate macroeconomic and human development levels of the country; and
- Determination of a recovery and reconstruction strategy that is based on community participation.

ASSESSMENT PROCESS

SECTOR OVERVIEW

Community infrastructure primarily refers to small scale basic structures, technical facilities and systems built at the community level that are critical for sustenance of lives and livelihoods of the population living in a community. These are low-cost small-scale infrastructures built over time through community-led initiatives according to the needs and aspirations of the community population. These micro infrastructures are socially, economically and operationally linked with community lives and livelihood options, ensure basic services to its population and are thus conceived as critical lifelines for survival of the community.

Community infrastructures, because of being less robust in their design, are usually subjected to severe damage by any natural event of reasonable magnitude or intensity. These small-scale infrastructures represent a weaker segment of the assets available at the local level, making the community more vulnerable to the challenges of disasters. The conditions are worse for urban community infrastructures that are built in and around slums and informal settlements.

Community Infrastructure is developed by the actors of informal sector, through community-led and non-government-funded initiatives according to the needs and aspirations of the population in the community. Often, these structures have been built in isolation from planned government programs and disconnected from the formal sector's development initiatives. community infrastructures are not supported by regulatory mechanisms such as building codes and construction regulations.

The types of infrastructure are extremely diverse and vary from community to community depending on geo-physical, socio-cultural and economic factors that influence the lives and livelihoods of the population in a community. Therefore, estimation of damage, changes in production flows and determination of recovery options require special skills and deeper understanding of geo-physical settings and socio-political dynamics of the affected regions.

Due to the informal conditions under which the community infrastructure has been developed, these structures are often absent from the official government records and have not been accounted for in the national accounting systems.

The recovery of community infrastructure is essentially a community-driven process and it is therefore important to ensure that the assessment should be guided by the insights and participation of the community populations. This poses significant challenges and often makes the process an unusually complex and difficult undertaking.

Community infrastructure is an integral sub-sector of the infrastructure sector. Therefore, it is important to note that the assessment and recovery planning of some structures and typologies included in this chapter may fall under the responsibility of other PDNA sector teams (transportation, electricity, water and sanitation, manufacturing, trade, and education) and may address cross-cutting issues of gender and livelihoods. It is important to note that there is a danger of double or multiple accounting in terms of damage and recovery and reconstruction needs estimation unless the CI Team works in close collaboration with the Infrastructure Team, and shares information with other sector teams who may be collecting the same or similar information.

However, drawing a line between main infrastructure and community infrastructure is not easy, and a globally accepted definition for community infrastructure does not yet exist. A collaborative effort leading to continued consultation with national and local authorities, affected communities and other sectoral assessment groups is the only way to define `community infrastructure` in the affected region and to determine the scope of damage and assessment to be undertaken in this sector.

DATA COLLECTION METHODS

The comprehensive assessment of community infrastructure, as outlined in this chapter, combines the use of quantitative primary data on damage and changes in flows by the assessment teams and secondary data. Such data allows for the quantifying of the physical damage caused by a disaster, with the use of baseline data and qualitative and quantitative information to assess the implications that such damage will have on mobility, safety, access to basic services, and livelihood opportunities of the women and men in the affected community.

Primary qualitative and quantitative information is also used to examine how community infrastructure assets have been affected. This implies the use of a variety of assessment methods, including primary data collection techniques such as household sample surveys, participatory rural appraisal techniques, key informant interviews, group discussions, participant observations and other methods.

The entire PDNA process usually takes four to six weeks depending on the extent of damage. Within this period, field data collection and community consultation requires at least two weeks. It is important to plan on at least two to three weeks for field assessment, followed by another one to weeks for data analysis and report preparation. Past experience has shown that all experts and staffs are not always required for the entire assessment period.

Depending on the scale of disaster, several teams are often required in the affected regions in order to facilitate timely completion of field assessments. In such cases, each team should include experts who are familiar with undertaking community infrastructure assessments.

MOBILIZING HUMAN RESOURCES FOR THE ASSESSMENT

It is important to note that a separate CI Team does not always have to undertake the assessment of community infrastructure. Other sector teams may do it, with awareness of community infrastructure and specialized skills, technical knowledge, prior experience and understanding of community infrastructure in the post-disaster recovery context.

CI recovery intersects multiple sectors and therefore, expertise and skills from a range of disciplines are required during assessment, planning and implementation. This range may include:

- Engineering Knowledge and skills: Architects, engineers;
- Community based planning and development: Community mobilization specialists; and
- Other specialized knowledge and skills: DRR specialists, livelihoods specialists.

BASELINE INFORMATION

DESCRIPTION OF THE INFRASTRUCTURE AND PHYSICAL ASSETS

Typically, community infrastructure may be regrouped in six main categories:

a. **Connective infrastructure**
This infrastructure is mainly related to community access and internal circulation including internal roads, walkways, footpaths within the community providing access to the national arterial or local road system. The transport sector assesses damage and changes in flows to tertiary roads, which includes access to/from communities to the rest of the country. Beware of possible duplications.

b. Protective Infrastructures

These are small-scale and low-cost protecting structures built for various community purposes. They include drainage structures, pipe culverts, box culverts, footbridges, retaining walls, protection of slopes, jetties, small embankments or protection walls, and small earthen dams. Again, the transport sector team and the water and sanitation team would assess any damage or changes in flows related to collective systems. Beware of duplications.

c. Socio Economic Structures

These are small-scale structures, developed through local initiatives for a community's socio-cultural and economic prosperity. They include small marketplaces and infrastructure within market grounds, including pathways, sheds, drains, community shops, community resource centers, religious centers, graveyards, playgrounds and so on. The trade sector team would assess damage and changes in flows for all market-related structures and activities. Beware of duplications.

d. Water and Sanitation Lifelines

These are minor structures built in the communities in response to their needs for a water supply and sanitation. They may include: water reservoirs and water sources, supply pipes, ponds, the community water supply system, pump houses and deep tube wells, drainage lines, waste disposal and composting plants, etc. Again, the water and sanitation sector team would assess such structures and services. Beware of duplications.

e. Energy Lifelines

These belong to decentralized household or community-based energy sources and renewable energy plants that cater to the energy needs of remote and isolated off-grid communities. They include biogas plants, bio-gassifiers, solar home systems for electrification, and similar community-driven low-cost technical plants. Beware of duplications with the electricity and energy sector assessments.

f. Communication Lifelines

These are small ICT-based installations at the community, catering to their needs of information, communication and early warning messages. They may include community telephone centers, community-based early warning systems and communication devices, community-run radio and communication systems. Beware of duplication with the telecommunications assessment team.

Disasters may severely damage community infrastructure. The assets, in terms of available community infrastructure, are diverse in their sectoral divisions and their applications in the community.

DESCRIPTION OF GOVERNANCE AND DECISION-MAKING PROCESSES

The governance and social processes refer to community infrastructure governance institutions, policies and procedures, and social organizations and networks that shape the construction and maintenance of community infrastructure. The assessment of governance and social processes identifies key institutions, such as NGOs, local and national authorities, and policies affecting community infrastructure, as well as formal and informal social networks, livelihoods, and socio-cultural and ethnic considerations linked to livelihoods. It is important to understand which governance and social processes are present in the affected areas, how they operate and support infrastructure systems, how they have been affected, and how they may enable/disable infrastructure recovery. The social organization at community level should be assessed also to understand the local capacity for recovery, and to identify collaboration and partnership arrangements in the recovery effort.

BASELINE INFORMATION REQUIREMENTS

In order to gauge the full extent of a disaster's impact on community infrastructure, it is necessary to understand the main characteristics of the infrastructure sector prior to the disaster, particularly to compare the differences between pre-disaster and post-disaster conditions. The baseline information required for community infrastructure may be similar to the baseline used in the other infrastructure sectors (transport, energy, water and sanitation, communication, industry, trade, etc.), which may include:

1. The characteristics (geographical, or spatial location), as well as capacities of the various components;
2. Information/data on the coverage of services, including population coverage , type of user, of each component of community infrastructure;
3. Information of the governance aspects of community infrastructure, including community-based management processes, social processes, social organizations and institutions including NGOs and CBOs involved with decision-making, design, construction and financing as well as day-to-day maintenance of community infrastructure
4. Information about sources of funds (community funds, NGO funds, etc.)for the financing of community infrastructure.
5. Information on the community infrastructure portfolio: All types of community-led, non-government-funded common assets, all officially implemented infrastructure and prospective, adopted plans. Planned interventions are particularly important to register, as they could be adopted and used in the recovery process.
6. General pre-disaster conditions in affected areas: This will include demographics, basic economic and social structures, and socio-economic conditions (poverty, HDI, etc.)
7. The institutional and policy environment: It is important to ensure that recovery planning and needs are aligned with national laws and policies (and international instruments) for the sector.

Field data collection should be carried out in concert with other sectoral assessment teams in order to harmonize the approach and to maximize the utilization of collective information and findings. Available information from secondary sources should be carefully reviewed and analyzed to determine the critical information gaps and data inconsistency to be addressed in the early stages of field data collection.

BASELINE INFORMATION SOURCES

It is important to note that due to the nature of community infrastructure, which often includes ad hoc, supplementary and self-implemented structures, the majority of structures will most likely not appear on official asset lists, and data should be complemented by field visits and direct involvement with women and men from the affected community.

Since community infrastructure may be closely linked to community livelihood options, a review of baseline livelihood information (if available) may provide a general sense on qualitative information in terms of types and concentration of community infrastructure in the affected communities. The national household surveys, undertaken periodically by national statistical authorities, provide useful disaggregated household information, including occupational and livelihood statistics. Household health and nutrition surveys, if available, may provide useful information on water supply and sanitation infrastructure.

It is important to overlay a gender analysis on the demographic, employment and livelihood data as this will give a more complete picture of the gendered patterns of associated community infrastructure needs and priorities. For example, in low-income settlements, women may be the primary operators of small-market trading/

micro-enterprises, and therefore more affected by the destruction of the market. Reinstatement of the market will have real benefits for both women and the households they support.

There may be reports or special studies available with community-based organizations, NGOs or local government institutions, focusing on community capacity, risks and vulnerabilities in the affected region. Useful information on community assets, including infrastructure, could be derived from these reports.

The community infrastructure sub-sector is in particular need of map-based information to understand the extent of the damages, as well as for planning the recovery process. Required map-based data includes but is not limited to: topography, landscape features, natural resources, the built environment, and the social, recreational and commercial spaces. There are several providers of maps, satellite images and geographic information:

- The UN Cartographic Section and the UN Operational Satellite Applications Program (UNOSAT) have the capacity to provide maps and satellite imagery. These requests should be coordinated and shared with all relevant partners in order to allow every stakeholder access to the same resources.
- Geographical Information Systems (GIS) is a system designed to create, manage, analyze and display geospatial data on digital maps.
- Online map and geographical information programs, such as Google Earth (superimposition of images obtained from satellite imagery and aerial photography) can be used to view areas subjected to disasters. Other free online collaborative networks are efficient sources to find crowd-sourced data (solicited contributions from online communities) and can serve a useful tool to map both physical and social structures.

DATA GATHERING AND SAMPLING STRUCTURE

Sampling size should be determined in accordance with the strategy agreed in consultation and coordination with other sectoral assessment groups, to optimize logistical requirements and to maximize the utilization of collective resources. Sampling should be representative and must cover communities with different categories of infrastructure damages (e.g. low, moderate and severe). At the community level the assessment should cover the entire geographic area and should be inclusive of all minor infrastructures, systems and facilities that are not covered by other sectoral assessment groups.

ASSESSMENT OF DISASTER EFFECTS

EFFECTS ON COMMUNITY INFRASTRUCTURE AND PHYSICAL ASSETS

The general effect of the disaster on the community infrastructure portfolio of affected areas should include:

Damages to community infrastructure components, including:

- **Community access roads**: These are internal roads, walkways and footpaths within the community providing access to the national arterial or local road system (village roads, earthen walkways in the community, house-to-house connection roads, etc.).
- **Minor structures**: These are small-scale and low-cost structures built for various community purposes (drainage structures, pipe culverts, box culverts, footbridges, retaining walls, protection of slopes, jetties, small embankments or protection walls, small earthen dams, etc.).
- **Socio-economic infrastructure**: These are small-scale physical infrastructures developed through local initiative for the community's socio-cultural and economic prosperity (small marketplaces and infra-

structure within market grounds including pathways, sheds, drains, etc., community shops, community resource centers, religious centers, graveyards, playgrounds and so on).

- **Community-based water supply and sanitation**: These are minor infrastructures built in the communities in response to their needs regarding water supply and sanitation (water reservoirs and water sources, supply pipes, ponds and reservoirs, community water supply systems, pump houses and deep tube wells, drainage lines, waste disposal and composting plants, etc.).
- **Communication and early warning systems**: These are small ICT-based installations catering to their needs on information, communication and early warning messages (community telephone centers, community-based early warning systems and communication devices, etc.).
- **Community-based non-conventional energy plants**: These belong to decentralized household or community-based energy sources and renewable energy plants that cater to the energy needs of remote and isolated off-grid communities (biogas plants, bio-gassifiers, solar home systems for electrification, and similar community driven low cost technical plants).
- **Community-managed small and micro-enterprises**: These are household or community-run micro-enterprises and are subject to destruction of stocks and equipment during disaster events. These micro enterprises are likely to collapse in the local economic downturn following a disaster (handloom and cottage industries, potteries, fish processing plants, rice husking and agro-based plants, etc.).

EFFECTS ON PRODUCTION, DELIVERY AND ACCESS TO GOODS AND SERVICES

Disasters may severely damage community infrastructure and thus disrupt community processes critical to the livelihoods of the community. Types of damage may include

- Destruction of internal and external road communication (note that external roads will be assessed by the infrastructure team) making the community inaccessible and making relief work even harder;
- Disruption of socio-economic and cultural activities, causing huge economic losses in the community;
- Disruption of information and communication networks, thereby creating isolation and barriers for relief and rescue operations;
- Disruption of drainage, water supply and sanitation facilities, which may lead to increased health hazards in the community; and
- Destruction of community-based small and medium-scale enterprises that causes financial losses and market disruptions in the affected regions with the possibility of an acute shortage of essential items for the sustenance of the victims.

EFFECTS ON GOVERNANCE AND DECISION-MAKING PROCESSES

The local context is assessed in terms of the nature and extent of the impact caused by the disaster on governance systems, including community-led organizations, NGOs, CBOs, local authorities, relevant government institutions (e.g. Ministry of Public Works), and the policy environment. Effects on Governance may include:

- Disruptions in local governments/communities services in construction and maintenance of roads, infrastructure;
- Disruption in local governments/ communities services in construction and management of water distribution and sanitation systems and loss of watsan services;

- Disruption in cultural and religious processes, disruption of community processes such as community based discussions, decision-making processes, community protection processes, social and cultural processes;
- Disruptions in local business and economic processes; and
- Disruption in local processes of information sharing and management.

INCREASED RISKS AND VULNERABILITIES

A key element of the assessment is to identify immediate risks to the affected communities, particularly new potential threats that may deteriorate conditions if the necessary measures are not taken in a timely manner. Priority mitigation and preparedness measures are identified to avoid another disaster or a further deterioration of current safety conditions. Below are some potential risks due to the disaster impact on community infrastructure:

- Vulnerability situation worsens; increased risks of loss of income and assets; social exploitation; health hazards etc.;
- Risk of health hazards and increased water prices;
- Risks of increased cost of social and cultural services; increased risks of anti-social activities etc.;
- Risk of increased price of essential commodities; and
- Increased risks of information blockage and isolation; risks of increased cost of information services.

ESTIMATING THE VALUE OF THE EFFECTS OF THE DISASTER

ASSESSMENT OF DAMAGE AND ECONOMIC FLOW CHANGES

The estimation of damage in community infrastructure should be determined by the repair or replacement costs expressed in current values. The value of the damage is the replacement cost, or repair cost, of destroyed physical assets with the same characteristics and standards as prior to the disaster and using the same unit costs that prevailed at the time of the disaster.

Depending on the type of infrastructure and the nature of efforts needed for recovery, the assessment team, in consultation with local experts, should be able to define the thresholds of 'partial damage' and 'complete damage' for each type of community infrastructure. A rule of thumb practiced in some countries consider 0-15% damage as 'minor damage' that can be repaired with little effort by the community themselves, while 15-60% and 60-100% correspond with 'partial damage' and 'complete damage' requiring recovery support from external sources for their repair and reconstruction.

Table 1 in the Annex shows a simple matrix for the compilation of damage and flow changes estimation for different types of community infrastructure. These assets are to be assessed only when they function in isolation, at community level, are built by the informal sector and are not part of the formal system.

ASSESSMENT OF CHANGES IN ECONOMIC FLOWS

IIndirect effects or economic losses due to the effect of the event on community infrastructure may be estimated by the disruption of goods and services at the community level – expressed in current values – over a period of time, from the disaster event to the moment services are back in place to the pre-disaster level. Examples of such effects are losses of production resulting in a loss of income or the cost of delay in transportation due to damage to community roads. Changes in economic flows could also include the additional cost of an interim arrange-

ment caused by possible disruption or lack of availability of raw materials or increased prices of such materials used as inputs, until a sustainable solution has been reached.

In addition to asset destruction, it is necessary to estimate change in economic flows under the following headings:

- The cost of demolition and debris removal;
- The cost of reducing the vulnerability of community infrastructure, including work to stabilize soil, protect dwellings or reinforce structures; and
- The cost of temporary facilities for the period during which a new infrastructure system is under construction or damaged ones are under repair.

There is no standard rule for costing of community infrastructure. It varies with the type of infrastructure and also from region to region. Since community infrastructure employs labor-intensive methods and uses locally available resources, the cost of a particular structure is greatly influenced by local wage rates and prices of locally available materials and equipment. The unit prices (commonly known as 'rate schedules') of common types of community infrastructure are usually available at the local government authority, particularly in the technical or engineering unit. In many developing countries, the engineering department or cell within the ministry of local government maintains updated rate schedules of local level infrastructures in different regions. Another possible source of information could be the public works department. If the price is not available for any particular type of infrastructure, the engineer (or technical expert) in the assessment mission should be able to determine the cost by analyzing the efforts and resources required in each step of the construction method, and in consultation with the community.

The damage and change in flows assessment need not be of utmost quantitative precision. However, efforts must be made to ensure it is comprehensive in its scope and covers the complete range of effects on socio-economic, environmental and community livelihood aspects.

The assessors may wish to undertake rapid sample surveys to capture the change in flows of the community and/or its members as a result of the total or partial destruction of physical assets. Such information would be useful as it may serve as an estimation of disaster impact on personal net income. They may wish to work closely with the livelihoods team.

ASSESSMENT OF DISASTER IMPACT

MACROECONOMIC IMPACT

It should be noted that it is not expected that the effects on community infrastructure would have any significant economic impact on GDP, unless the government agreed to adopt a fiscal initiative, which would partially fund the redevelopment of community infrastructure damaged or destroyed, thus increasing government expenditure in the current fiscal period.

CROSS-SECTORAL COORDINATION AND CROSS-CUTTING THEMES IN COMMUNITY INFRASTRUCTURE

Below are some of the particular considerations relating to cross-sectoral coordination, inter-sectoral linkages as well as cross-cutting issues in the community infrastructure sub-sector. The assessment should indicate how these issues can be addressed in the recovery process, and should establish cross-sector arrangements as required with other sector teams to ensure that they are adequately addressed in the recovery strategy. The assessment and repair of some of the assets included in the community infrastructure assessment may fall under the responsibility of other PDNA sectors, and coordination is necessary at the start of the assessment to avoid overlaps. It is especially important to ensure that infrastructure included in the community infrastructure sub-sector assessment does not duplicate but rather complements the work of others, to ensure a holistic assessment and recovery planning process.

CROSS-SECTORAL COORDINATION

Coordination in CI sector recovery is a multi-faceted challenge. This is particularly difficult because recovery in the CI sector is essentially a community-driven process and disaster-vulnerable communities across developing countries seriously lack coordination capacity.

Effective coordination for assessment, planning and implementation of community infrastructure recovery is critically important for at least the following three important reasons:

Cross-sectoral linkages	Community infrastructure cuts across many sectors and the recovery of CI is therefore required to be aligned appropriately with other sectoral recovery plans. For example, a damaged infrastructure of a community-based learning center must be repaired or reconstructed in a way that conforms to the national recovery plan in the education sector. Linkages must be established to ensure that the education services at the community level are restored appropriately once the school building is back in place. Similar coordination efforts are needed in the recovery of other types of community infrastructure such as community-based primary health centers, major or arterial road systems, etc.
Consistency and avoiding duplication	In the national development context, community infrastructure represents a microcosm of the national infrastructure system and it is therefore important that CI recovery takes place in a manner consistent with the national recovery plan for infrastructure. Hence coordination with the assessment group for major infrastructure is crucial for ensuring consistency in technical configuration and planning, and more so for avoiding duplication in damage and loss estimation.
Livelihood recovery needs	Most importantly, community infrastructure recovery is inherently connected to livelihood recovery of the people living in the affected communities. In fact, community infrastructure recovery has proved to be the most effective vehicle for the creation of employment for the poor and for channeling cash resources to local economies. Effective coordination with the livelihood sector is therefore extremely important to identify and prioritize interventions under the CI sector that facilitate rapid livelihood recovery.

Apart from the above reasons, coordination among different sectoral assessment teams is often required for the interest of effective and quality discussion with the affected communities and with local institutions and stakeholders. Often separately organized meetings and consultations may create confusion and information gaps.

Better coordination among the sectoral assessment groups helps optimum utilization of logistics and saves time and resources in a post-disaster situation. Annex II provides further information on the coordination objectives and related issues. .

GENDER AND SOCIAL EQUITY

Social equity is a key consideration in post-disaster recovery because disasters affect different groups of people in different ways and an equitable response is necessary. Recovery processes have the potential to reinforce social inequities or to contribute to greater equality between differentiated social groups, such as those based on age (for example, the elderly, orphans or unaccompanied or separated children, child-headed households), gender or ethnicity. Gender is particularly important because women and men have different resources available to them and different coping strategies, which need to be understood and recognized in the recovery plan, and because women and girls are often discriminated against and excluded from decision-making relating to community infrastructure needs and priorities. The elderly and the young are particularly exposed to hazards, because of their relative lack of mobility and dependence on others, and have particular levels of sensitivity to disasters once they occur. Similarly, the risk of exclusion of these groups from relief and recovery is high and they will often require special efforts and approaches.

According to WHO estimates, between 7 and 10 percent of the world's population lives with disabilities of one form or another. This population is extremely vulnerable in the face of disasters and requires high levels of attention and support in order to recover from the loss of care and the stable environment on which it normally depends. When possible, the principle of universal design should be applied when planning for community infrastructure upgrades. This principle recognizes that everyone, not only persons with disabilities, passes through periods of life when their ability is challenged: childhood, illness and old age. As such, it is important to plan for the implementation of physical solutions that are satisfactorily accessible, safe and environmentally sound, which again will make it easier for all people to use.

DISASTER RISK REDUCTION

The community infrastructure recovery should adopt a resilient pathway and should make every effort possible to rebuild and lay down durable infrastructures to safeguard community lives and protect livelihoods from future disaster shocks. Disaster risk reduction (DRR) must therefore act as the key driver to advance the recovery process in a manner that effectively address the existing disaster risks and mitigates the risks of future disasters.

Community infrastructures are usually the weakest form of physical infrastructures constructed at the local level and these make both the infrastructure and the community vulnerable to disaster shocks. Annex II provides a table showing generic impact of hazards on community infrastructure.

Within the PDNA context, an in-depth technical investigation on structural vulnerability is not always possible. The structural vulnerability of CI can be assessed through either visual and structural investigation or a combination of both. Visual investigation is often considered a feasible approach in the CI recovery context and this helps to determine the existing structural condition based on examining the age, type and structural soundness, environmental conditions and seismic risk of the site. Other visual measures include:

- Analysis of design layout and technical configuration including structural system, dimension, geometry of elements, spacing, loading systems etc.;
- Inspection and mapping of the detailed structural damage, e.g. spalling, pops-out, cracking and its patterns, corrosion, discoloration, etc.;
- Judgment of the construction quality;

- Evaluation of workmanship; and
- Inspection of material used and its quality

The following are a few suggested actions/steps for the promotion of disaster-resilient recovery of community infrastructure:

- Community capacity should be developed to prepare a community disaster risk reduction plan through conducting systematic mapping of community assets, vulnerabilities and identification of disaster risk. The recovery of community infrastructure should be seen as a distillation of the community disaster risk reduction plan and should aim to build community capacity and promote community resilience.
- A detailed community risk assessment will be carried out involving diverse stakeholders at the local level. The compelling objective is to engage the local people in a consultative process on how to effectively avoid the threats of future disasters and to protect the lives and livelihoods of the community population in the future. An extensive consultative process will be initiated at the local level to determine, assess as well as to examine available options at the hands of local stakeholders to reduce future disaster risks.
- Based upon the results of the risk assessment, elaborate a plan of actions for reducing disaster risks including structural measures at the local levels (e.g. construction of small-scale flood control structures) through community participation approaches.
- Recovery of community infrastructure must be reflective of existing disaster risks and should make necessary provisions (e.g. compliance to building codes, highest flood level, maximum wind speed etc.) for risk-proofing infrastructures recovery.
- The process should ensure that the communities have the understanding and hands-on knowledge of hazard-resistant construction materials and techniques.
- The recovery planning should undertake risk assessment for site locations of important community infrastructure like water pumps, drainage structures, solid waste composting plants etc.
- Manufacturers and suppliers of construction materials such as cement, steel, etc. should provide information, tools and guidance for safe and correct use of their materials. For example, provision of gloves and boots when using cement, and suppliers/manufacturers raise awareness on how cement is mixed and cured, etc.
- Small entrepreneurs should be supported to develop business contingency plans.

SECTOR RECOVERY STRATEGY

The recovery strategy must be aligned to national laws and existing sector development policies and strategies. In addition, current best practices should be adopted.

SECTOR RECOVERY VISION AND GUIDING PRINCIPLES

The vision describes the desired long-term recovery outcome in the community infrastructure sub-sector, which should include measures to improve sector performance and build resilient communities, through appropriate technologies and practices.

Guiding principles for community infrastructure recovery should be defined to inform the sector recovery strategy and to guide the recovery process in an effective, transparent and accountable manner. These should be

agreed to within the sector team under the leadership of the government. Below are some examples of recovery guiding principles.

- Respond to the distinct needs and priorities of affected women and men of all ages within the population;
- Identify and focus on the most vulnerable and most affected, ensuring their fullest participation in decisions about their needs and priorities;
- Restore capacities and capabilities;
- Support spontaneous recovery processes;
- Ensure national ownership and leadership of the infrastructure recovery strategy;
- Work in partnership with civil society, donors, NGOs, WB and other UN agencies;
- Maintain synergies with humanitarian actions and development goals;
- Take into account and support national strategies on urban planning rural development and sustainable development; And
- Reinforce national and local plans for DRR.
- While the design of community infrastructure will essentially be governed by engineering standards and technical provisions, the following technical considerations are also important:
- A context- and site-specific process that should comply with legal provisions and standards applicable to the affected regions.
- The design process should be guided by existing planning and construction guidelines, master plans and prospective projects (if any).
- The recovery process should use local resources, locally available materials, and existing knowledge.
- The recovery process should take account of possible recycling and productive use of the construction materials extracted from the debris or rubble after the disaster.
- The design process must comply and be reflective of gender considerations and sensitive to cultural needs.

STAKEHOLDERS' CONSULTATION

Design options should be discussed with local communities in order to reflect their needs and expectations. The process should give consideration to indigenous risk reduction practices and community coping mechanisms. Based on factors typically present in low-income dense settlements, such environmental threats and limited physical space, design solutions capable of responding to several challenges simultaneously should be developed. Maintenance is an integral part of the life cycle of infrastructural interventions, and hence the design options should take account of community-friendly and community-led, sustainable maintenance arrangements.

One of the key challenges faced in the needs assessment process is the genuine involvement of women and men from the communities to ensure that their own distinct perspectives and needs, based on local wisdom and traditional knowledge, are captured through a consultative and participatory process. The recovery plan must reflect community needs and priorities as the success of community infrastructure recovery largely depends on the choices made by women and men from the community as well as the capacity demonstrated by the community for planning, programming, and implementation and monitoring during recovery.

While community empowerment is an incremental and long-term process, the planning process for community infrastructure recovery should seize all opportunities for building community capacity and contributing to community empowerment during the recovery process.

RECONSTRUCTION AND RECOVERY NEEDS, INCLUDING BUILDING BACK BETTER

The following recovery needs may not apply to all disaster situations, but the guidance presents the usual recovery needs, which should be in direct relation to the assessment results. Estimations of overall recovery needs in the community infrastructure sub-sector should consider the following:

- The repair or rebuilding of destroyed physical assets in order to resume a safe and well-functioning community;
- The rehabilitation of service delivery systems and restoring access to goods and services;
- Restoring governance and social processes;
- Redressing immediate risks and building back better; And
- Measures to address the human development impact.

TYPES OF RECOVERY PROGRAMMES

The strategic focus of community infrastructure recovery is context-specific and largely depends on the type of hazards and the magnitude of the effect. The following areas of assistance are commonly applied to the recovery of community infrastructure and can be supported in the early recovery phase. It is important to note that these thematic areas should not be seen as a step-by-step guide where one implementation phase follows the other, but rather included in an overall plan for the recovery process and prioritized as required.

CLEARANCE OF DEBRIS AND OPENING UP ACCESS TO COMMUNITY SITES

The objective is to open up community access networks by removing rubble and debris of the devastation caused by the disaster. In most cases, this support is urgently required to facilitate relief and rescue operations as well as to generate short-term employment opportunities for the disaster-stricken population in the community. The clearance of rubble and debris should be done in line with existing environmental rules and standards. Reusable building materials must be preserved for their productive reuse during the recovery and reconstruction phase.

IMPLEMENTING SAFETY MEASURES IN THE COMMUNITY

Risk assessments must be undertaken in areas prone to environmental and natural hazards before any restoration can take place. Plans for the prevention of natural hazards that include the quantification of hazard, the qualification of issues at stake, the resulting zoning (areas not to be built in or only under certain conditions) and recommendations for mitigation solutions must be developed. Where possible, retaining walls and other interventions used to secure land should be built before reconstructing other structures.

RESTORATION AND UPGRADE OF COMMUNITY ACCESS ROAD NETWORKS AND PUBLIC SPACES

The assistance should include repair, reconstruction and upgrading of community access roads networks with proper drainage and other required connective and protective infrastructure. Piecemeal repair and restoration of roads after recurrent disaster is neither cost-effective nor economically sustainable. While planning for the restoration of roads and other infrastructure, common urban space must be incorporated in the plans. Rehabilitating and revitalizing public space is a crucial part of building socially integrated urban environments. Local meeting places close to accommodation are especially valued in high-density informal settlements as easy access to public space provides income-earning opportunities.

RESTORATION OF WATER SUPPLY AND SANITATION FACILITIES

In cases not covered by the WASH recovery plan, support the restoration of community-based water supply and sanitation facilities, including but not limited to: cleaning of community ponds and water supply sources; re-installation of water treatment plants; installation of tube-wells; reparation of water supply pipes; installation of rainwater harvesting structures; construction of adequate sanitary facilities for communities; and setting up solid waste disposal systems.

CAPACITY BUILDING AND TRAINING FOR COMMUNITY AND LOCAL GOVERNMENT INSTITUTIONS

The recovery process offers a window of opportunity to adopt resilient development and support for recovery and should aim to build the capacity of the community, local authorities and other stakeholders to promote safe and resilient communities.

The capacity building efforts should include specialized training for local engineers, masons, carpenters, and other craftspeople on safe and disaster-resilient construction techniques and methods. The capacity building process should offer opportunities for the local officials and the community leaders in having the right exposure to disaster-resilient standard technologies. Workshops and events should be organized to sensitize the community and local government officials for disaster-resilient infrastructure development at the local level.

The following training activities may be considered as part of the community infrastructure recovery process:

Target groups	Rigs and trailer trucks
Community leaders, representatives from various professions in the community and local stakeholders: in this regard, ensure the equal or – at a very minimum – the representative – participation of women and men from the community.	Suggested training that may be imparted during recovery of community infrastructure: • Building community managerial skills for recovery • Orientation and awareness training in disaster resilient technologies and safety standards • Labor rights, health, safety and environment • Gender issues in community infrastructure recovery • Participatory monitoring of community infrastructure recovery • Community-based maintenance • Capacity building in disaster risk reduction including risk identification and mapping, risk mitigation options, and community based early warning
Local artisans, masons, technicians (M/F)	• Training in disaster resilient construction techniques and methods • Labor rights, health, safety and environment
Local officials, NGOs/CBOs and local stakeholders	• Orientation and awareness training in disaster resilient technologies and safety standards • Local disaster risk management
Local entrepreneurs and stakeholders	Development of micro-entrepreneurial skills and business management

BUILDING BACK BETTER (BBB)

The assessment should identify the underlying risks and the measures that need to be taken in the recovery process to protect communities from future crises. This is done in order to reduce vulnerability and build capacities to address risks, and to include this concept in a practical manner in urban planning and construction decisions. Furthermore, it is done to develop and enforce building codes, reconstruct to standards and to provide an opportunity to register informally constructed infrastructure of adequate

quality and include these as national assets. With technical support and proactive measures, community infrastructure can be recovered in a way that addresses the underlying causes of risks, and minimizes vulnerability in the future. As such, close coordination with the sector team assessing DRR/M is crucial.

The assessment identifies appropriate technologies and practices that can be effective in protecting communities and their infrastructure against these known threats. This includes local knowledge and positive coping strategies that can be supported, as well as negative coping strategies that can be avoided in the recovery process. Measures identified are integrated into the sector's recovery strategy and reflected in the national recovery framework.

Natural resource management technologies and practices should also be considered, particularly those that redress the underlying drivers of risk and make community infrastructure more resilient. Examples include the enhanced management of water to reduce flooding, soil-protection systems that make use of trees and shrubs as shelterbelts, windbreaks and live fences.

Safe location and design of new infrastructure built during the recovery process are key to building back better and reducing risk. To achieve this, it will be necessary to assess the following:

- Infrastructure at risk or exposed to risk;
- Determine if it is safe to rebuild the community in the same location or if there is a need to support resettlement. If so, determine where and how;
- Potential land tenure obstacles that should be addressed to secure safe land/safer housing;
- Introduction of coastal/lakeshore zoning to reduce future risk; and
- Laws, policies, regulations and management practices that may need to change.

SECTOR RECOVERY PLAN

In line with the PDNA guidance on the recovery strategy the community infrastructure sub-sector recovery plan should be formulated following the results-based model, and therefore include 1) priority needs, 2) interventions required, 3) expected outputs, 4) recovery costs, and 5) intended outcomes.

Indicative Example of a Results-Based Recovery Plan

Priority recovery needs	Interventions	Interventions	Recovery costs	Intended outcomes
To assist those affected by the disaster in X province with the repair and rebuilding of damaged community infrastructure	1. Supply construction materials 2. Provide technical assistance for rebuilding 3. Capacity building training support	1. 4 markets rebuilt 2. 10 access roads and pathways cleared and repaired 3. 2 training centers established and 50 government staff trained	$4,330,000	20,000 affected people have restored access to basic community infrastructure.

PRIORITIZING AND SEQUENCING RECOVERY NEEDS

Recovery needs in the sector must be prioritized and sequenced (short-term, medium-term and long term), as appropriate. Criteria may be developed by the sub-sector team (or previously by the PDNA team) to guide the prioritization process. The immediate focus of community infrastructure recovery after a catastrophic event is to fa-

cilitate rescue and relief operations by the temporary repair of community access roads and the restoration of communication systems for better coordination and information management. Moreover, a drinking water supply and sanitation facilities should be restored urgently to mitigate secondary health hazards in the affected community.

The medium-term objectives of community infrastructure recovery are to support community livelihood and economic recovery as well as to facilitate access to basic services through the systematic implementation of infrastructure recovery activities. The strategy should be devised to facilitate and complement spontaneous recovery efforts by the community.

The longer-term focus of community infrastructure will be to build capacities of the affected communities, local government institutions and the relevant national authorities, and ensure sustainable recovery of community infrastructure by addressing the root causes of the underlying risks and community vulnerabilities. Specific capacities and institutional mechanism should be built to ensure community oversight and participatory monitoring of infrastructure recovery in the community. Opportunities should be seized to build awareness at the national and local levels about safety standards and to promote a culture of resilience in the development and maintenance of community infrastructure.

Key recovery objectives of community infrastructures at different phases:

Phases	Timeline	Key objectives
Immediate	**2-8 weeks**	• Restore/repair critical communication facilities to support relief supplies and saving lives. • Restore communication networks and early warning systems for information dissemination and better coordination. • Develop medium-term and long-term recovery plans for damaged community infrastructure including technical designs, drawings and illustrations, following a multi-stakeholder approach and taking into account disaster risk reduction, gender and environmental considerations. • Develop capacity of local government institutions, NGOs and community-based organizations for coordination, planning and implementation of infrastructure recovery.
Medium-term	**2-12 months**	• Implement activities for restoration of damaged community infrastructure. • Create employment opportunities for the residents of affected communities. • Implement activities to support immediate resumption of community livelihood activities and economic opportunities. • Complement spontaneous community efforts to recover minor structures. • Prepare grounds and harness conditions for longer term sustainable development.
Longer term	**2-18 months**	• Build capacity and strengthen community institutional mechanisms for implementation and participatory monitoring of community infrastructure recovery program. • Promote community awareness of safety standards and disaster risk reduction, and build a culture of resilience at the community level.

The recovery plan must take into account the consultations that have taken place, as well as the national development objectives and policies. Additionally, it is important that the recovery plan is informed by the following:

- The integration of BBB concerns in recovery does not take on the national development agenda, and is not driven by international experts or development partners.

- Address key risks and vulnerabilities that contributed to the extent of the effects/impact on communities, systems and infrastructure, and that can be avoided.
- Where possible, BBB should also have a positive contribution on the recovery from the current disaster.
- Consultations and communications with the other sectors are essential in order to avoid contradictory recommendations, gaps or overlaps.

COSTING

This section explains how the costs for reconstruction and recovery are calculated based on the projected needs, and proposes realistic approaches to estimating costs for BBB. This should be done in proportion to basic recovery costs, existing national budgets and absorption capacity.

All assumptions, formulas and references used for unit costs for each budget line item should be made explicit.

IMPLEMENTATION ARRANGEMENTS

PARTNERSHIPS, COORDINATION AND MANAGEMENT

This sub-section of the plan describes key partnerships, coordination and management arrangements for the recovery process of the sector, such as:

- Coordination arrangements with the government, civil society, and the private sector;
- Inter-sectoral arrangements (with other clusters such as WASH, environment, DRR, health);
- Management arrangements within the government for the sector recovery process; and
- Inter-agency management arrangements (e.g. coordination unit or similar arrangements, support services to be established, such as offices, human resources, etc.)

MONITORING AND EVALUATION (M&E)

Include in this section the plan for monitoring and evaluation in the sector, considering the following:

- What is to be monitored and evaluated;
- The activities needed to monitor and evaluate;
- Who is responsible for M&E activities;
- When the M&E activities are planned (timing);
- How M&E are carried out (methods); and
- What resources are required and where they are committed.

LINKS TO DEVELOPMENT

This sub-section outlines the ways in which the recovery of the sector will link with and support the country's development goals and priorities, where possible aligning the recovery process with the broader strategic development objectives of the sector. Consider the following:

- National objectives for meeting MDGs;

- National policies, poverty reduction strategies and other key instruments related to community infrastructure; and
- UN development planning instruments (e.g. UNDAF).

KEY ASSUMPTIONS AND CONSTRAINTS

Identify key assumptions made to successfully complete the recovery of the sector, and the major constraints likely to be encountered during the recovery process, indicating how they might be overcome.

ANNEXES

ANNEX I: A GENERIC CLASSIFICATION (TYPOLOGY) OF COMMUNITY INFRASTRUCTURES THAT ARE INTIMATELY LINKED WITH COMMUNITY LIVELIHOOD OPTIONS

Generic Types	Description	Examples
Community access roads	These are internal roads, walkways, footpaths within the community providing access for the community people to national arterial or local road systems.	Village roads, earthen walkways in the community, house-to-house connection roads, etc.
Minor structures	These are small-scale and low-cost appurtenant structures built for various community purposes.	Drainage structures, pipe culverts, box culverts, footbridges, retaining walls, protection of slopes, jetties, small embankments or protection walls, small earthen dams, etc.
Socio-economic infrastructure	These are small-scale physical infrastructures in the community developed through local initiative for the community's socio-cultural and economic prosperity.	Small marketplaces and infrastructure within market grounds including pathways, sheds, drains, etc., community shops, community resource centers, religious centers, graveyards, playgrounds and so on
Community-based water supply and sanitation	These are minor infrastructures built in the communities in response to their needs on water supply and sanitation	Water reservoir and water sources, supply pipes, ponds and reservoirs, community water supply systems, pump houses and deep tube wells, drainage lines, waste disposal and composting plants, etc.
Communication and early warning systems	These are small ICT-based installations in the community catering to needs on information, communication and early warning messages.	Community telephone centers, community-based early warning systems, communication devices, etc.
Community-based non-conventional energy plants	These belong to decentralized household or community-based energy sources and renewable energy plants which cater to the energy needs of remote and isolated off-grid communities.	Biogas plants, bio-gassifiers, solar home systems for electrification, and similar community-driven low cost technical plants.
Community-managed small and micro-enterprises	These are household or community-run micro-enterprises and are subject to loss of stocks and equipment during disaster events. These micro-enterprises are likely to collapse in the local economic downturn following a disaster.	Handloom and cottage industries, potteries, fish processing plants, rice husking and agro-based plants, etc.

ANNEX II: MATRIX OF DAMAGES IN COMMUNITY INFRASTRUCTURE ASSETS

Matrix of Damage and losses Community Infrastructure Assets 1/4		Minor damage 0-15%	Partial damage 15-60%	Complete damage 60-100%	uantification (state Unit)	Repair / Reconstruction cost	Indirect effect (loss)	Total damage and loss
CONNECTIVE INFRASTRUCTURE	Mobility							
	Access roads (to community)							
	Internal roads (dimensioned for vehicles)							
	Sidewalks							
	Internal walkways (paved)							
	Footpaths (unpaved)							
	Bicycle lanes							
	Stairways							
	Bridges (dimensioned for vehicles)							
	Bridges (pedestrian)							
	Marina							
	Other (Specify)							
	Other (Specify)							
	Other (Specify)							

	Public and Commercial							
	Parks							
	Plazas (open, urbanized spaces)							
	Market places							
	Urban furniture (sheds, benches, trash bins)							
	Community shops							
	Resource centers							
	Sacred places/Religious centers							
	Playgrounds							
	Sports facilities (including fields)							
	Cemeteries							
	Other (Specify)							
	Other (Specify)							
	Other (Specify)							

	Communications								
	Internet hubs								
	Telephone centers								
	Early warning systems								
	Other (Specify)								
	Other (Specify)								
	Other (Specify)								

	Matrix of Damage and losses Community Infrastructure Assets 2/4	**Minor damage 0-15%**	**Partial damage 15-60%**	**Complete damage 60-100%**	**uantification (state Unit)**	**Repair / Recon-struction cost**	**Indirect effect (loss)**	**Total damage and loss**
PROTECTIVE STRUCTURES	Water-management systems							
	Drainage canals (masonry/durable material)							
	Storm drains							
	French drains (trenches with rocks/gravel)							
	Embankment of ravines/rivers							
	Culverts and outlets							
	Other (Specify)							
	Other (Specify)							
							Subtotal	
	Flooding and landslide protections							
	Vegetation (clusters/belts)							
	Retaining walls (masonry/durable material)							
	Gabion baskets							
	Boulder nets							
	Terraced slopes							
	Dams							
	Breakwater structures							
	Other (Specify)							
	Other (Specify)							
							Subtotal	
	Public lighting							
	Street lamps							
	Other (Specify)							
							Subtotal	

	Matrix of Damage and losses Community Infrastructure Assets 3/4	Minor damage 0-15%	Partial damage 15-60%	Complete damang 60-100%	uantification (state Unit)	Repair / Recon-struction cost	Indirect effect (loss)	Total damage and loss
ENERGY NETWORKS	Electricity grids (ad hoc connections)							
	Utility poles							
	Other (Specify)							
						Subtotal		
	Fuel-based power generators							
	Community-driven power generators							
	Other (Specify)							
						Subtotal		
	Green energy/off-grid solutions							
	Solar-power driven energy sources							
	Bio-gas plants							
	Other (Specify)							
	Hydropower							
	Other (Specify)							
	Matrix of Damage and losses Community Infrastructure Assets 4/4	**Minor damage 0-15%**	**Partial damage 15-60%**	**Complete dam 60-100%**	**uantification (state Unit)**	**Repair / Reconstruction cost**	**Indirect effect (loss)**	**Total damage and loss**
WATER AND	Piped water							
	Supply pipes							
	Connection points							
	Water treatment facilities							
	Other (Specify)							
						Subtotal		
	Wells and boreholes, water-harvesting							
	Tube-wells							
	Wells							
	Boreholes							
	Reservoirs							
	Sewage systems							
	Toilet facilities							
	Sewer pipes							
	Other (Specify)							
	Other (Specify)							
						Subtotal		

	Ponds							
	Pumps (electric/hand)							
	Water-harvesting structures							
	Other (Specify)							
	Other (Specify)							
							Subtotal	
	Sewage systems							
	Toilet facilities							
	Sewer pipes							
	Other (Specify)							
	Other (Specify)							
							Subtotal	
	Septic tank/other solutions							
	On-site wastewater treatment							
	Composting toilets							
	Other (Specify)							
	Other (Specify)							
							Subtotal	
	Solid waste handling							
	Waste handling facilities							
	Recycling facilities							
							Subtotal	

ANNEX III: COORDINATION OBJECTIVES AND TOPICS:

Coordination cannot be achieved by ensuring simple participation and involvement. Coordination efforts must aim achieve its inherent objectives and these objectives vary among stakeholders and between stages of recovery. The key coordination objectives in the recovery of the community infrastructure sector are:

- Facilitating information sharing and exchange of data;
- Promoting synergy in assessment and recovery planning, designing and recovery;
- Addressing cross-sectoral needs during recovery;
- Avoiding duplication or double-counting and gap filling;
- Optimizing logistical resources during assessment of damage, loss and recovery needs; And
- Promoting inclusive recovery by taking into consideration of the needs and opinions of diverse stakeholders into consideration.

The specific coordination issues and objectives among key stakeholders at various recovery stages are explained in the following table:

Sector/Entity	Key coordination objectives		
	Pre-Assessment Phase	**Assessment Phase**	**Recovery Phase**
Major infrastructure group	• Scoping for CI recovery • Avoiding duplication and filling gaps • Technical consistency • Design standard • Exchange of information • Setting priorities • Optimizing resource planning	• Information sharing and cross-checking • Optimizing logistics during field trips • Communicating and sharing community needs and interests for better connectivity with major infrastructure	• Promoting conformity on design and technical standards • Exchange of information and data • Promoting participatory monitoring and local accountability
Livelihood sector	• Better understanding on the livelihood losses in the affected communities • Data exchange and information sharing • Optimization in logistical planning and resource sharing	• Information exchange and cross-verification • Optimizing logistics and coordinated consultation at the community level • Incorporating livelihood needs in planning and prioritization in CI recovery	• Participatory monitoring • Creation and better facilitation of livelihood opportunities
Governance sector	• Data exchange and information sharing for defining baseline situation • Optimizing resource planning • Coordinated approach and defining methods for assessment and recovery planning	• Information exchange and cross-verification • Optimizing logistics and coordinated consultation at the community level • Community perspectives and needs for good governance and local government support for sustainable recovery	• Promoting participatory monitoring and local accountability • Provisioning operation and maintenance support from local and central government. • Capacity building and good governance

Sector/Entity	Key coordination objectives		
Local officials, NGOs/CBOs and local stakeholders	• Data exchange and information sharing for defining baseline situation • Optimising resource planning • Coordinated approach and defining methods for assessment and recovery planning	• Information exchange and cross-verification • Optimising logistics and coordinated consultation at the community level • Community perspectives and needs for good governance and local government support for sustainable recovery	• Orientation and awareness training in disaster resilient technologies and safety standards • Local disaster risk management
Water and sanitation sector	• Scoping for CI recovery • Avoiding duplication and filling gaps • Promoting consistency and synergy • Exchange of information • Setting priorities • Optimizing resource planning	• Information sharing and cross-checking • Optimizing logistics during field assessment and information collection • Ensuring infrastructural need for full recovery of water and sanitation (Watsan) services in the affected communities	• Exchange of information and data • Promoting participatory monitoring and local accountability
Related PDNA sector (health, education, agriculture etc)	• Scoping for CI recovery • Avoiding duplication and filling gaps • Promoting consistency and synergy • Exchange of information • Setting priorities • Optimizing resource planning	• Information exchange and cross-verification • Optimizing logistics and coordinated consultation at the community level • Incorporating livelihood needs in planning and prioritization in CI recovery	• Exchange of information and data • Promoting participatory monitoring and local accountability
Coordination with local institutions	• Information collection and verification • Facilitating organisation and planning for PDNA in CI sector • Mobilising resources for PDNA in CI sector	• Data collection and cross-verification • Facilitating assessment of institutional capacity and needs • Better understanding of local development plans and practices • Facilitating local resource mobilisation	• Effective monitoring and quality implementation • Conforming to local development plans and standards • Creating demand for effective operation and maintenance • Promoting understanding and raising local awareness of disaster resilient construction

Sector/Entity	Key coordination objectives		
Local NGOs/CBOs	• Information collection and verification • Understanding pre-disaster local contexts • Sourcing local expertise on CI • Facilitating organization and planning for PDNA in CI sector	• Data collection and cross-verification • Providing local knowledge • Facilitating community participation and engagement • Securing community inputs and support to CI recovery	• Participatory monitoring and quality control • Facilitating participation in recovery implementation • Creating demand for effective operation and maintenance • Promoting understanding and raising local awareness of disaster resilient construction.

ANNEX IV: DISASTER IMPACTS IN THE CI SECTOR

Disaster impacts vary across the types of community infrastructure based on their structural vulnerabilities and the hazard type. The generic level of impact by moderate to high intensity hazards on different types of CI are shown in the table below:

Type of Community Infrastructure	Flood	Cyclone	Tsunami	Earth-quake	Volcano	Landslide	Fire
	(H – high; M- Medium and L – Less)						
Community/Neighborhood Access Road							
Village roads	H	M	H	M	H	H	L
Neighborhood access roads	M	L	M	M	H	M	L
Footpath	M	L	M	M	H	M	L
Earthen Walkways/House	H	M	H	M	H	H	L
Road structure (Culvert/Foot Bridge etc)	M	L	M	L	H	M	L
Slope protection wall	H	M	H	L	H	M	L
Small Drainage and Water Structure							
Drains/Drainage pipes	H	M	H	H	H	H	L
Pipe culverts	M	M	M	L	M	M	L
Footbridge	M	M	H	L	M	M	L
Earthen dam	H	H	H	L	H	M	L
Water reservoir	M	M	M	L	M	M	L
Retaining wall	H	M	H	M	M	H	L
Small embankment	H	M	H	L	H	M	L
Deep tube well	M	L	M	M	M	L	L
Community latrines	H	M	H	M	M	M	M
Solid waste disposal system	H	H	H	M	H	M	M
Waste composting plant	H	H	H	M	H	M	H
Socio-Economic Infrastructure							
Community resource centers Community clubs	M	M	H	H	M	M	H
Mosque/Church/Religious centers	H	M	H	H	M	M	H
Community clinics	H	H	H	H	M	M	H
Community schools	H	H	H	H	M	M	H
Community shops	H	H	H	H	H	H	H
Market grounds	H	M	M	M	H	H	L
Market sheds	M	H	H	H	H	H	H
Communication and Early Warning Systems							
Community telecenters/early warning center	M	H	H	H	H	H	H
Community mobile charging center	M	H	H	M	H	M	H
Community IT Training center	M	H	H	M	H	M	H
Community-Based Non-Conventional Energy Plant							
Biogas plants	H	M	H	H	H	M	H
Solar PV systems	M	H	H	M	M	M	L
Windmills	L	H	H	M	M	L	L

Type of Community Infrastructure	Flood	Cyclone	Tsunami	Earth-quake	Volcano	Landslide	Fire
	(H – high; M- Medium and L – Less)						
Community-Based Small and Micro-enterprise							
Handloom and cottage industry	H	H	H	M	H	H	H
Pottery	H	M	H	M	H	H	M
Fish processing plant	H	M	H	M	M	M	L
Rice husking plant	H	H	H	M	H	M	H
Agro-based plant	H	H	H	M	H	H	M