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DRR & Development Planning in Sindh - Gap Assessment Report

REPORT COMPILED UNDER PROJECT
"SUPPORT TO LINE DEPATMENTS FOR DRR MAINTREAMING IN DEVELOPMENT PLANNING"

SUBMITTED BY

Community Resilience Initiative

TO

PROVINCIAL DISASTER MANAGEMENT AUTHORITY SINDH
GOVT OF SINDH

FOREWARD

BY

DIRECTOR GENERAL
PROVINCIAL DISASTER MANAGEMENT AUTHORITY

The geographic location and climatic conditions of Sindh Province render it vulnerable to various natural disasters. These include floods, cyclones, drought, windstorms, heatwaves, sea intrusion, earthquake and tsunamis. In addition, the geography, topography, nature of economy, rapid urbanization and high population growth exacerbate Sindh's vulnerability to natural disasters. Sindh faces one of the most daunting climate challenges in the world. Climate projection indicate increased frequency and intensity of extreme climate events adversely affecting livelihoods, agriculture, forestry and biodiversity. Sindh is predicted to be the most vulnerable hotspot in terms of impact of temperature and precipitation changes on living standards of the Province.

Natural hazards are unavoidable phenomena, and when hazard interact with poor human development setting, it turns out as disaster. Disasters affect humans, agriculture, housing, health, education and infrastructure and negatively impact development progress, because, development resources are diverted to relief and rehabilitation efforts. Disaster Risk Reduction (DRR) aims to avoid, reduce or transfer the adverse impacts of hazards on people, property and the environment through activities and measures. It is the systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.

DRR Mainstreaming in Development Planning is an effort of PDMA Sindh through World Bank funded Sindh Resilience Project and aims to inculcate disaster risk reduction culture across government sector for better disaster resilience in the province. Disaster risk reduction can only be achieved through cohesive and synergized efforts of all stakeholders in development planning. I anticipate that, outcome of this project activity will pave the way for furthering progress in this domain.

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EXECUTIVE SUMMARY

Each year, earthquakes, cyclones, floods, drought, and other natural hazards continue to cause deaths, injuries and economic losses around the world. Disasters represent a major source of risk for the poor and wipe out development gains and accumulated wealth in developing countries. It is growing recognition that natural disaster risk must be addressed as a development issue rather than strictly of humanitarian assistance.

Disaster Risk Reduction (DRR) is a contemporary theme to be mainstreamed into all development interventions and also needs to be promoted through DRR- specific interventions focused on: strengthening policy and organizational structures and knowledge management. To reinforce and facilitate, DRR interventions are needed to strengthen the disaster management system, develop appropriate information systems for coordination and early warning, promote knowledge management for DRR, create DRR awareness and initiate community-based DRR programs. There are two approaches to deal with the disasters; 1) to consider disaster as unavoidable and focus on providing relief and response as early as possible after the disaster to prevent further loss of life and damages or 2) to recognize disasters as failures of development or as the result of unsustainable development. Both approaches have pros and cons but later is more robust and encourages for better disaster preparedness, leading to reduced life losses and damages.

The UNISDR define DRR as the "concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events." DRR therefore has two-fold aim: 1), addressing vulnerability in order to be resilient to natural hazards and 2), ensuring that development efforts do not increase vulnerability to these hazards. Mainstreaming DRR into development means to consider and address risks emanating from natural hazards in medium-term strategic frameworks and institutional structures, in country and sectoral strategies and policies and in the design of individual projects in hazard-prone countries.

Disaster-Development nexus is such that disaster limits development, development causes disaster risks and development reduce disaster risks by overcoming vulnerability. Thus, development activity and Disaster Risk Reduction (DRR) represent two sides of the same coin and needs to be dealt with in unison. While natural disasters cannot be prevented from happening, the vicious cycle of disasters

and its effects in the development activity can be altered. This can be done through "mainstreaming" Disaster Risk Reduction into the development process.

The lack of consideration of disaster risks in the development process leads to investments in constructing and reconstructing risks which perpetuate the conditions for unsustainable human development and the scarce resources originally programmed for development are diverted into relief and response. As a result, the achievement of poverty alleviation, good governance and other related goals become more difficult.

In Pakistan, public sector development projects are planned, initiated and appraised through Project Cycle -I (PC-I) document, which undergoes rigorous inception, evaluation and approval process. Project PC-I is prepared and initiated by relevant sector department. Consideration and inclusion of DRR in development projects at project planning stage is anticipated to decrease investments in construction and reconstruction risks, existing and emanating vulnerabilities. Collective efforts towards disaster risk reduction and management in the province will bring better disaster resilience and resulting minimal damages and losses.

To review the existing status of DRR awareness and implementation in public development sector, a consultative meeting with relevant stakeholders was arranged on 8th October, 2020 at Hotel Avari Towers. A large number of senior level officials participated in the meeting. The objective of consultative meeting was to conduct survey and discussion session on existing status of DRR and to outline the requirements for awareness and training program for stakeholders on DRR mainstreaming.

This gap assessment report is composed in four chapters. Chapter 01 briefly describe, DRR & DRR mainstreaming, global and national guidelines for DRR mainstreaming, international and national best practices in DRR mainstreaming and summarize DRR mainstreaming standards and best practices. Chapter 02 focuses on existing mechanism of DRR mainstreaming in development planning in Sindh or at national level, review Project Cycle forms used for planning, initiation and completion of development projects, review approved PC-Is of some selected infrastructure related projects, review existing policies related to DRR mainstreaming, and analysis of data collected through survey questionnaire and gap assessment i.e. global standards of DRR mainstreaming versus existing practices in Sindh. Chapter 03 covers recommendations and guidelines on DRR mainstreaming in development sector. Chapter 04 covers detailed training modules / syllabus and training schedule.

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Chapter

1

DRR MAINSTREAMING APPROCHES AND PRACTICES

CHAPTER ONE

1. DRR MAINSTREAMING APPROCHES AND PRACTICES

1.1. RATIONALE

1.1.1. Natural Hazards and Disasters

The natural hazards are elements of physical environment which have potential to harm humans and ecology and are caused by forces beyond control of humans. Natural hazards are atmospheric, hydrologic, geologic phenomena which can generate primary and secondary impacts depending on their location, severity, and frequency and have the potential to affect humans, their structures, or their activities adversely. Natural hazard is only hazardous when it interacts with humans and human ecology, thus; has an element of human involvement. A **physical event**, such as cyclone, that does not affect human beings is a natural phenomenon but not a natural hazard. A natural phenomenon that occurs in a **populated area** is a **hazardous event**. In areas where there are no human interests, natural phenomena do not constitute hazards nor do they result in disasters.

When natural hazard interacts with human settings, there is **likely chance** of a disaster. The United Nations Office for Disaster Risk Reduction (UNDRR), define disaster as "a serious disruption of the functioning of a community or society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope with using its own resources[]."

The interaction between natural hazard and human ecology can be established through hazard risk assessment expression i.e.

Risk = Exposure x Vulnerability x Hazard

Where;

Exposure is people, property, other assets or systems exposed to hazards.

Example: In areas with high population density in high-risk areas such as flood plain of River Indus, inhabitants frequently have their houses and assets exposed to the hazard of floods.

Vulnerability is the conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community / individual to the impacts of hazards.

Example: Financial: *lack of savings or access to credit.* ***Physical:*** *lack of protective infrastructure, adequate housing or inaccessible shelter.* ***Social/human:*** *lack of disaster awareness or lack of a support network.* ***Political:*** *lack of policies and regulation.* ***Environmental:*** *degraded ecosystems.*

Hazard is a potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation

Examples: Geophysical hazards*: earthquake/tsunami, mass movement, volcanic eruption.* ***Hydrological hazards:*** *flood, landslide.* ***Meteorological hazards:*** *storm, cyclone, extreme temperature.* ***Climatological hazards:*** *drought, wildfire.* ***Biological hazards:*** *Epidemics, epizootics, pest.* ***Technological hazards (though not natural hazard but can be triggered by a natural hazard as domino effect):*** *technical accident, structural collapse, fire, explosion.* ***Chemical/Radiological hazards though not natural hazard but can be triggered by a natural hazard as domino effect):*** *chemical/oil spill, radiological contamination, pollution.*

It is obvious from risk expression that, probable hazard impact is mainly dependent on human factors i.e. exposure and vulnerability. More the exposure and vulnerability, larger the scale of hazard impact. This expression represents hazard risks without considering disaster management actions. The expression is complete when we put capacity as denominator in this expression i.e.

$$\text{Risk} = \frac{\text{Exposure x Vulnerability x Hazard}}{\text{Capacity or Coping Capacity}}$$

Where;

Capacity is the combination of all the strengths, attributes and resources available within a community, society or organization to manage and reduce risk and strengthen resilience.

Capacities may include the infrastructure, physical means, institutions, societal coping abilities, human knowledge, skills, social relationships, leadership and management that help people and communities to deal with the impact of disasters.

In contemporary disaster management practices, the concept of resilience is being widely used instead of Capacity of Coping Capacity. Though all terms used in this expression are not easily quantifiable but this expression reinforces the idea that hazards when interact with human settings can turn into disaster

if hazard risks are not considered in the planning stage of the human ecological development. On the hand if human setting is resilient enough or have the capacity to manage disasters, then disaster risks can be minimized to acceptable limits.

Multiple meanings /definitions of Resilience

- Ability to **resist, absorb, accommodate** to and recover in a timely and efficient manner (UNISDR, 2009).
- Ability of individuals, communities, organizations or countries exposed to **disasters, crises and underlying vulnerabilities** to anticipate, prepare for, reduce the impact of, cope with and recover from the effects of shocks and stresses **without compromising their long-term prospects** (IFRC, 2014).
- Capacity to survive, **adapt and grow** when facing stress, shocks and transform when conditions require it (Rockefeller Foundation 2016).
- Capacity to deal with change and **continue to develop** (Stockholm Resilience Centre).

Though it is not justifiable to compare earthquake of Japan and Pakistan because of the economic and various other differences between the countries, but to draw the importance of coping capacity / resilience in disaster management, salient features of the disaster events are given below.

Japan

- Earthquake of 9 Mg, which caused tsunami shook northeastern Japan on Mar 11, 2011
- Causalities between 15,800 and 20,000
- Losses about $300 billion
- More damage and losses due to tsunami than earthquake. Japan was not prepared for this magnitude of tsunami in which wave heights reached upto 45 meters
- Japan got back to normal on almost anniversary date of the event. The Toyota, got back to 95% production in six months after the disaster

Pakistan

- Earthquake of 7.6 Mg occurred in Muzaffarabad, Pakistan on Oct 8, 2005
- Balakot severely affected with more than 70% collapsed buildings
- Losses about $ 5 billion
- It took 87,350 lives. Approx. 38,000 injured and over 3.5 million homeless
- Several areas remained cut off via land routes even three months after the main event. Power, water supply, and telecommunication services were down for varying lengths of time
- Reconstruction and rehabilitation began 8th week following the disaster

In Japan, earthquake and tsunami occurred simultaneously. Japan was prepared for earthquakes but poorly prepared for this magnitude of tsunami and suffered more losses. In comparison, Pakistan suffered heavy damages and losses with relatively low magnitude earthquake and recovered to normal on varying lengths of time with foreign assistance.

1.2. HAZARD SCENARIO OF SINDH PROVINCE

1.2.1. Existing Hazard Risks

Physiographicaly the Sindh province can be divided into 6 broad regions i.e. 1) Western Valley, 2) Khirthar mountains, 3) Kohistan or Kachho, 4) Eastern Valley, 5) Thar Desert and 6) Delta. Due to different characteristics of each region, hazard profile of the regions is slightly different from each other. Based on historical events, major existing natural hazards of the province include, floods, cyclones, drought, heatwaves, earthquake and tsunami.

[1]Hazards and Hazard Levels

Type of Hazard	Hazard Level
River Floods	High
Urban Floods	High
Coastal Floods	High
Cyclones	High
Drought	High
Heatwaves	High
Earthquake	Medium
Tsunami	Medium

Sea-water intrusion is also slow-onset natural hazard for the province along-with water scarcity.

1.2.2. Possible future Hazard Risks

Climate change is likely agent to bring unprecedented changes in weather patterns and consequential changes in hydro-metrological hazard risk at global scale. The Sindh cannot be excluded from climate induced hazard risks. Climate change, if left unchecked, will increase the likelihood of severe, pervasive and irreversible impacts on people and ecosystems.

The annual mean temperature in Pakistan is expected to rise by 3°C to 5°C for a central global emissions scenario by the end of this century. Average annual rainfall is not expected to have a significant long-term trend, but is expected to exhibit large inter-annual variability. Sea level is expected to rise by a further 60 centimeters by the end of the century and will most likely affect the low-lying coastal areas south of Karachi toward Keti Bander and the Indus River delta. Under future climate change scenarios, Pakistan is expected to

[1] Think Hazard, GFDRR, URL: https://thinkhazard.org/en/report/2277-pakistan-sindh

experience increased variability of river flows due to increased variability of precipitation and the melting of glaciers. Demand for irrigation water may increase due to higher evaporation rates. Mortality due to extreme heat waves may increase. Urban drainage systems may be further stressed by high rainfall and flash floods. Sea level rise and storm surges may adversely affect coastal infrastructure and livelihoods[2]. Additionally, severe water-stressed conditions in arid and semi-arid regions is expected due to reduced rainfall, increased temperature, and depletion of soil moisture.

Global climate change impacts given in Intergovernmental Panel on Climate Change (IPCC) report of 2014 are shown in Figure-1. Asia is likely to face climate change impacts in High range as depicted in the figure in terms of river flows, floods, drought, food production, livelihood and health[3].

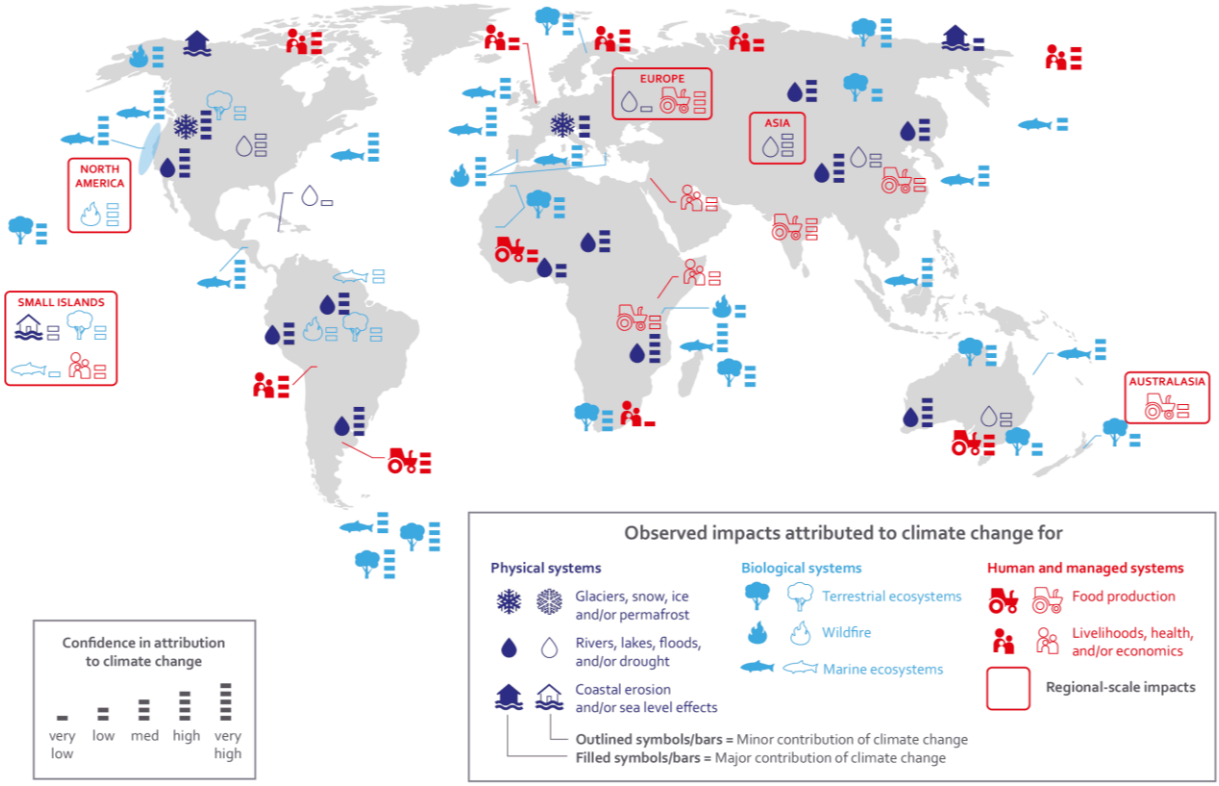


Figure 1 - Impacts of Climate Change - IPCC 2014

The climate change is also affecting sea surface temperature in Indian Ocean which is likely to continue in current Green House Gas (GHG) emission scenario. A report titled 'Assessment of Climate Change over the Indian Region' published on June 17, 2020 prepared of Ministry of Earth Sciences, India points out Increasing sea surface temperatures in the tropical Indian Ocean and an

[2] Climate Change Profile of Pakistan – Asian Development Bank
[3] Intergovernmental Panel on Climate Change (IPCC) – Report on Climate Change 2014

increase in frequency of very severe cyclones in the region[4]. This is trend is likely to affect coastal belt of Sindh. During monsoon 2020, the southern arm of monsoon system remained active and brought heavy downpour over coastal cities of Sindh including Karachi. This year Karachi received record high rains which paralyzed the city and caused heavy counted and uncounted economic losses.

1.3. WHY DISASTER RISK REDUCTION (DRR) MAINSTREAMING?

There is rising harmony among major walks of life that the key to sustained disaster risk reduction lies in 'mainstreaming' the reduction of risks into development. Essentially, this is a process of incorporating the key principles of disaster risk reduction (DRR) into development goals, governance arrangements, policies and practice. On one hand, mainstreaming requires the analysis of how potential hazard events could affect the performance of policies, programs and projects, and on the other hand, it needs to look at the impact of the same policies, programs and projects on vulnerability to hazards. Results from the analyses should lead to risk sensitive development, which is now widely recognized as critical to achieving sustainable development. Effective mainstreaming results in DRR being embedded in the day-to-day operations of national and local organizations, in various sectors, with sufficient resources – human, financial, technical, material, information – allocated to managing the risks.

Disaster Risk Reduction (DRR) is a contemporary theme to be mainstreamed into all development interventions and also needs to be promoted through DRR specific interventions focused on: strengthening policy and organizational structures and knowledge management. To reinforce and facilitate, DRR interventions are needed to strengthen the disaster management system, develop appropriate information systems for coordination and early warning, promote knowledge management for DRR, create DRR awareness and initiate community-based DRR programs. There are two approaches to deal with the disasters; 1) to consider disaster as unavoidable and focus on providing relief and response as early as possible after the disaster to prevent further loss of life and damages or 2) to recognize disasters as failures of development or as the result of unsustainable development. Both approaches have pros and cons but later is more robust and encourages for better disaster preparedness, leading to reduced life losses

[4] Assessment of Climate Change over the Indian Region. A Report of Ministry of Earth Sciences, Govt of India

and damages. Disaster-Development nexus is such that disaster limits development, development causes disaster risks and development reduce disaster risks by overcoming vulnerability. Thus, development activity and Disaster Risk Reduction (DRR) represent two sides of the same coin and needs to be dealt with in unison. While natural disasters cannot be prevented from happening, the vicious cycle of disasters and its effects in the development activity can be altered. This can be done through "mainstreaming" Disaster Risk Reduction into the development process.

The UNISDR define DRR as the "concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events." DRR therefore has two-fold aim: 1), addressing vulnerability in order to be resilient to natural hazards and 2), ensuring that development efforts do not increase vulnerability to these hazards. Mainstreaming DRR into development means to consider and address risks emanating from natural hazards in medium-term strategic frameworks and institutional structures, in country and sectoral strategies and policies and in the design of individual projects in hazard-prone countries.

The lack of consideration of disaster risks in the development process leads to investments in **constructing** and **reconstructing** risks which perpetuate the conditions for **unsustainable human development** and the scarce resources originally programmed for development are diverted into **relief and response**. As a result, the achievement of poverty alleviation, good governance and other related goals become **more difficult**.

The term "mainstreaming" is derived from the concept of how small, isolated tributaries flow into the larger main-stream of a river, a seamless integration of disparate flows into a larger whole. Hence "mainstreaming risk reduction" describes a process that fully incorporates and integrates the efforts of disaster risk reduction (DRR) into larger relief efforts and development policy. This approach aims to radically expand and enhance DRR so that it is incorporated into normal practice, and fully institutionalized within an agency's relief and development agenda. Essentially, this process merges the key principles of DRR with development goals and governance arrangements

1.4. DRR MAINSTREAMING PRACTICES AND GUIDELINES

1.4.1. United Nations Perspective on DRR Mainstreaming

Sendai Framework for Disaster Risk Reduction 2015-2030

The Sendai Framework for Disaster Risk Reduction 2015-2030 was adopted at the Third UN World Conference in Sendai, Japan, on March 18, 2015. It is the outcome of stakeholder consultations initiated in March 2012 and inter-governmental negotiations from July 2014 to March 2015, supported by the United Nations Office for Disaster Risk Reduction at the request of the UN General Assembly. The Sendai Framework is the successor instrument to the Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters.

Sendai Framework defines 04 priority areas for actions i.e. 1: Understanding disaster risk, 2: Strengthening disaster risk governance to manage disaster risk, 3: Investing in disaster risk reduction for resilience and 4: Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction.

The UN office for Disaster Risk Reduction (UNDRR) have developed guidelines for implementation of Sendai Framework in its series; Words Into Action: Developing National Disaster Risk Reduction Strategies. The guidelines define 10 key elements of alignment with the Sendai Framework as shown in Figure-2.

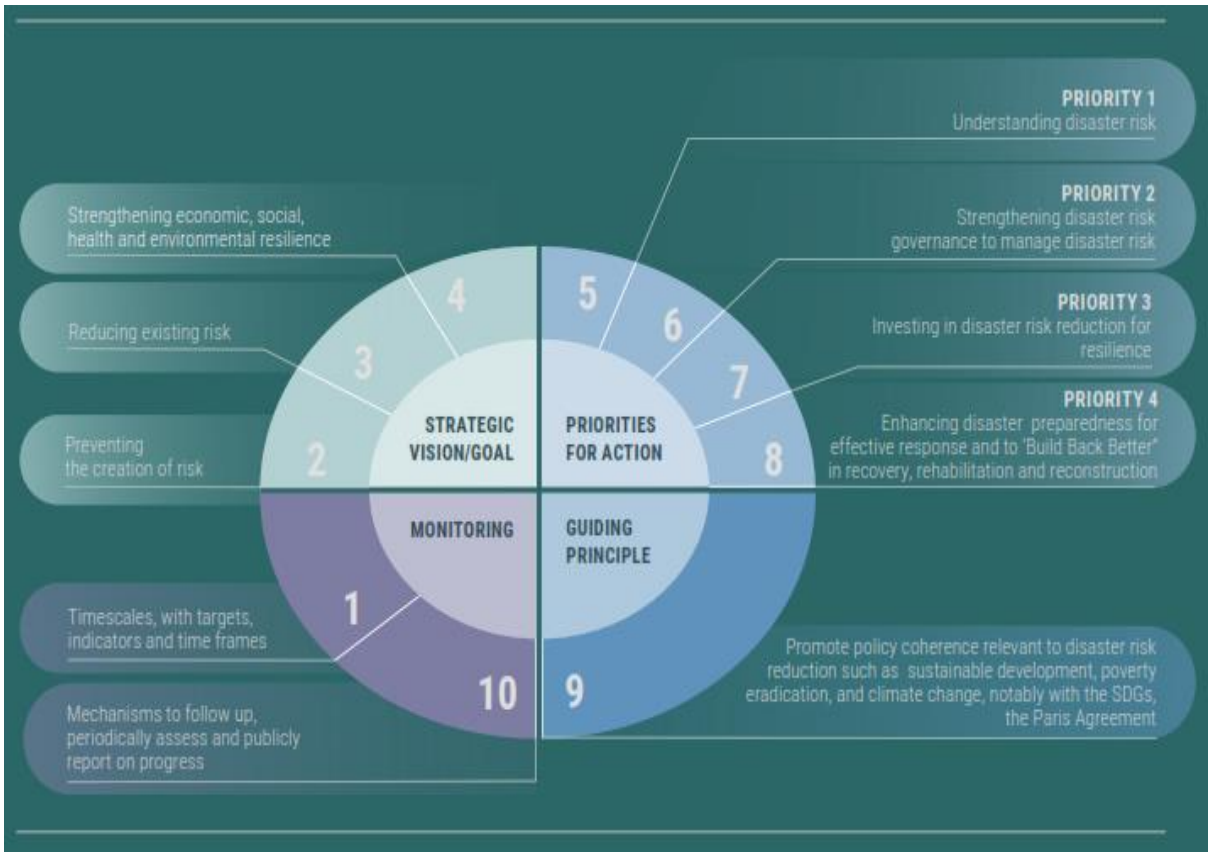


Figure 2 - 10 Elements of alignment with Sendai Framework

Similarly, 10-step approach is defined in guidelines for developing a national level disaster reduction strategy. The approach is shown in Figure-3.

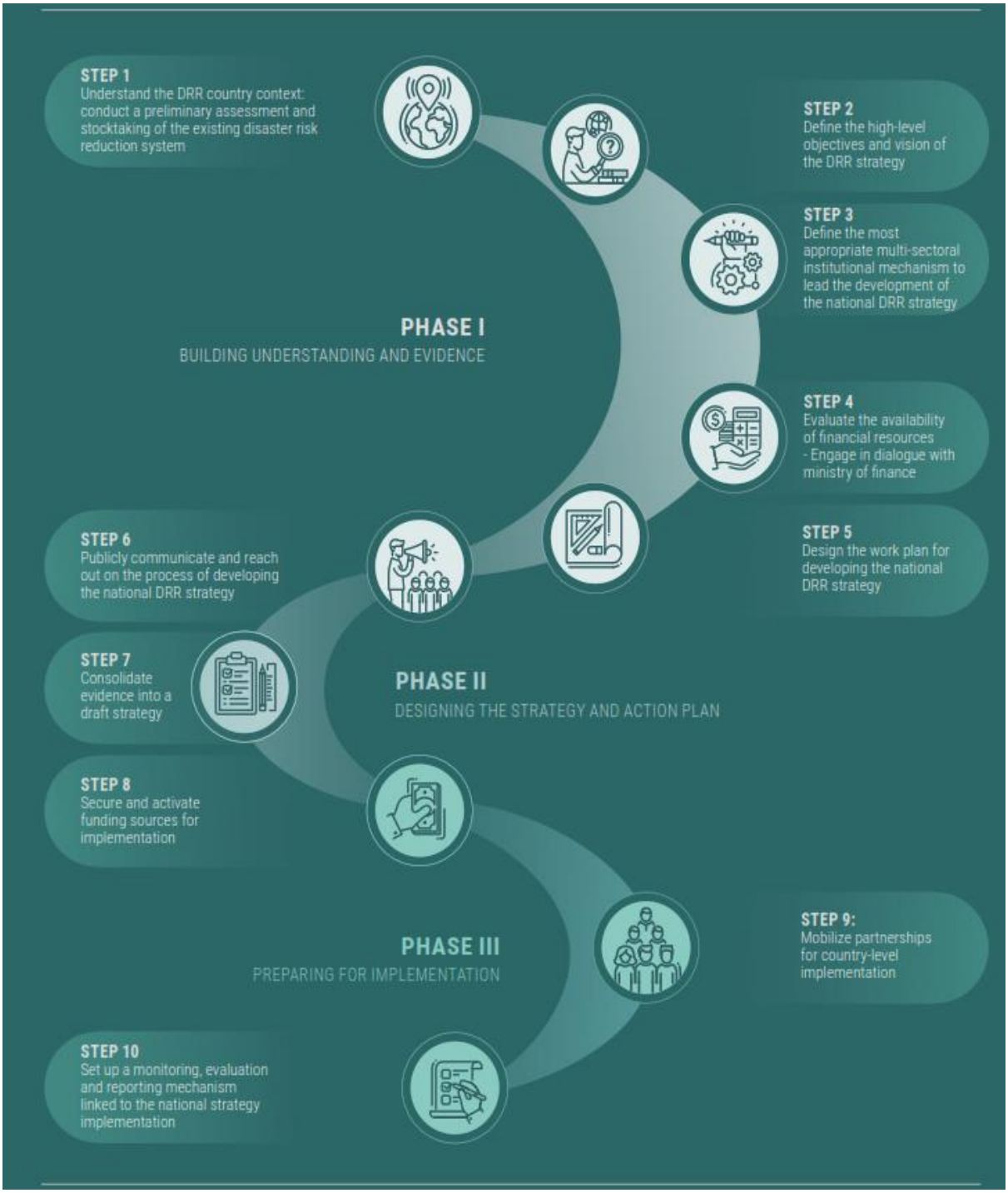


Figure 3 - 10 Step Approach for Developing National Level Disaster Risk Reduction Strategy

In order to ensure that the content of the DRR strategy is comprehensive and addresses core DRR priorities and gaps at the country level, it is important to build evidence of the country's needs through the collection of essential disaster data and information on the disaster risk management system. Detail of 10-Step approach is given in Box-1.

BOX-1[5]

PHASE I: BUILDING UNDERSTANDING AND EVIDENCE

STEP 1: UNDERSTAND THE DRR COUNTRY CONTEXT: CONDUCT A PRELIMINARY ASSESSMENT AND STOCKTAKING OF THE EXISTING DISASTER RISK REDUCTION SYSTEM

1.1. Understand or define the existing DRR system and governance mechanism in each sector and across sectors

- Review the current disaster risk reduction governance system, including the key national and local players, their roles and responsibilities, key interactions between players, including with climate change adaptation mechanisms, prioritize sectors
- Identify existing multi-stakeholder national coordination mechanisms (for disaster risk reduction, sustainable development, climate change adaptation) that should serve to discuss, plan, design and develop a comprehensive national DRR strategy. Ensure all core stakeholders are represented (key line and sectoral ministries, civil society, private sector, science and technology, civil society, parliamentarians) with direct interaction with the highest level of authority. If not available, establish a multi-stakeholder coordination mechanism ahead of the development process of the national strategy to ensure a fully consultative and participatory process for the development of the strategy.
- Identify, list and evaluate the implementation status of existing legislation, policies, strategies / plans / frameworks linked to DRR, including, but not limited to, national development plans, SDG strategies, climate change adaptation plans (or nationally determined contributions), sectoral development plans, etc. Build understanding, linkages and coherence across these, as feasible, to offer an integrated approach to DRR, climate change and sustainable development in support of risk-informed development.

Evaluate existing capacities for DRR, for example: building codes status and enforcement capacities; landuse planning laws and regulations and enforcement mechanisms; early warning systems; education at all levels, including education curricula; security, contingency and emergency management plans; business continuity plans, poverty reduction plans and social resilience-building plans for emergency preparedness, protection. response, recovery and 'building back better' in all sectors.

Develop a comprehensive report on DRR capacities, including strengths, challenges, gaps, opportunities and recommendations for strengthening capacities.

1.2. Build strong understanding and evidence of the disaster risk context

- List all prevailing hazards, exposure, vulnerability, capacity and risk information, including through data disaggregation (i.e. by age, gender and disability), and highlight related institutions and experts' contact information. As available, analyse risk assessments elaborated with a scientific approach and draw upon participatory and qualitative methods.
- Understand and identify the drivers of risk (e.g. poverty, unchecked urban expansion and growth, environmental degradation, weak risk governance and lack of disaster risk-management capacities, climate change, maladaptation).

[5] Word into Action: DEVELOPING NATIONAL DISASTER RISK REDUCTION STRATEGIES: UNDRR

- Prepare a list of all available historical disaster loss databases including information on the hosting institutions. If not existing as yet, develop a disaster-loss database compiling historical disaster data as a major tool for understanding risk by looking into trends and patterns on the impact of disasters and the toll they take on life, livelihoods and the achievement of socio-economic development goals and for building the evidence of existing hazards, vulnerabilities and exposure.
- In case a comprehensive national disaster risk assessment is not in place, put together a preliminary risk profile by compiling available risk information. In the absence of reliable disaster data and risk information, discuss with the national platform members the relevance and modalities to undertake appropriate national hazard and risk assessment whose outcome will allow the development of the country's risk profile.
- Produce a comprehensive report of all risk information that will define the country context and support the decision-making process to design and plan the process of developing a national DRR strategy. The output should include;
    - Analysis of all components of risk (hazards, exposure, vulnerabilities, drivers, direct and indirect impacts);
    - Social, economic and environmental risk levels;
    - Risk levels in the context of public and private investments and projected growth in various sectors.

1.3. Define and agree on a standard terminology on disaster risk reduction to be used by all

STEP 2: DEFINE THE HIGH-LEVEL OBJECTIVES AND VISION OF THE DRR STRATEGY

Building on the outcomes of investigations undertaken under Step 1, define the high-level objectives and long-term vision of the national DRR strategy:

Why are we developing a national DRR strategy?

This is a critical step as it provides direction to the whole process of formulating a national DRR strategy and its design. Proposed key activities include:

2.1. Draft a proposed set of high-level objectives for the DRR strategy in the context of national social, economic, political and environmental priorities and development goals based on the outputs of the previous step.

The latter could include at least the protection of the: human lives; health & safety; the economy, including livelihoods and infrastructure; environment and natural resource management; education; housing; social-political stability; and cultural heritage. Direct linkages to the national development and climate change strategies should be clear.

2.2. The proposal should then be discussed by a governing mechanism for the national strategy development, to be comprised of senior representatives of line ministries and other sectors and the high-level objectives of the national DRR strategy endorsed.

It is important that the high-level objectives are established in a transparent and inclusive manner and make use of the DRR governance structure as set out in Step 1, but also reaching out to stakeholders that are not yet represented there.

STEP 3: DEFINE THE MOST APPROPRIATE MULTI-SECTORAL INSTITUTIONAL MECHANISM TO LEAD THE DEVELOPMENT OF THE NATIONAL DRR STRATEGY

Building on the country context and governance structure for disaster risk reduction, sustainable development and climate change adaptation:

3.1. Identify / select the most appropriate institutional leadership structure to drive the development of the national DRR strategy (high level, governing mechanism and working groups):

- Ideally should be at the highest level of government (e.g. at president or prime minister level) to endorse the process and bring the appropriate political commitment and leadership that will lead to firm decision-making and allocation of resources for the national DRR strategy planning, development and implementation.
- It is recommended to establish the governing mechanism at the highest level of representation to provide guidance to the process and decide on the most relevant design of the national DRR strategy. The governing mechanism should consist of senior-level representatives from key line ministries and all sectors and could include a set of working groups to develop the specific content, interaction and working modalities around core topics for the national DRR strategy.
- Moderator: Identify and confirm which entity within the governing mechanism will drive the process. The selected entity should have a relevant DRR or associated mandate (climate change, sustainable development) and strong coordination and convening power. This entity is accountable for running the process and its success.

3.2. Set up a multi-sectoral and multi-stakeholder national DRR coordination mechanism – or update/use the existing national platform for DRR – to ensure a truly participatory, whole-of-society and inclusive approach to the DRR strategy that will bring coherence among all required areas of expertise, knowledge and agendas to design the content of a comprehensive DRR strategy.

- Make sure the platform has a wide representation of key line ministries, relevant public and private sectors, science and technology, parliamentarians and civil society, with particular emphasis on women and girls, persons with disability, elderly persons, children and youth, indigenous populations and local government representatives to foster inclusion as part of the development process of the national DRR strategy.
- Get stakeholders' confirmation of commitments and invite them systematically to regular national consultations.

3.3. Define the form of coordination between the DRR mechanism, or national platform, and other key mechanisms coordinating climate change adaptation and SDG implementation and reporting

Ensure formal engagement or linkages with appropriate entities, such as development or climate change adaptation committees, working groups and experts building coherence at the national level.

STEP 4: EVALUATE THE AVAILABILITY OF FINANCIAL RESOURCES – ENGAGE IN DIALOGUE WITH MINISTRY OF FINANCE

Some key considerations;

4.1. Identify national / domestic and international sources of funding. The ministry of finance can also provide information on both national and international sources and decision-making processes.

4.2. Evaluate current decision-making processes for investments in DRR and resource mobilization capacity at national level and from national to local level.

4.3. Ensure DRR is taken into account in any planned national development finance assessment. Ensure risk assessment of all development projects financed by the finance ministry/budget office.

4.4. Conduct a survey of existing budgets dedicated to various categories of risk reduction; resilient new development, reducing existing risk, and disaster management (preparedness, response, relief and recovery).

4.5. Get an overview of the current status of national reserves and public risk transfer mechanisms in catastrophic events, including how past financial losses in disasters have been managed. Explore the contingent liabilities that were assumed by governments in previous disasters. Explore availability and opportunities to access national / international funds for DRR, including climate change adaptation funds, as well as recovery financing mechanisms.

4.6. Prepare a report of findings from the financial resources evaluation and submit to governing mechanism for consideration.

STEP 5: DESIGN THE WORK PLAN FOR DEVELOPING THE NATIONAL DRR STRATEGY

Once the research has been carried out, the findings should allow to develop a work plan:

5.1. Propose content for each core area identified as critical for the national strategy (as per the working groups identified under Step 3), with clear objectives, set of activities and expected outcomes identified for each of them. This should basically be a compilation of the reports submitted by the different working groups on their respective priority areas.

5.2. Establish a timeframe to undertake and deliver each activity.

5.3. Allocate roles and responsibilities across all actors planned to engage in the development of the strategy, endorsed by the respective actors through the national platform for DRR consultation and discussion.

STEP 6: PUBLICLY COMMUNICATE AND REACH OUT ON THE PROCESS OF DEVELOPING THE NATIONAL DRR STRATEGY

Communicating officially about the process of developing the national DRR strategy represents an effective way to reach out to and engage all relevant stakeholders in truly participatory national consultations. It also demonstrates the government's political commitment to develop a strategy that is inclusive and calls for the whole of society to play a role in reducing disaster risk.

Communicate through an appropriate combination of media tools, such as newsletters, TV and radio outlets, online broadcasts, social media, and websites of key stakeholders involved in developing the strategy.

PHASE II: DESIGNING THE STRATEGY AND ACTION PLAN

STEP 7: CONSOLIDATE EVIDENCE INTO A DRAFT STRATEGY

7.1. Develop a narrative that highlights the overall country context in DRR governance and risk drivers and confirms the overall objectives and shared vision of the strategy;

7.2. Set up implementable and measurable national targets and custom indicators aligned with the SDGs.

7.3. Agree on the prioritization of sectors and related goals, on the capacities to be used or developed in each sector to achieve the strategy objectives;

7.4. Develop an action plan that provides a clear roadmap for implementation, with a clear definition of: the allocation of roles and responsibilities among stakeholders; the modalities of interaction across sectors and stakeholders; partnership-building opportunities; the allocation of resources and required resources mobilization efforts to ensure a smooth and effective implementation of the strategy;

7.5. Secure the agreement, buy-in and ownership of all stakeholders engaged through a national consultation of the national platform for DRR;

7.6. Submit a commonly agreed strategy to the governing mechanism for its policy endorsement;

7.7. Secure the highest-level authority's endorsement and adoption of the strategy;

PHASE III: PREPARING FOR IMPLEMENTATION

STEP 8: SECURE AND ACTIVATE FUNDING SOURCES FOR IMPLEMENTATION

8.1. Reach out actively to the ministry of finance and to other key line ministries involved in the development and implementation of the national DRR strategy to confirm the availability of financial resources for national DRR implementation as part of the ministries' and overall government's annual budget plan.

8.2. Explore the exact modalities to access available funds for DRR or development work, including the government's budget planned for climate change adaptation that may serve for DRR implementation.

8.3. Secure new funding sources from the private sector, both nationally and internationally, including international development entities that might be interested in starting a portfolio in DRR in the country, etc.

8.4. Analyse what portion of the measures can be funded by (i) existing streams of funds, (ii) accessing existing streams of funds for emergency management, climate change adaptation, or resilience development/SDG funding (iii) international aid.

8.5. Use the data and risk assessments' information gathered and conducted to develop a cost-benefit analysis of the key measures with higher cost, if the resources allow it. The result will be used as the basis of argument to convince decision makers on the return on investment.

STEP 9: MOBILIZE PARTNERSHIPS FOR COUNTRY-LEVEL IMPLEMENTATION

9.1. Gain confirmation from organizations or agencies responsible for leading and/or coordinating the implementation of actions.

9.2. Develop a multi-sectoral accountability framework to support the implementation of the national strategy.

9.3. Undertake high-level consultations and achieve high-level final approval of the national DRR strategy.

9.4. Besides review and approval by the relevant governing mechanism, official approval by the prime minister or president would enforce legitimacy of the strategy.

STEP 10: SET UP A MONITORING, EVALUATION AND REPORTING MECHANISM LINKED TO THE NATIONAL STRATEGY IMPLEMENTATION

10.1. Collecting information on the DRR strategy implementation process, assessing it through a national monitoring system and providing outputs for the reporting to the governing mechanism / national platform for disaster risk reduction and stakeholders on the progress in implementation.

10.2. Collecting data for indicators to monitor the progress in reducing risk and achieving the objectives and targets that were defined for the strategy. It is often easier to build on existing information systems and data collection efforts (such as disaster loss databases).

1.4.2. Asian Disaster Preparedness Centre (ADPC) Approach on DRR Mainstreaming

DRR mainstreaming in development is consideration and address of risk issues in;

- Medium-term strategic development frameworks
- Legislation and institutional structures
- Sector strategies and policies
- Budgetary processes
- Design and implementation of individual projects
- Monitoring and evaluating all of the above

DRR mainstreaming is a crosscutting issue that needs to be 'owned' by all government agencies rather than by a single department. Cross sectoral initiatives for DRR mainstreaming are given in Box-2.

BOX-2

Education

- Introducing DRM modules into the school curriculum
- Promoting hazard resilient construction of new schools
- Introducing features into schools for their use as emergency shelters

Environment and Natural Resources

- Including disaster risk Impact assessment into environmental Impact assessments for new development projects
- Linking with the national adaptation Plan of action under the UN Framework Convention for Climate Change
- Action on other environmental hazards and links between environmental degradation and disaster risks

Health

- Vulnerability assessment of hospitals in hazard prone areas
- Promoting hazard resilient construction of new hospitals
- Implementing of disaster preparedness plans for hospitals

Housing

- Promoting the increased use of hazard resilient designs in rural housing in hazard prone areas
- Utilization of national building codes; and the compliance and enforcement of local building laws in urban hazard prone areas

Urban Planning and infrastructure

- Introducing disaster risk Impact assessments into the construction of new roads and bridges
- Promoting the use of hazard risk information in land-use planning and zoning programs

Financial Services

- Incorporating flexible repayment schedules into microfinance schemes
- encouraging financial services and local capital markets to finance DRM measures

The focus of DRR mainstreaming should be;

a) Reduce disaster risk accumulated from previous urban development
b) Avoid creating new urban disaster risks in the future
c) Build the capacity to effectively respond to any type of emergencies

Building block to successful mainstreaming is given in Box-3.

Box-3

1. Legislation	for DRM, including the mainstreaming of DRR into development, to provide an enabling environment in which DRM strategies can be 'empowered'
2. Comprehensive DRM	plan that has been developed through the active participation of stakeholders at all levels of government
3. Institutional Arrangement	the institutional structure should strengthen the horizontal and vertical integration of DRR between different levels of government, various line agencies and other stakeholders
4. Budget	budget lines should be created at the level of local government to support the basic functioning of DRM offices and their activities
5. Skills, capacities and tools	need to be developed by government agencies for incorporating risk considerations in their day-today operations
6. Awareness-raising	among government officials as well as the public to secure a solid appreciation and understanding of the linkages between DRR and sustainable development
7. Monitoring	monitoring and measuring progress against performance indicators are essential for gauging the success of the mainstreaming process, and for generating evidence on results and impacts, as well as lessons learned that will be useful to other cities

1.4.3. NDMA Pakistan Guidelines for DRR Mainstreaming

National Disaster Management Authority, Pakistan suggest 7 - step approach for DRR mainstreaming the development planning. The steps and their interlinkages are given in Figure-4.

Figure 4- 7 Step Approach for DRR Mainstreaming

Description of each step is summarized below;

Step 1. Awareness-raising

- Appreciation and understanding of the relevance of disaster risk reduction to sustainable development. Increased awareness of the potential importance of examining and, if necessary, addressing disaster risk is critical, on the part of both governments and development organizations, in striving for sustainable development and poverty reduction.
- Accountability. Most fundamentally of all, governments need to accept greater accountability for hazard-related human, physical and economic losses. Governments need to assume greater responsibility for their countries' and peoples' vulnerability and to actively seek to reduce risk.

Step 2. Enabling environment

- Appropriate organization policies, strategies and institutional capacities. Overarching policies and strategies need to pay due attention to

disaster risk reduction, regarding it as a development issue rather than the responsibility of humanitarian departments.

- Government prioritization of disaster risk reduction. It is essential that governments themselves prioritize risk reduction as a critical development challenge in high-risk areas.

Step 3. Development of tools

- Programming, appraisal and evaluation tools are required to investigate sectors and individual projects at risk from natural hazards, provide detailed information on the nature and level of risk and ensure that appropriate risk reduction measures are taken.

Step 4. Training and technical support

- Government needs to provide appropriate internal training and technical support to support the integration of disaster risk concerns into development.

Step 5. Change in operational practice

- **Early assessment**. It is essential that hazard-related issues are considered during the very early stages of sectoral programming and project design so that they can be fully and systematically taken into account and appropriately addressed where relevant.
- **Adequate supporting information**. Sufficient information is necessary to permit a full and accurate assessment of disaster risk and its appropriate treatment.
- **Cost minimization.** Disaster risk analysis should be integrated into sectoral programming and project design at minimum cost. Pooling of relevant information and related analysis within the government would help achieve this.
- **Treatment of low-probability, high-impact risks.** Climatologically hazards are most likely to be identified as potential risks, reflecting their shorter return periods and thus higher probability that they will occur over the life of a project or country strategy. In contrast, risks emanating from earthquakes and volcanic hazards, with much longer return periods, may be discounted. However, even if ignored from an economic perspective, it is important to ensure that earthquake risks are adequately considered from a safety perspective, taking rights to safety and protection into account.
- **Transparent, inclusive and accountable consultation.** The consultative process must give a voice to poor and marginalized groups, who are

often among the most vulnerable to natural hazards, and ensure that their interests are adequately addressed and their rights protected.

- **Adequate upkeep and maintenance of development investments.** Mechanisms for ensuring that development investments are adequately maintained and remain in good condition are essential in ensuring that their designed level of hazard resilience is maintained.

Step 6. Measuring progress

- Internationally agreed targets for disaster reduction should be established, providing a focus for the government against which progress in mainstreaming can be measured.

Step 7. Learning and experience sharing

- The government, together with other stakeholders, should make a concerted effort to monitor, share and learn from its experience in mainstreaming disaster risk reduction into development.

1.4.4. The ProVention Consortium on DRR Mainstreaming

The ProVention Consortium in "Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organizations" publication of January, 2007 describes about DRR mainstreaming as;

"The development process does not necessarily reduce vulnerability to natural hazards. Instead, it can unwittingly create new forms of vulnerability or exacerbate existing ones, impeding efforts to reduce poverty and promote growth, sometimes with tragic consequences. 'Win-win' solutions for securing sustainable development, reducing poverty and strengthening hazard resilience, therefore, need to be explicitly and actively sought, particularly as climate change looks set to increase the incidence of droughts and floods and the intensity of windstorms. Such solutions are best derived by integrating disaster risk reduction strategies and measures within the overall development framework, viewing disaster risk reduction as an integral component of the development process rather than as an end in its own right."

A comprehensive approach for DRR mainstreaming in development planning has been proposed by ProVention Consortium. The approach is shown in Figure-5. The steps starting from country level strategy to project level appraisal, implementation and evaluation are given in the approach.

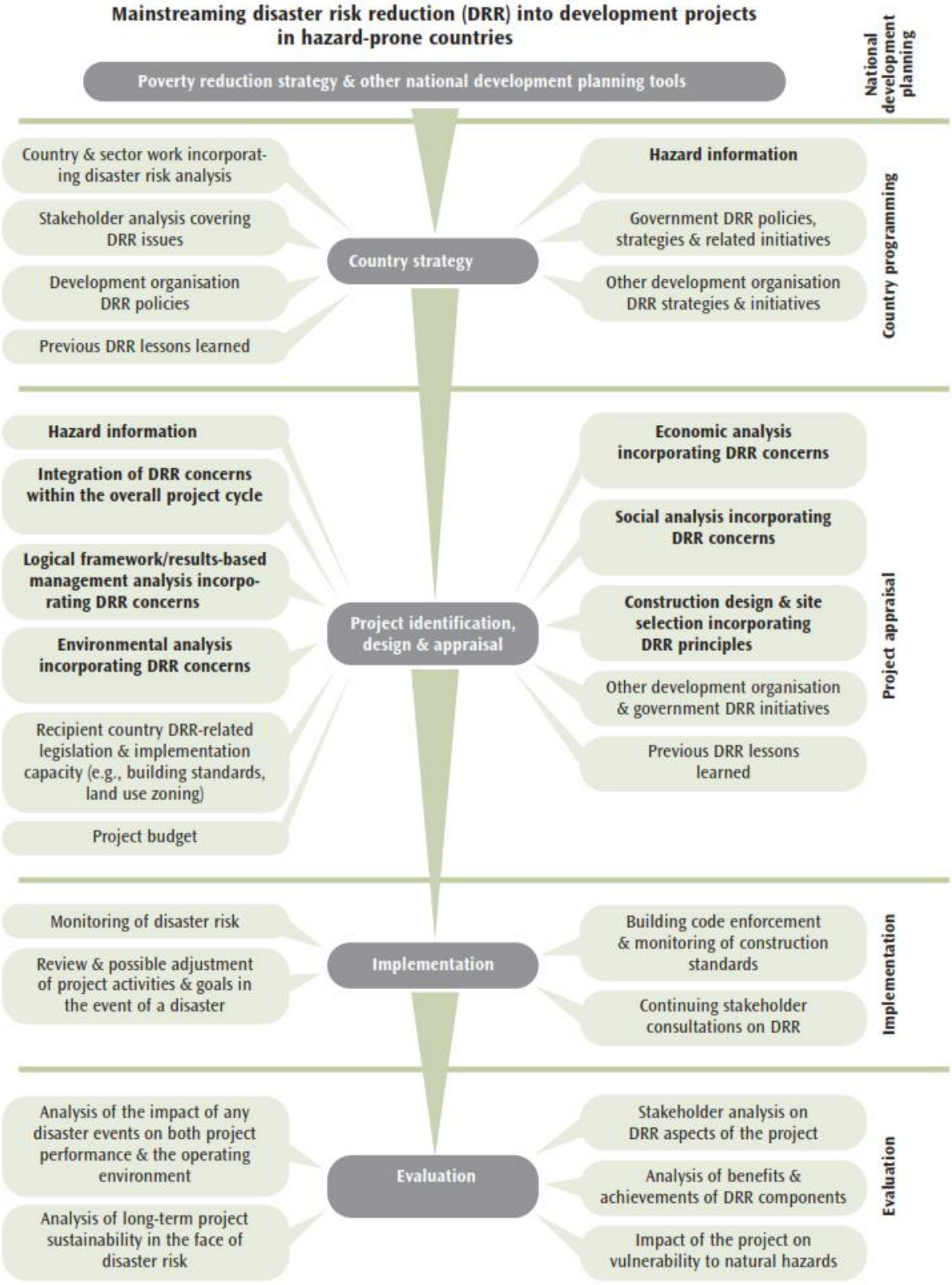


Figure 5 - ProVention Consortium approach for DRR mainstreaming

1.5. SUMMARY

- Since the late 1990s, there has been increasing recognition of the need to mainstream' disaster risk reduction into development – that is, to consider and address risks emanating from natural hazards in medium-term strategic frameworks and institutional structures, in country and sectoral strategies and policies and in the design of individual projects in hazard-prone countries. Mainstreaming requires analysis both of how potential hazard events could affect the performance of policies, programmes and projects and of the impact of those policies, programmes and projects, in turn, on vulnerability to natural hazards. This analysis should lead on to the adoption of related measures to reduce vulnerability, where necessary, treating risk reduction as an integral part of the development process rather than as an end in itself.

- This shift in perspective from a previously widely entrenched view of disasters as unpredictable, unavoidable events to be dealt with by emergency specialists has, in part, reflected increasing understanding of disasters as unresolved problems of development.

- The prime objectives of DRR Mainstreaming are;

    a) Reduce disaster risk accumulated from previous urban development

    b) Avoid creating new urban disaster risks in the future

    c) Build the capacity to effectively respond to any type of emergencies

- Appreciation and understanding of the relevance of disaster risk reduction to sustainable development. Increased awareness of the potential importance of examining and, if necessary, addressing disaster risk is critical, on the part of both governments and development organizations, in striving for sustainable development and poverty reduction.

- Appropriate organization policies, strategies and institutional capacities. Overarching policies and strategies need to pay due attention to disaster risk reduction, regarding it as a development issue rather than the responsibility of humanitarian departments.

- It is essential that governments themselves prioritize risk reduction as a critical development challenge in high-risk areas.

- It is essential that hazard-related issues are considered during the very early stages of sectoral programming and project design so that they can be fully and systematically taken into account and appropriately addressed where relevant.

- Disaster risk analysis should be integrated into sectoral programming and project design at minimum cost. Pooling of relevant information and related analysis within the government would help achieve this.

- Disaster Risk Reduction (DRR) is a development issue rather than a mere humanitarian response and demand cross sectoral collective efforts.

- The recommended approach for DRR Mainstreaming is top-down approach and starts from country level DRR strategy downwards to project level planning, implementation and monitoring.

- Legislation / policy, comprehensive Disaster Risk Reduction (DRM) plans, institutional arrangements, budget, skill, capacities & tools, awareness raising and monitoring are integral components of DRR Mainstreaming in development planning.

Chapter

2

DRR SCENARIO IN SINDH AND GAP ASSESSMENT

CHAPTER TWO

2. DRR SCENARIO IN SINDH AND GAP ASSESSMENT

2.1. BACKGROUND

Prior to 2005, the West Pakistan National Calamities Act of 1958 was the available legal remedy that regulated the maintenance and restoration of order in areas affected by calamities and relief against such calamities. An Emergency Relief Cell within the Cabinet Division has been serving since 1971 as an institutional disaster relief support at the national level. Similar institutional arrangements existed at the provincial level in the form of relief commissioners. However, that regime provided a reactive approach towards emergency response only.

The United Nations International Strategy for Disaster Reduction (UNISDR) introduced the paradigm shift from a reactive to a proactive approach in the form of the Hyogo Framework of Action (2005-2015) signed by 168 countries including Pakistan. To fulfill the global obligations as well as cope with the challenges emerged in the aftermath of the October 2005 earthquake, the Government of Pakistan promulgated the National Disaster Management Ordinance in 2007 to introduce a comprehensive National Disaster Management System in the country. The Ordinance became the Act called the National Disaster Management Act in December 2010. The Act establishes three tiers for the disaster management system: i.e., national, provincial and district levels. National Disaster Management Act 2010 envisages disaster management system in Pakistan as shown in Figure-6.

2.1.1. National Disaster Risk Reduction (DRR) Policy (2013)

National DRR Policy envisions "A Pakistan that continuously builds up its resilience to shocks from natural and man-made hazards". The Guiding Principles are multi-hazard approach, promoting vulnerability and risk assessments as the basis of DRR, strengthening community participation and capacity in DRR, strengthening the resilience of vulnerable groups, subsidiary/strict and clearly defined division of roles, promoting inter-organizational partnerships and accountability and transparency. The key objectives of the policy comprise integrated national capacity to identify & monitor risks, local level risk reduction capacity, promoting resilient development planning, resilience of key infrastructure and lifelines, multi-

hazard early warning capacity, national disaster preparedness and response capacity and systematic integration of DRR into recovery and reconstruction.

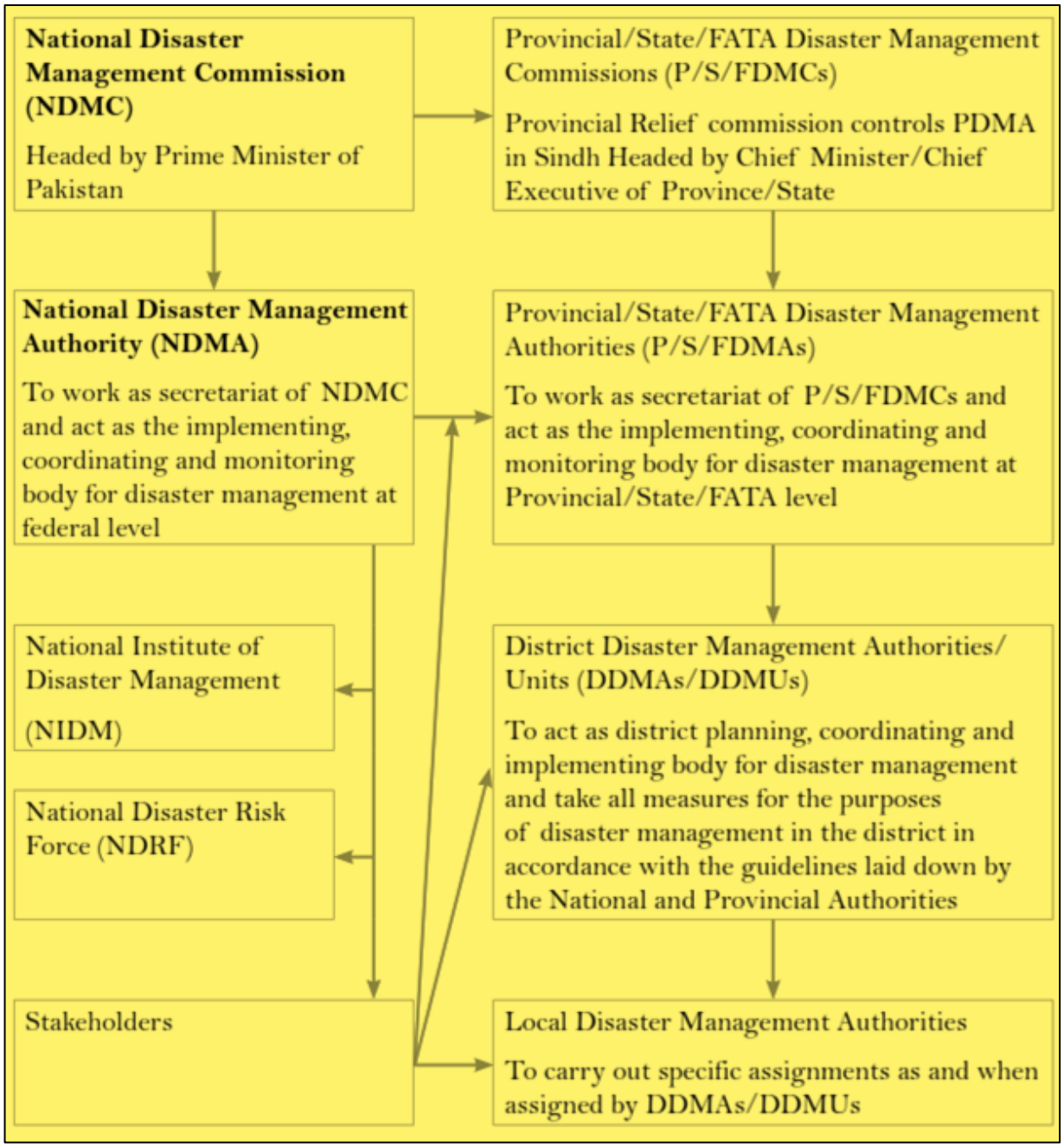


Figure 6 - Disaster Management System in Pakistan

2.1.2. DRR Initiatives in Sindh

- The National Disaster Risk Management Framework envisages a multi-hazard approach in dealing with disaster risks. Accordingly, the multi-hazard risk assessment exercise is being executed by the NDMA with an objective to develop Hazard Atlas of Pakistan. The pilot project has been completed in Sindh province and Multi Hazard Vulnerability Assessment for Sindh province at macro scale has been prepared. Micro level Multi-Hazard Vulnerability Risk Assessment at Union Council level supported by Disaster Management Information System (DMIS) and Informed Disaster Management Plans are under development.
- Provincial Emergency Operation Centre (PEOC) has been established and is in process of upgradation to house DMIS.
- Disaster Risk Management Needs Report 2012 has been prepared.
- Provincial and District level SoPs for Flood / Rain / Cyclone emergencies have been prepared and being modified in the light of micro level MHVRA.
- Capacity Building Programs/workshops are being conducted for Provincial, District officers, Civil Society and NGOs in DRM and DRR under Sindh Resilience Project.
- Community Based Disaster Risk Reduction (CBDRM) model for the province has been development and in process of implementation.
- Initiatives for DRR Mainstreaming has been launched and in process of implementation. Various awareness programs on DRR mainstreaming have been planned and in execution phase.
- Development schemes have been launched for drought mitigation in desert areas of district Umerkot and Tharparkar.

Though few initiatives have been completed by the province, but Provincial Disaster Management Authority, Sindh have envisioned comprehensive program to address complete disaster management cycle. PDMA Sindh under Sindh Resilience Project is working on diverse initiatives, which once complete, will pave way for enhancing the capacity of the Province in managing disasters and steps in right direction for disaster risk reduction on globally accepted contemporary practices.

2.2. GAP ASSESSMENT

Development, specially infrastructure development has the potential to add disaster risks in any hazard prone area because, development always alter the natural systems. If sufficient substitute to natural system or disaster risk reduction is not considered at planning stage of the development project, the project may undergo construction and reconstruction risks after occurrence of each hazardous event. Not only development projects but policies can also add to disaster risks e.g. policy for leasing-out forest lands to local peasants harmed the ecosystem of flood plain in Sindh and induced unplanned and controlled human interventions which at large extent add-in riverine flood risks in Sindh.
Though full spectrum of DRR mainstreaming has been covered for gap assessment, but special focus has been given to infrastructure development projects of public domain. The initiative of PDMA Sindh titled "Support to line departments for DRR Mainstreaming in Development Planning" has been set-out to achieve following objectives;

a) Awareness and capacity building of public sector departments of Sindh on Disaster Risk Reduction

b) Capacity development on inclusion of DRR plan / check list / disaster safety measures in project PC-I to ensure safety of infrastructure to be developed.

c) Inculcating disaster risk culture across government sector

On Provincial scale, this initiative addresses two important components of DRR Mainstreaming in development planning i.e. Awareness Raising and ingestion of DRR measures at project identification, appraisal and design level. The full spectrum of DRR Mainstreaming in Development Planning is being addressed through initiatives taken-up by PDMA. As all development projects are initiated through Project Cycle (PC) documents in Sindh, therefore, development projects in public domain has been given priority in this initiative.

2.3. GAP ASSESSMENT METHODOLGY

Two- way approach has been implied in preparation of gap assessment report.

1) Consultative meeting with stakeholders and questionnaire-based survey
2) Literature review and analysis of PC documents, including approved PC-I of the projects
3) Review of any other material on the subject matter

2.3.1. Stakeholder Consultative Meeting

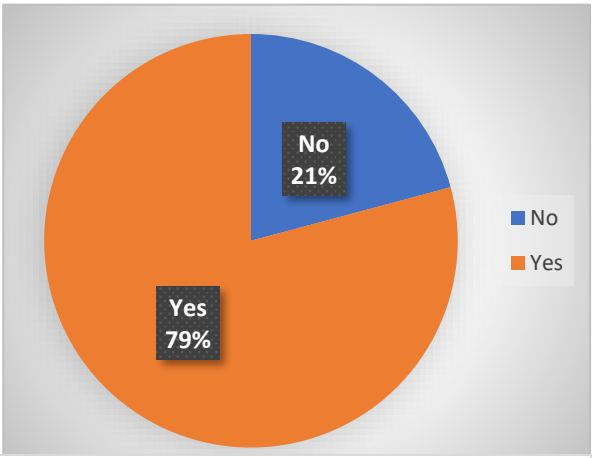
A consultative meeting of stakeholders identified by PDMA was arranged in Hotel Avari Towers, Karachi on 8th October, 2020 with the following objectives;

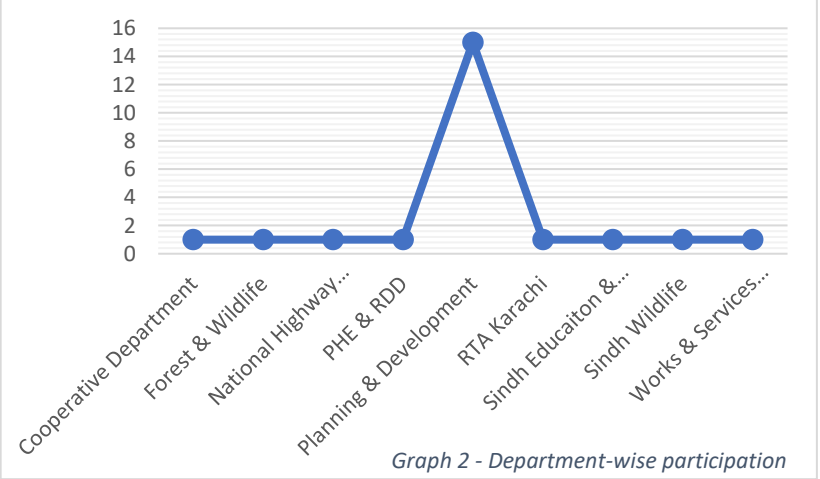
- Questionnaire-based survey for DRR Mainstreaming in Development Planning with specific focus on PC-I preparation for infrastructure development related projects
- Assessment of awareness level of participants on DRR
- Training Need Assessment

The meeting started with brief introduction on DRR mainstreaming and its importance, objectives DRR Mainstreaming, objectives of consultative meeting and explanation of survey questionnaires. Survey Questionnaire is given at Annexure-I.

Statistical Summaries and Results of Survey

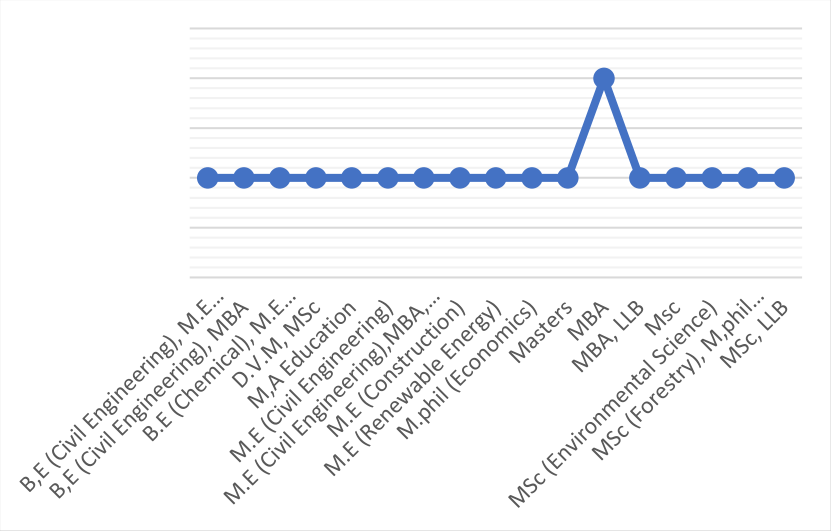
PDMA invited potential stakeholders in the meeting from different departments. 24 participants attended the meeting out of which 19 participants filled the survey questionnaire as shown in Graph-1. Participation in survey remained 79%. Most of the participation was from Planning and Development Department, Government of Sindh. Almost each section of P&D participated in the meeting and provided valuable feedback. Department-wise participation of meeting attendees is given in Graph-2. As shown in graph highest participation in the meeting was from P&D Department. All participants were well qualified and highly experienced in their domain. Graph-3 shows qualification of participants.





Graph 2 - Department-wise participation

As mentioned earlier five attendees did not participated in the survey, hence not provided personal details.



Graph 1- Qualification of Participants

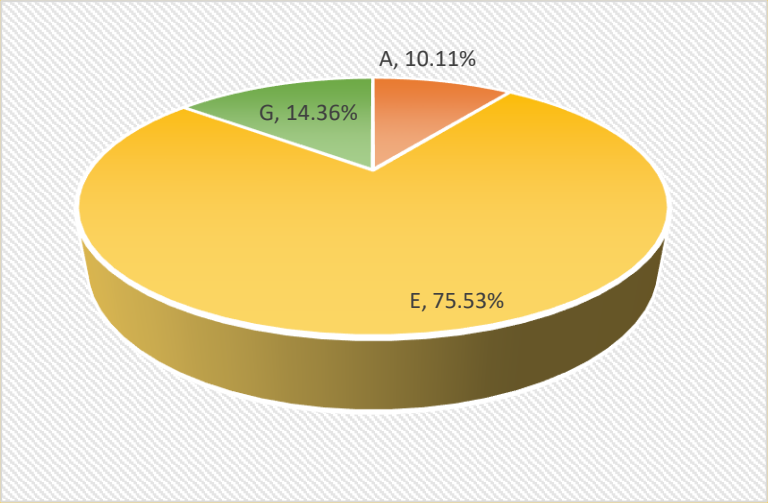
Questions and results

The questionnaire was divided into two sections. Section-1 specifically focused on disasters and DRR awareness, while Section-2 was based on questions to probe for understanding current mechanism of DRR mainstreaming or consideration at project planning stage and suggestions for improvements. Statistical summaries and findings on the basis of answers obtained are presented in below;

SECTION-1

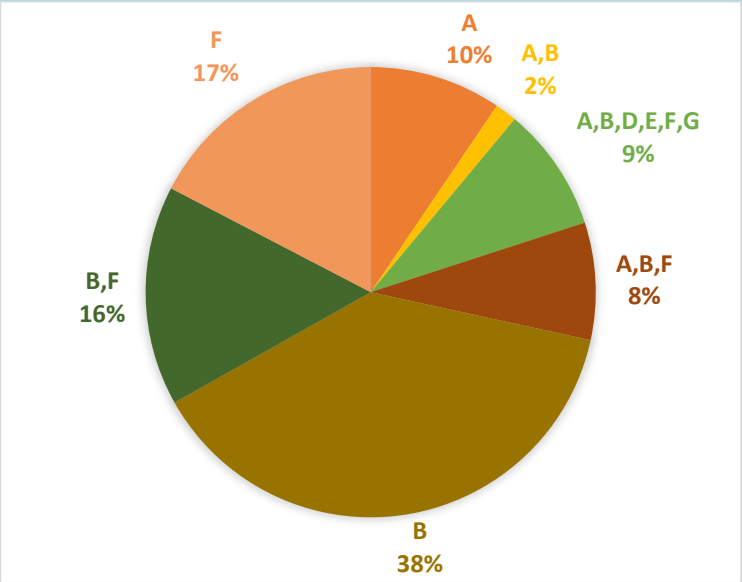
Q1: Generally, which natural disaster causes major economic and social impact in Sindh Province? (Choose any one option from the list)

75.53% of the participants selected option E (Floods (all types of floods)), followed by Drought (14.36%) and 10% selected Earthquake.



Findings: Majority of the participants selected floods as major cause of economic and social impacts. Through Drought also bring impacts in selected regions of the Province, however, floods due to their large arial extent and frequency cause more social and economic losses. Majority of participants selected right choice.

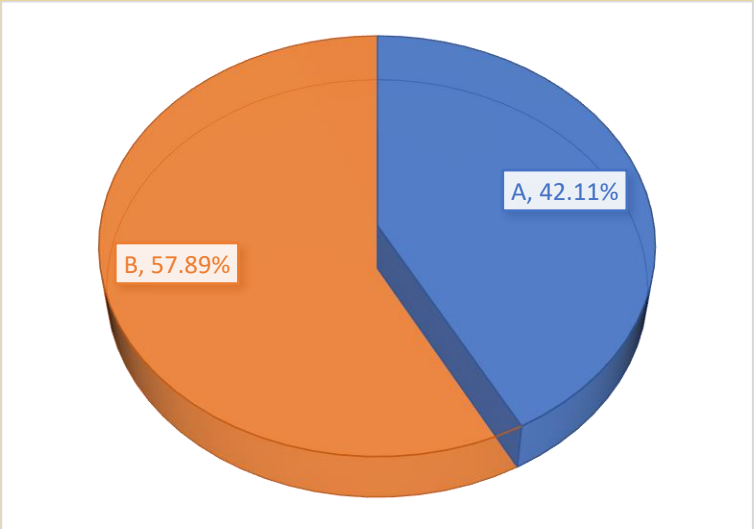
Q2. In your opinion, which natural disasters occur more frequently in Sindh? (Choose all that apply)



Response to above question is mixed. 32.63% selected Floods as most frequent hazard followed by Droughts (17%). 16% considered Floods and Droughts while Heatwaves (10%) as frequently occurring disaster.

Findings: In terms of frequency, occurrence of heatwaves is more frequent followed by Floods and Droughts. Most of the participants have considered these hazards as frequent disasters of the province, which reflects right perspective of participants on hazards and disasters in the province.

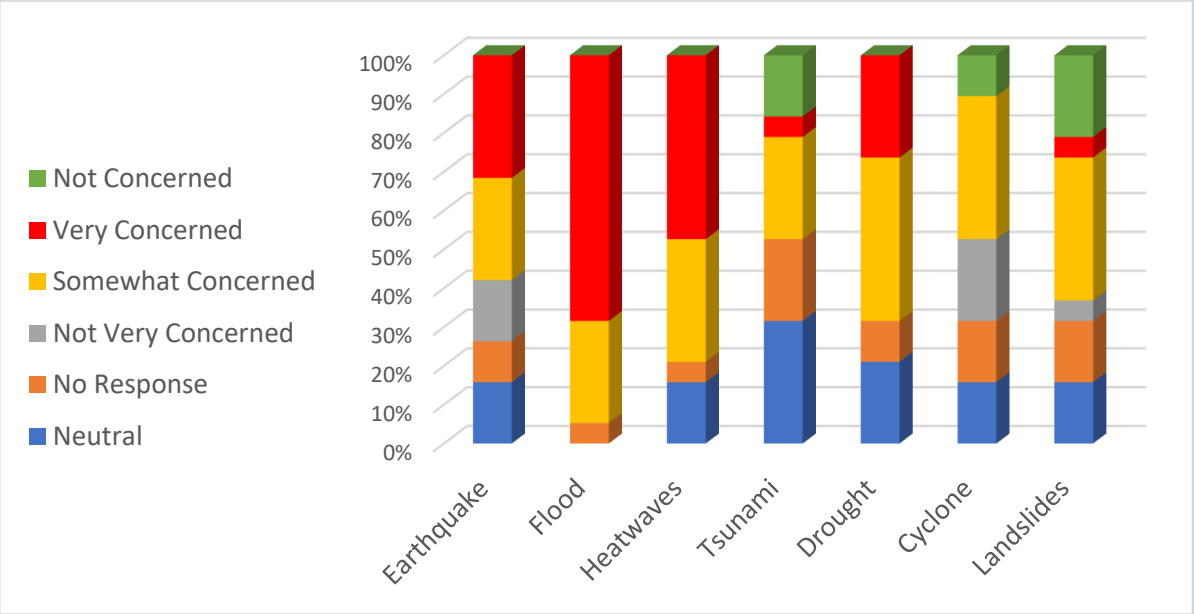
Q3: Have you ever been involved in disaster management / risk reduction activities in your personal or professional capacity? (Yes / No)



About 42.11% of the participants answered Yes to this question, while 57.89% have never been involved in disaster management / risk reduction activities.

Findings: Though a sufficient percentage of participants have participated in disaster management activities but majority were inexperienced in this domain. Frequent trainings and awareness programs on disaster management / disaster risk reduction will be helpful in capacity development of officials in this domain.

Q4. How concerned are you with disaster management / DRR knowledge you have about the following disasters? (Choose only one per row)

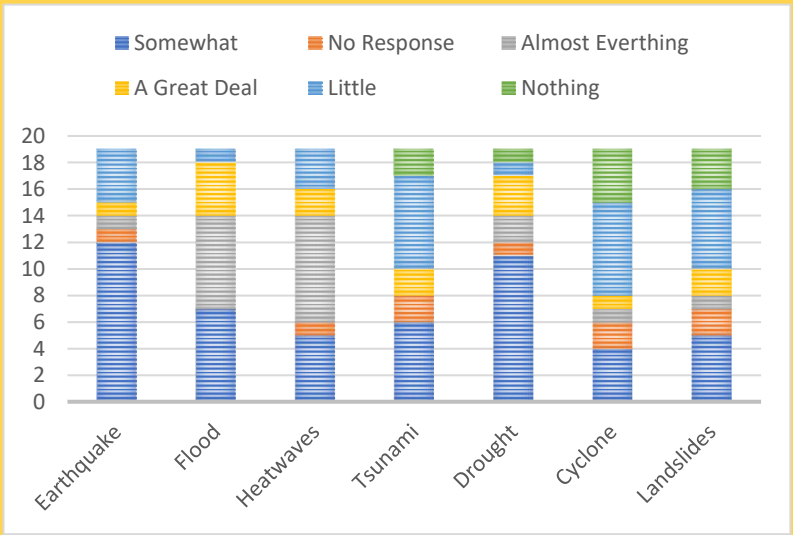


Majority of the participants were concerned about knowledge on Floods, Heatwaves and Droughts followed by Earthquake.

Findings: In the training session of this initiatives, specific focus will be given to hazard risk assessment of Floods, Heatwaves and Drought along with all other hazards of the province.

Q5: What level of knowledge do you have about disaster management for the following disasters? (Choose only one per row)

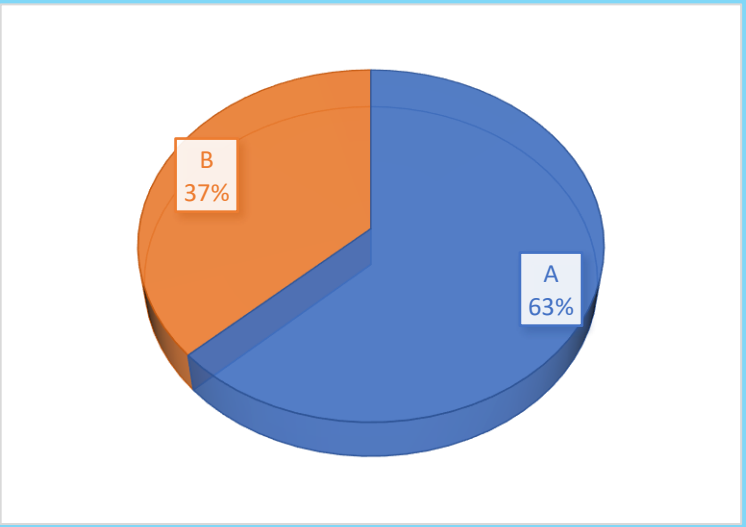
Most of the participant's knowledge level about common disasters was in 'Somewhat' and 'Little' range. Few responded to have 'A Great Deal' knowledge in certain disasters.



Findings: In training session of this initiative, physical characteristics of natural hazards will also be covered for better understanding of the hazards.

Q6: Do frequently occurring natural disasters disrupt the function of your department which you represent? (Yes / No)

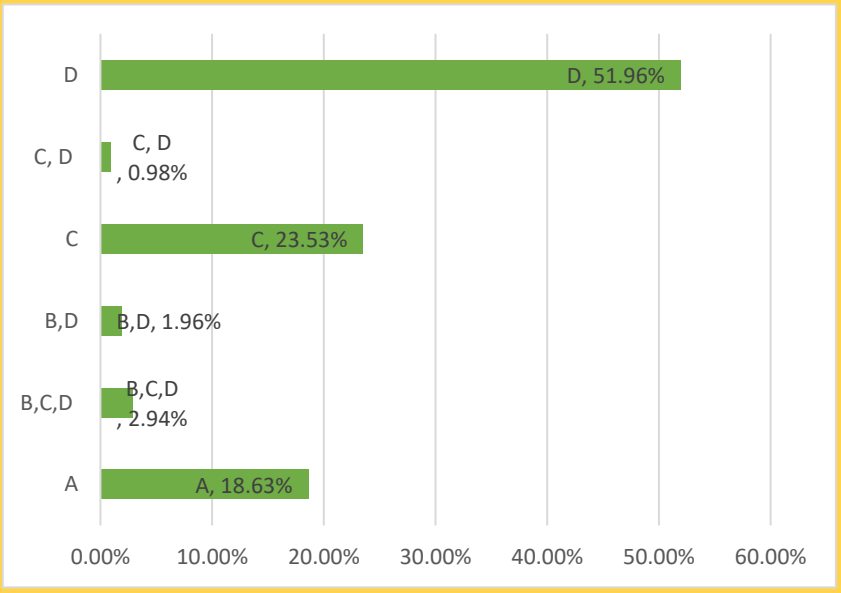
Majority of participants (63%) agreed the function of their departments is disrupted due to frequently occurring disasters in the province. Answer of (37%) participants was No.



Findings: The majority of participants were aware of the consequences of frequently occurring disasters in the province, which reflect high threat perception about disasters among government officials.

Q7: If your choice is Yes in question 6, then how function of your department is disrupted by the disaster event? (Choose all that apply)

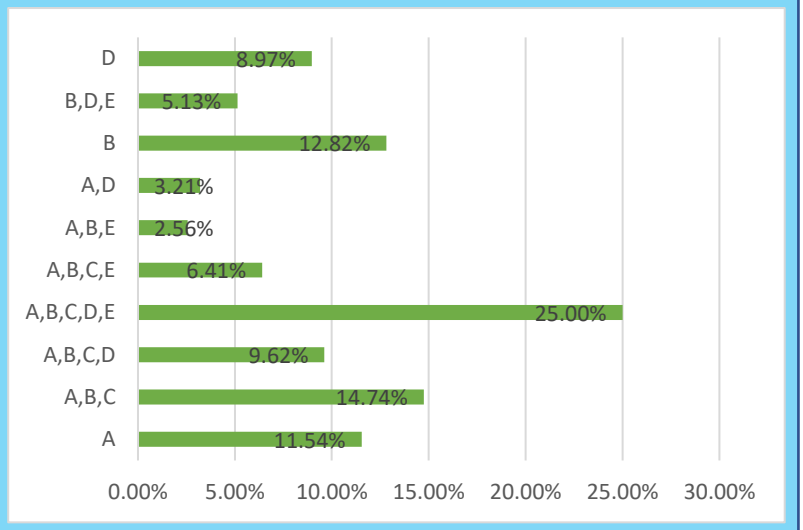
The majority of participants (51.96%) opted for D (Difficulties in disposal of office matters due to disturbance like, failure of electricity, closure of roads, flooding in office premises, damage to office building etc.) followed by option C (23.53%) i.e. Low attendance in office, and Option A (18.63%) i.e. Complete Closure of office / setup.



Findings: Majority of the participants was concerned about disturbance in disposal of official duties caused by the frequently occurring disasters and domino effects such as closure of electricity etc. This dimension is important

and reflects unaccounted losses caused by disasters in term of official duties and efficiency of government functionaries.

Q8: In your opinion, how disaster losses and damages can be minimized? (Chose all that apply)



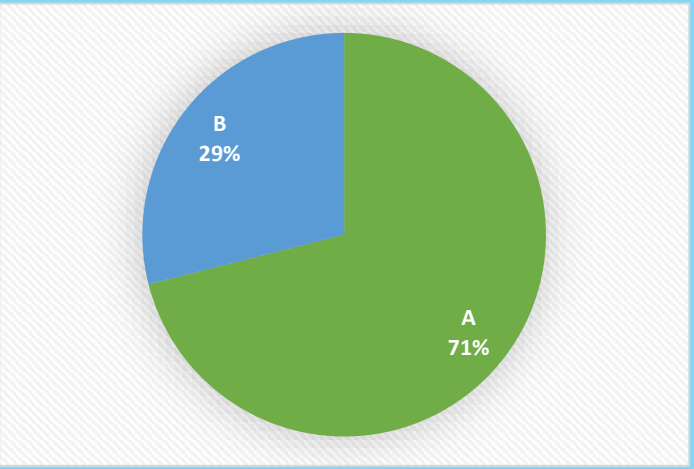
Majority of participants (25%) opted all options, which cover all necessary steps involved in disaster risk reduction, followed by 14.74% which covers option A,B,C i.e. proactive approach, DRR mainstreaming, awareness raising. 12.82% specifically selected DRR Mainstreaming. Rest of the participants considered mixed options.

Findings: All given options were valid for disaster risk reduction. Response received on this question reflect high sense of disaster risk reduction among government officials working in different development sectors.

SECTION-2

Q1: Does your department prepare and appraise PC-I for infrastructure development projects? (Yes / No)

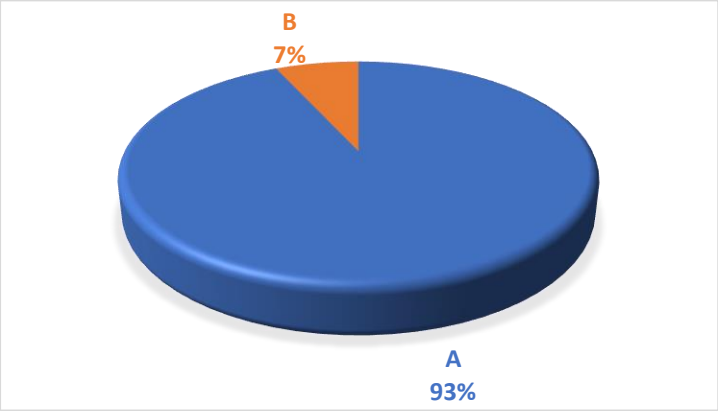
71% of the participants answered 'Yes' to this question, while 29% participants answered 'No'.



Findings: Majority of the participants were experienced in project planning and documentation. The opinions shared by the participants are based on their experiences and valuable input for this study.

Q2: Does your department evaluate, recommend or approve PC-I document? (Yes / No)

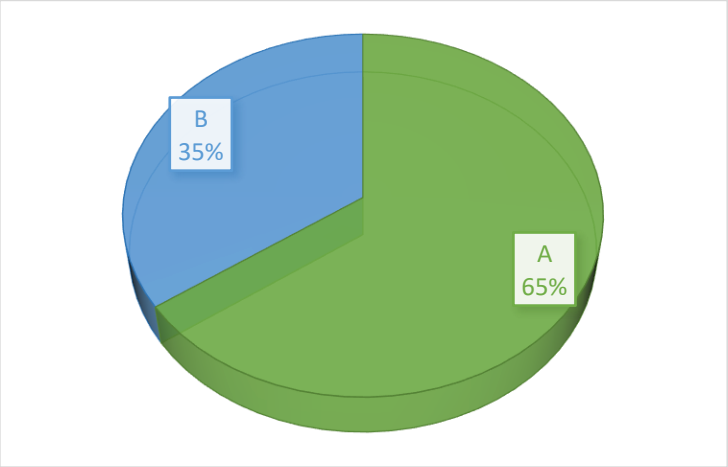
91% of the participant's departments were involved in different phases of project preparation and planning. Only 7% answered 'No' to this question.



Findings: Majority of the participants were experienced in project planning and documentation. The opinions shared by the participants are based on their experiences and valuable input for this study.

Q3: Have you prepared PC-I for any infrastructure development project or assisted in preparation from your department? (Yes / No)

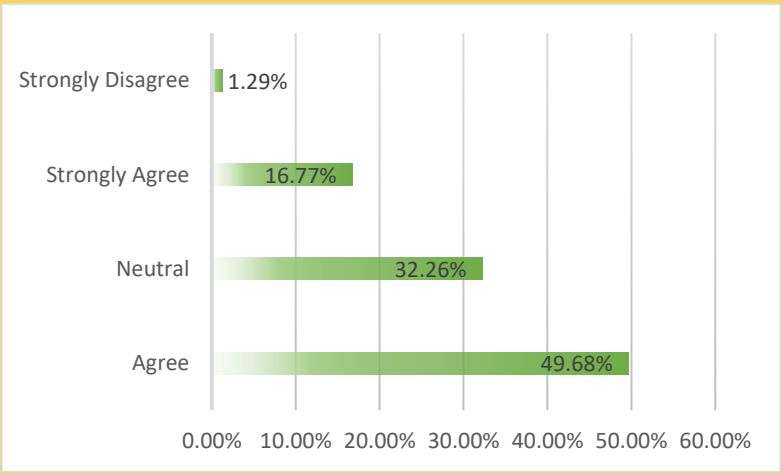
65% of the participants were experienced in preparation of PC-I documents related to infrastructure development project. While 35% were inexperienced.



Findings: This was specific question to probe the personal experience of individual participants on preparation of PC-I related to infrastructure development. Majority of the participants were experienced in PC-I preparation process, specifically infrastructure development projects.

Q4: Do you agree with this statement "Disaster-Development nexus is such that disaster limits development, development causes disaster risks and development reduce disaster risks by overcoming vulnerability" (Choose any one option)

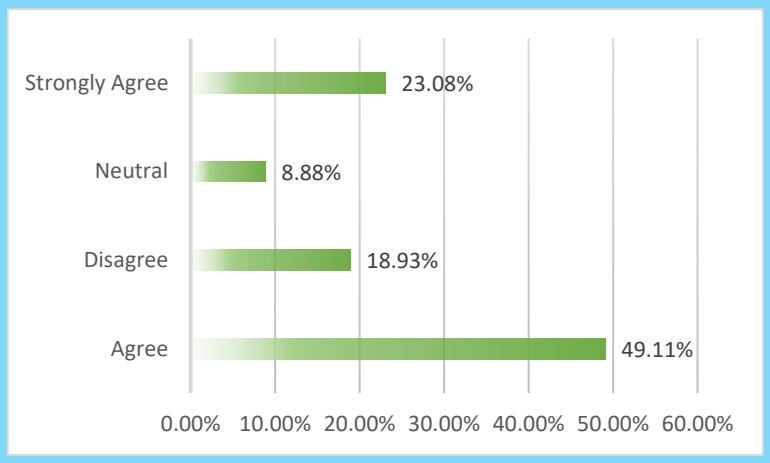
49.68% Agreed and 16.77% Strongly Agreed with the statement. Cumulatively, majority of the participants agreed with the statement.



Findings: Majority of the participants were aware of the fact that disaster and development are interrelated process. Development cause alteration in nature and may bring imbedded disaster risks, and at the same time development provide opportunity for prosperity which can be helpful in overcoming disaster vulnerability.

Q5: Do you agree with this statement "Development activity and Disaster Risk Reduction (DRR) represent two sides of the same coin and need to be dealt with in unison. While natural disasters cannot be prevented from happening, the vicious cycle of disasters and damaging effects in the development activity can be altered. This can be done through mainstreaming Disaster Risk Reduction into the development process." (Choose any one option)

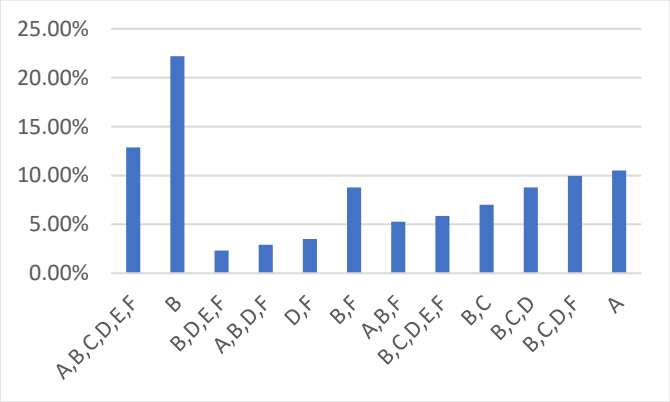
49.11% Agreed and 23.08% Strongly Agreed with the statement, while 8.88% Disagreed with the statement. Cumulatively, majority of the participants agreed with the statement.



Findings: Majority of the participants endorsed DRR Mainstreaming in Development Planning as a solution to disaster risk reduction in the province.

Q6: The UNISDR defines DRR as the "concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events". How this can be achieved in context of Sindh? (Select all that apply)

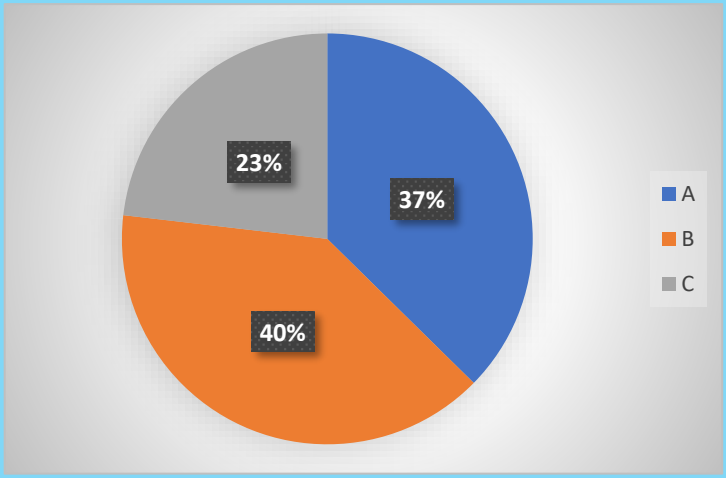
This question was posed to probe the understanding of participants on DRR mainstreaming specially on implementation of DRR mainstreaming. The option 'A' only was wrong choice for this question. 10% of participants considered PDMA can achieve DRR mainstreaming. Majority of participants opted other combination of options (22% considered DDR can be achieved through collective efforts, while 12.87% selected all options.



Findings: All choices expect option 'A' are correct. PDMA Sindh can play the lead role in disaster risk reduction i.e. formulation of policies, regulations, frameworks, risk databases etc but DRR can be achieved through collective efforts by all segments of life. Majority of the participants endorsed this idea.

Q7: Do you think current format and contents of PC-I ensure safety against creation of new infrastructure related hazard risks? and minimize prevailing hazard risks?

Majority of participants i.e. 40% opted 'No' in response to this question, 37% were of the opinion that current PC-I format ensure safety against hazard risk. 23% were unsure and selected option 'May be'.



Findings: Majority of the participants were of the opinion that current format and contents of PC-I form does not directly address DRR at project planning stage. Though margin between Yes and No is very little but precent of participants who were unsure is reasonable. It is evident, that there is no firm mechanism for ensuring DRR at project planning stage.

Q8: If your answer is Yes in question 7, briefly mention those sections of PC-I form or any policy document or any relevant material you deem necessary in context of the question. (You can also refer relevant documents by adding links of documents, or source from where it can be obtained)

This was open ended question and participants were supposed to write on the pertinent sections / contents of PC-I form in which DRR is addressed. About 39% of participant did not provided any input on this question. Key answers by participants on this question are;

a) PC-I form ensures Environment Friendly Infrastructure
b) Policy guidelines on DRR already given in SDG goals
c) Manual and guidelines by Planning Commission of Pakistan cover DRR
d) PC-I Section on Social, Environment and Economic impacts must be filled properly
e) PC-II for project costing Rs 500M and above require in-house feasibility study and DRR can covered in this section

Findings: Documents and section shall be studies in next section of this gap assessment report. However, from the responses of participants it appears that, there is no specific content or section of PC-I that ensure DRR of hazard risk at project planning stage.

Q9: Are there any guidelines / policy in vogue for consideration of hazard risks and risk reduction strategies while preparing PC-I for development planning?

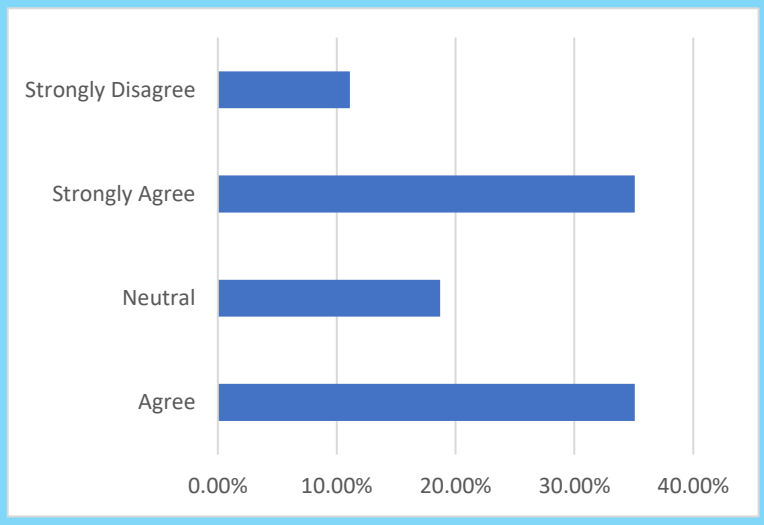
Answers and results of Q9 are almost same. Almost half of the participants replied Yes and provided same input as of Q8.

Q10: In your experience, do you think development planning is considered keeping in view multi-hazard environment of the Province. For example, addressing concerns like: Is earthquake resistance thought-out while constructing a hospital? If located within saline lands, would it withstand effects of salinity and weathering? Is it likely to get submerged or damaged during heavy rains and winds? Does the construction of hospital affect the natural drainage of the area etc?

Mixed response similar to Q8 and Q9 was received from the participants. Almost half of participants replied no such provision are considered in project planning stage, which ensure disaster risk reduction.

Findings: Q8, Q9, Q10 were partly closed questions followed by open ended remarks / suggestions etc. Though these questions were designed to obtain different results but more or less similar answers have been received from participants. Few participants have strongly recommended to include DRR provisions in Project Cycle documentation to ensure project related disaster risk reduction at planning stage.

Q11: Do you agree that poor development planning can lead to government's investments in "constructing" and "reconstructing" risks, which perpetuate the conditions for unsustainable human development and the scarce resources? (Choose any one option)

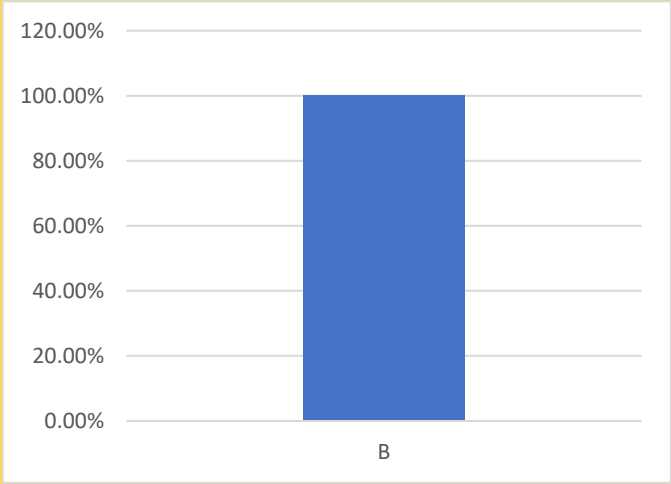


About 35% of the participants either Agreed or Strongly Agreed with statement. About 11% Strongly Disagreed and 18% remained neutral on the question.

Findings: Cumulatively majority of the participants endorsed the importance of better project planning, which consider DRR at project planning stage. In absence of DRR in project planning may lead to construction, reconstruction cost after every disaster, if infrastructure is developed in disaster prone area and without consideration of DDR at project planning stage.

Q12: Is there any qualified or trained DRR professional / team in your department overseeing development planning or its implementation?

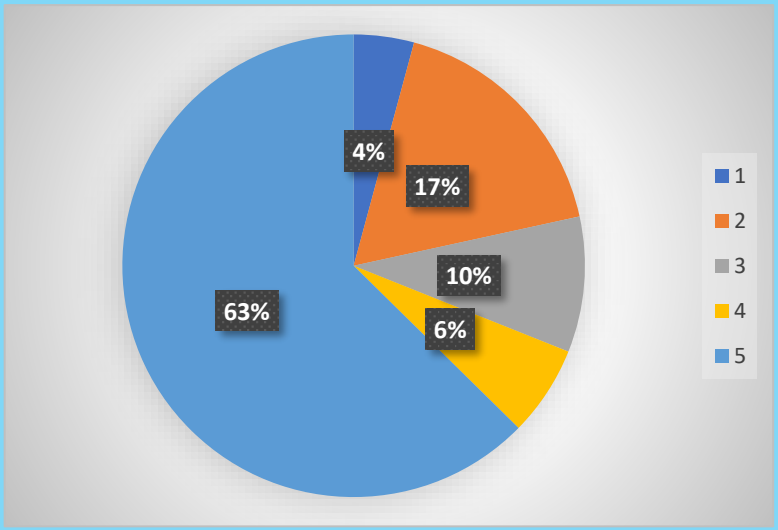
100% participants selected option 'B' i.e. 'No' for this question.



Findings: Inclusion of DRR professionals / team is highly important with respect to implementation of DRR mainstreaming. In absence of professionals, DRR mainstreaming may not offer fruitful results. Two approaches can be used to achieve this gap while implementing DRR mainstreaming, i.e. either hiring of professionals in each department engaged in infrastructure related development or a central pool of professionals hired and placed at e.g. P&D Department may be tasked to ensure DRR intervention at each project planning level. Second approach could be extensive (diploma / certificate level) training of selected existing officials in DRR related domains.

Q13: Please scale the importance of training and awareness about DRR to officials engaged in different phases of development process. (Choose any one number)

63% of the participants considered trainings and awareness as 'Highly Important'. Only 4% participants considered training and awareness as 'Less important'. Rest of the participant scaled between 'Important and Very Important'.



Findings: Training and awareness sessions will be conducted under this initiative i.e. Support to line departments in DRR mainstreaming in development planning. However, dedicated, extensive and hands-on trainings for the officials are also recommended other than this initiative. This will augment implementation of DRR mainstreaming in development planning.

Q14: Please specify broad outlines of training / awareness course on DRR mainstreaming in development planning.

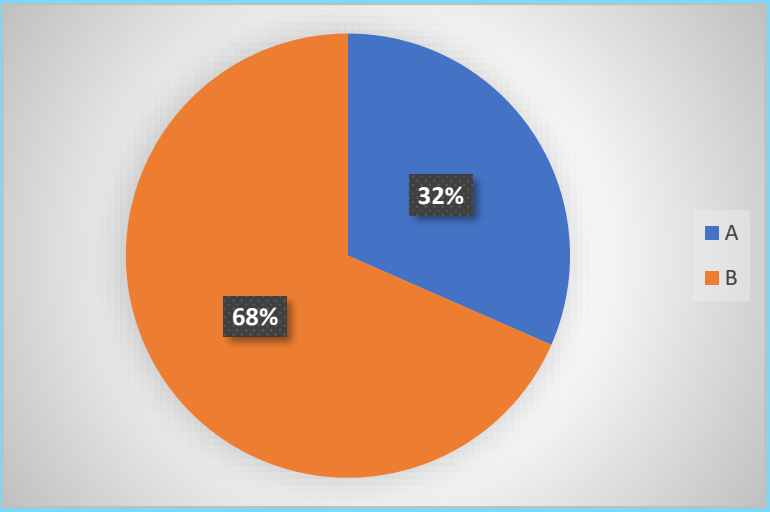
This was open ended question. 4 participants did not answer to this question. Key suggestions given by rest of the participants are given below;

a) Risk Identification
b) Mitigation and risk sharing strategies
c) Early warning mechanism
d) Maintenance, monitoring and updation mechanism for disaster risks
e) Awareness on SDG goals in various fields
f) Training courses at national and international standards on DRR mainstreaming
g) Training must be given to grass root level
h) Damage assessment due to natural disasters
i) Ranking of risks and ways to reducing disaster vulnerabilities
j) Survey to be conducted from grassroot level for training requirements
k) Guidelines to be prepared and trainings to be conducted with consultation of stakeholders/field technical officers
l) Awareness regarding DM planning
m) Training on disaster management
n) Involvement of communities in seminars / workshops
o) Use of print electronic media, social media and designing training modules.
p) Proactive use of social media for awareness in communities vulnerable to calamity and natural disasters
q) Disaster mitigation
r) Training on fire fighting
s) Training on guideline for preparation of PC-I with regard to DRR
t) Training on search and rescue

Findings: Most of the suggestions are not relevant to the topic, however, due consideration will be given in modification / designing of the training courses to be conducted in this initiative.

Q15: Do you think present format of PC-I is sufficient to address disaster risk reduction?

Q15 onwards were specifically designed to probe for suggestions for improvements in infrastructure related project planning. 68% of the participants endorsed that, present format or contents of PC-I are not sufficient to address disaster risk reduction.

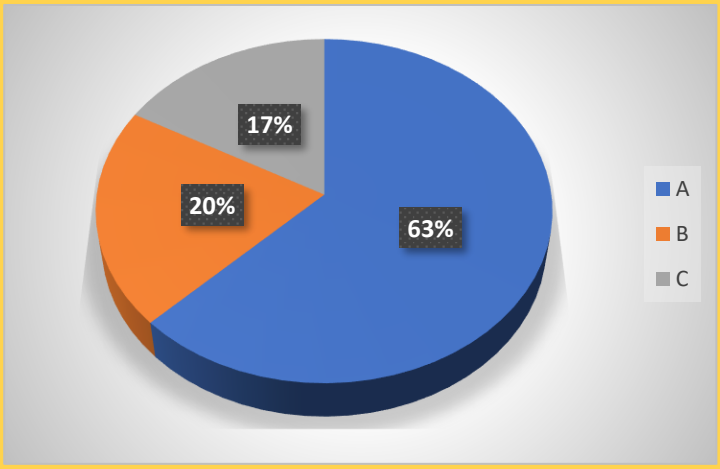


Findings: In order to reduce disaster risks, modification / addition of PC-I document is necessary to specifically address DRR. DRR inclusion / consideration will greatly impact on reducing disaster losses and damages in public sector development projects and will improve overall disaster management in the province.

Q16: Do you think inclusion of DRR mainstreaming guidelines in development process including PC-I preparation will improve disaster risk reduction measures?

63% of the participants endorsed the idea, while 20% were of the opinion that inclusion of such interventions will not improve disaster risk reduction measures.

17% were unsure about the impacts of such interventions.



Findings: Majority of the participants endorsed the idea that if DRR mainstreaming guidelines are put into place while preparing PC-I will improve overall disaster risk reduction measures.

Q17: In your opinion, what other than DRR guidelines should be included in development process? (Describe briefly)

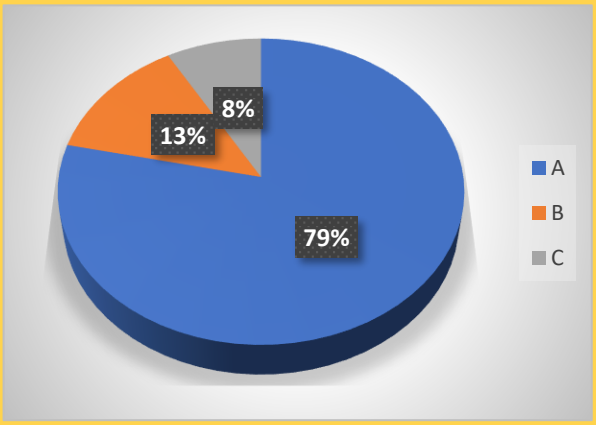
This was open ended question and about 53% participants did not answer. Key opinions are appended below;

a) Consider time, cost, quality of the project while managing disaster risks
b) Safety measures during building construction
c) Training of field level officials on DRR consideration while preparing PC-I
d) Extensive trainings on DDR and DRR mainstreaming
e) Structural approaches to mitigate disaster
f) Provision of disaster assessment tools and techniques
g) DRR policy and guidelines as practiced in developed countries

Findings: Though opinions received are general in nature, but DRR mainstreaming from strategic level downwards to project level is highly important. At strategic level it should be supported through enabling environment i.e. legislation, policy, programs, awareness and engagement of all stakeholders.

Q18: Do you think induction of qualified or trained DRR professional in development process will improve disaster risk reduction?

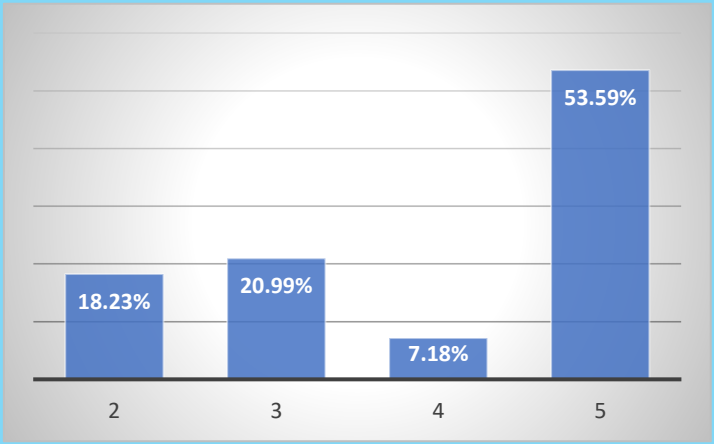
79% of the participants agreed that induction of DRR professionals in development process will improve the disaster risk reduction in the province. 13% disagreed, while 8% were unsure.



Findings: induction of trained and qualified professional is required at project planning level.

Q19: Please scale the importance of centralized (provincial level) DRR policy or legislature for development planning. (Choose any one number)

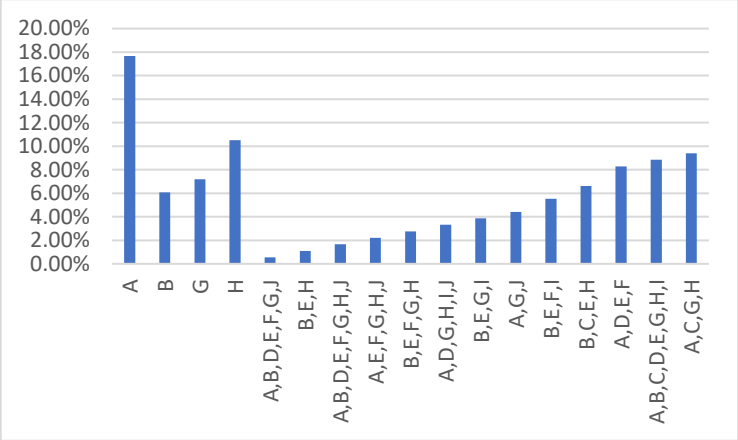
53.59% considered central DRR policy as 'Highly Important'. Rest of participants ranked it from 'Important to Very Important'.



Findings: Provincial level DRR policy is essential and important in disaster risk reduction initiatives. PDMA may lead to formulate provincial policy or legislation in consultation with all relevant stakeholders. Involvement of stakeholders in policy / legislation development will smoothen the implementation process.

Q20: Which challenges do you foresee in implementation of DRR mainstreaming in development planning? (Select all that apply)

All options given in answer were valid challenges. All participants have chosen one option or combination of options. As a single option, about 18% consider additional financial resources will be a major challenge in DRR implementation.



Findings: Certainly, implantation of DRR in development planning is a challenge, specially for developing and poor nations because of various other priorities. However, utilization of financial resources in DRR mainstreaming is investment, which pay off in reduced reconstruction costs, less disturbance due to disasters, reduced relief and rehabilitation expenses etc.

Q21: Please suggest, recommend, advice on the subject of DRR for improvements. (Briefly describe)

The last question i.e. Q21 was open ended question. 5 participants did not answer to this question. Key suggestions, recommendations are given below;

a) Implementation of modern Project Management concept as adopted by PMI USA may be considered and enforced in project development
b) Awareness scope may be extended to large scale
c) Technical analysis of DRR interventions before implementation
d) DRR intervention alignment at District, Provincial and Federal level to avoid implementation issues
e) Dashboard to indicate existing and newly implemented procedures and measures
f) DDR Proforma should be attached with PC-I in order to make it priority
g) Manual for stakeholders for DRR intervention in project planning
h) Identification of most disaster effected areas
i) Integrated efforts needed from departments for disaster risk reduction
j) PDMA should provide baseline disaster risk data of the province
k) Guidelines / Policies to be updated in light of modern technology
l) Planning and Development Departments be equipped with necessary tools and techniques and DRR implementing teams
m) Enhanced awareness on DRR at large scale
n) Development of flexible strategies to hold checklist for re-designing PC-I format including DDR approach
o) Complete DRR plan at provincial and district level may be formed and then implemented
p) Orientation, awareness and training on DRR shall be provided at the district level line departments
q) Preparation of DRR Manuals & SoPs are required to be implemented at the policy level
r) PC-I format is to be revised by Planning Commission of Pakistan

Findings: All suggestions are valuable and considerable in implementation of DRR mainstreaming in the province.

Overall Findings: The overall findings of survey / consultative meeting are given below;

a) There is high level of disaster threat perception among officials
b) DRR mainstreaming in development planning is required
c) Trained manpower, training and awareness programs at large scale are highly important before implantation of DRR
d) In current format / contents of Project Cycle, clear or categorical provisions are not given to address to DRR. Same shall be prepared and recommended for implementation at project level planning.

2.3.2. Review of Manual for Development Projects and Project Cycle Forms

The Manual of Development Project revised in 2019, provides knowledge and guidelines about managing development projects implemented under the public sector development programmes. It provides an overview of project cycle, including project identification, appraisal, approval, monitoring, closing and evaluation of development projects and other standard activities involved in the project management. Besides providing guidance to the project sponsoring and implementing agencies, the document gives an authentic compilation of Government instructions on various aspects of development project directors, consultants and other project officials, sanctioning powers of various project approving forums etc. Project formulation forms have also been revised specially to include impact of climate change, disaster risk management and to encourage involvement of private sector in project financing. The GoP's Project Management Life Cycle has five distinct phases, that is, (i) Identification and preparation, (ii) Appraisal and approval, (iii) Implementation, execution and monitoring, (iv) Completion or closure, and (v) Ex-post evaluation. The development projects are prepared on the approved format, that is, PC-I proforma. Five PC proforma (PC-I, PC-II, PC-III, PC-IV and PC-V) along with proforma for summary for the ECNEC and working paper for the CDWP[6]. The project cycle is given in Figure-7.

[6] Manual of Development Project. Ministry of Planning Development & Special Initiatives, Pakistan. https://www.pc.gov.pk/uploads/psdp/Manual_PDF.pdf

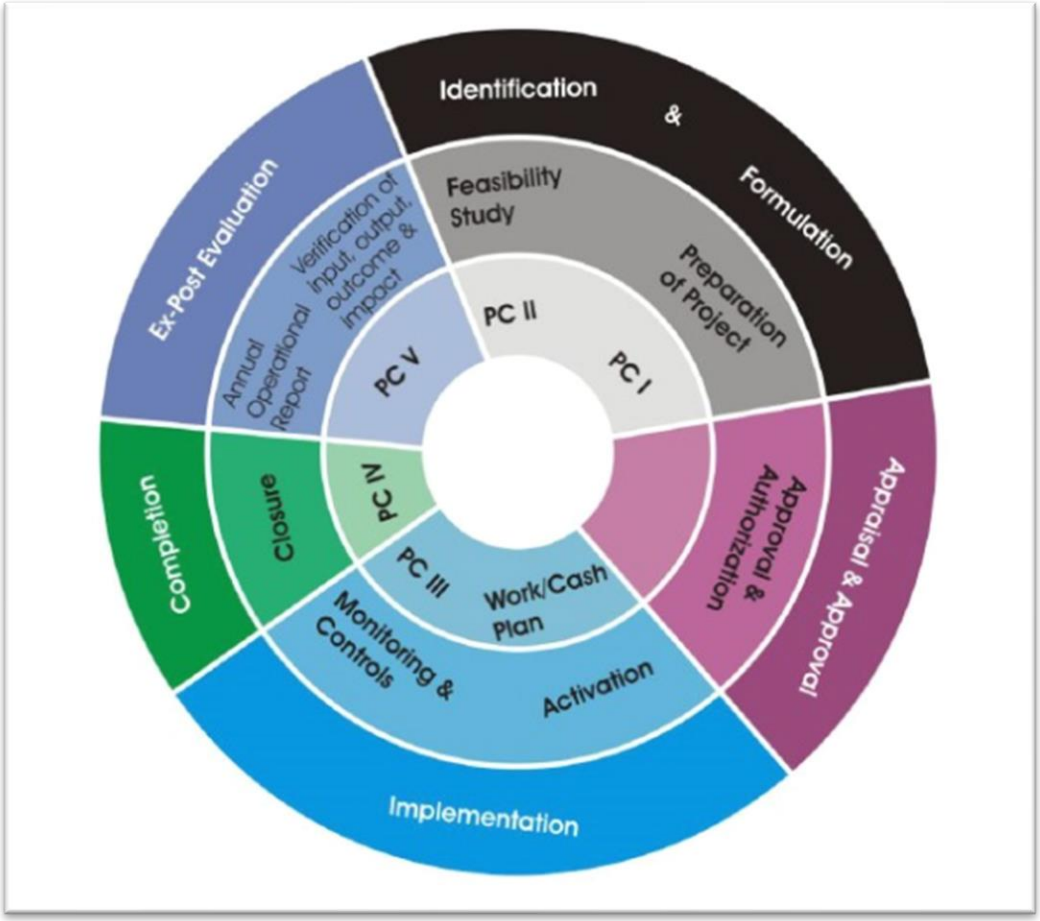


Figure 7 - Project Cycle and Relevant Documents

As shown in Figure-7, PC-II and PC-I forms are used for project feasibility study and project preparation respectively, which falls under Project Identification and Formulation phase of the project. It is important to mention here, that feasibility study is compulsory only for projects of 500 million or above. Afterward, projects go through Appraisal and Approval phases. Once project is approved Implementation phase of the project start with preparation of PC-III which cover work/cash plans, project activation, monitoring and control. Once the project is complete, PC-IV is required for completion of project. Ex-Post Evaluation phase of the project cover Annual Operational Reports and Verification of input, output, outcome and impact. Ex-Post Evaluation of completed projects is required on PC-V.

2.3.3. Disaster Risk Reduction in Project Preparation

Disaster risk reduction in PC-1 has been included in Manual of Development revised in 2019. PC-I Form is divided in 03 Parts. Part-A cover Project Digest, Part-B Project requirements, while Part-C Appraisal and Analysis. Checklist for disaster risk reduction has been incorporated in Part-C as shown in Figure-8.

Part – C
(Appraisal and Analysis)

21) Project Quantifiable Benefits:

i. Financial
ii. Economic
iii. Social
iv. Other

22) Revenue Generation /Annual Income after completion of Project:

S.No	Source of Income/Revenue	Amount *(Rs. Million)*	Length of period for revenue generation *(life of the project)*
	Total		

23) Financial & Economic Analysis: *(with methodology & assumptions)*

i. Bench mark/opportunity cost/discount rate computation
ii. Provision of Cash flow statement of Cost & Benefit with payback period of investment
iii. Weighted Average Cost of Capital (WACC)

24) Sensitivity and Risk Analysis:

Impact of delays on project cost, revenue and viability
(Please attach detailed working)

25) Financial/Economic Results

i. Net present worth
ii. Benefit cost ratio
iii. Internal Financial Rate of Return (IFRR)
iv. Unit cost analysis
v. Break-Even Point (BEP)
vi. Internal Economic Rate of Return(EIRR)

26) Stakeholder Consultation Analysis:

27) Environmental & Social Impact Assessment:

(TORs of the Consultant should cover Environment & Social Impact Assessment, Social Action Plan, Resettlement Action Plan, Environment & Social Management Plan and Socio-economic Management Plan)

i. **Is the development project contributing to the Climate Change response? Yes or no**
(Ref: Supporting note 1 for categories, Attachment-B)

ii. **Which classification of Climate Change relevance does the development project fall into?**
(Ref: Supporting note 2 for categories, Attachment-B)

iii. **Has the Cost-Benefit Analysis (CBA) taken into consideration the expected future climate change? Yes or no**

28) Clean Development Mechanism Assessment:

- (For Energy, Transport, Industry, Forestry, Waste Management etc. projects)
- Questionnaire for assessment of Clean Development Mechanism (CDM) potential is at *Attachment-C*
- CDM eligibility test for assessment and identification of CDM project is at *Attachment-D*

29) Disaster Risk Reduction Analysis:
(DRR checklist (Attachment-E) be also attached)

30) Project Monitoring Mechanism:

i. Result Based Monitoring (RBM) Indicators *(should be specific, measurable, attainable, realistic and time bound)*:

S.No	Input	Output	Outcome		Targeted Impact
			Baseline Indicator	Targets after Completion of Project	
1					
2					

ii. What are monitoring arrangements at:
a) Project Management level
b) Administrative Ministry/ Department/ Provincial Government level

31) Mechanism for Sustainability of Project/Activities After Completion
(Please indicate mechanism by which project activities will be continued on sustainable basis)

Figure 8 - PC-I Form (Revision 2019)

Disaster Risk Reduction Analysis has been provided at serial no 29 and ensured through DRR checklist. The DRR Checklist is given at Figure-9.

Attachment-E

CHECKLIST FOR DISASTER RISK REDUCTION

1. Does the project fall in the disaster-prone district (List of 50 districts circulated by NDMA)?

   ☐ Yes ☐ No

2. If yes, which types of hazards have been considered as unavoidable for the project and thus a condition for its planning and design?

   Indicate the relative order of importance of the hazards related to the project.

   ☐ Avalanche ☐ Cyclone ☐ Drought ☐ Earthquake ☐ Fire

   ☐ Flooding ☐ Glacier Lake outburst Flood ☐ Intense erosion ☐ Torrential Rains

   ☐ Landslide ☐ Tsunami ☐ Windstorm ☐ Locust ☐ Other...

3. Give brief history of the identified hazard(s) in the area.

4. Is the project prepared keeping in view the building Codes of Pakistan 2007?

   ☐ Yes ☐ No ☐ Partial ☐ N/A

5. Is the project prepared keeping in view the prevailing Building bye-laws?

   ☐ Yes ☐ No ☐ Partial ☐ N/A

6. Does the project incorporate the prevailing territorial planning regulations (e.g. hazard zoning, institutional jurisdictions)?

   ☐ Yes ☐ No ☐ Partial ☐ N/A

7. Have the components and activities of the project been designed to resist the impact of hazards and to contribute to the reduction of its vulnerability and that of its surroundings and beneficiaries?

   ☐ Yes ☐ No ☐ Partial ☐ N/A

8. What facilities are available in the area for rescue and emergency relief in case of a hazard?

Sr. No.	Facility	Controlling Organization	Distance from the Project (approx.)	Response time (approx.)
1.	Fire Fighting Services			
2.	1122 Rescue Service			
3.	Edhi Service			
4.	Other			

9. Are there funds for mitigation and periodical maintenance of its components, incorporated and meant to reduce the vulnerability of the project and its surrounding population?

☐ Yes ☐ No ☐ Partial ☐ N/A

10. Does the budget and cash flow of the project include items allowing the coverage of structural activities for risk management?

☐ Yes ☐ No ☐ Partial ☐ N/A

11. Does the budget of the project include provision to respond to emergencies (e.g. alert, contingencies, mitigation and rehabilitation)?

☐ Yes ☐ No ☐ Partial ☐ N/A

12. Does the project include a campaign of awareness raising, training and understanding to risk management for planners, workers and beneficiaries?

☐ Yes ☐ No ☐ Partial ☐ N/A

13. Does the budget and cash flow of the project include items allowing the coverage of non-structural activities for risk management?

☐ Yes ☐ No ☐ Partial ☐ N/A

14. Do service, transfer, concession and reclamation contracts incorporate provisions for risk management?

☐ Yes ☐ No ☐ Partial ☐ N/A

15. Does the project incorporate an adequate contingency plan for possible disasters?

☐ Yes ☐ No ☐ Partial ☐ N/A

16. Does the project incorporate any instruments for its financial protection during execution and after the completion of the project (insurance, indemnity, guarantee, contingency credit arrangements, etc.)?

☐ Yes ☐ No ☐ Partial ☐ N/A

17. Are there any financial or moral incentives to promote risk management?

☐ Yes ☐ No ☐ Partial ☐ N/A

18. Is there an evaluation of the financial vulnerability of the department/agency in charge of the project in case of a disaster?

☐ Yes ☐ No ☐ Partial ☐ N/A

Figure 9 - DRR Checklist

A similar checklist was also introduced by Planning Commission of Pakistan in 2010 for implementation and incorporation in PC-I and PC-II. The checklist is given at Annexure-2.

In addition to review of relevant literature as of above, few approved PC-I (s) of Infrastructure Development Sector were studied but not mentioned here because of official record.

Findings: Efforts have been made to include Disaster Risk Reduction and Climate Change in development planning specially at project planning stage. For the purpose a DRR checklist has been introduced by Planning Commission to ensure DRR has been considered in project planning. Though checklist provide various dimensions of disaster risk reduction but still there are apparent gaps which needs to taken into account while preparing PC-I. For example, Question-1 probe for location of project i.e. whether project falls in disaster prone district. For a small scale infrastructure project, the district level vulnerability may not useful to consider. More importantly, specific location of project area with respect to hazard risk within the district is more important. Further, it highly pertinent and important to determine whether, proposed project is adding or subtracting to existing hazard risks e.g. location of project within flood plain, depression, or natural waterways will not only make project vulnerable but will also be addition to physical vulnerabilities of the area if natural waterways or depressions are altered due to project development. Further, no method for risk asses The DRR checklist require adjustment in order to make it more practical and implementable in development process.

As far as study of approved PC-I (s) of few projects is concerned, no such provision / consideration was found for disaster risk reduction.

2.4. GAP MATRIX

ProVention approach for DRR mainstreaming is considered as standard approach for this study because of its comprehensiveness. Gap matrix is given in Table-1.

Strategic or Provincial Level

Focus Areas	Desired Future State	Current State	Identified Gap	Action Plan
Hazard information	Multi-hazard micro level hazard information required	District level hazard information available. Micro level MHVRA of Sindh under development by PDMA	90%	Micro level MHVRA and Disaster Management Information System (DMIS) being developed by PDMA is likely to fill information gap
Government DRR policies, strategies and related initiatives	Provincial Disaster Risk Reduction Policy	National Disaster Risk Reduction Policy is prepared by NDMA	50%	Action required by PDMA for preparation of Provincial DRR policy
Other development department's DRR strategies and initiatives	Preparation and implementation of sector specific DRR policies by all public and private entities engaged in development planning	No such structured policies exist at any level	100%	Development sector departments collaborate with PDMA Sindh and prepare sectoral policies under the ambit of Provincial DRR Policy

Project Level

Focus Areas	Desired Future State	Current State	Identified Gap	Action Plan
Integration of DRR concerns within overall project cycle	Well structured, practical and implementable and quantifiable provisions in project cycle	Checklist for DRR analysis available in project cycle	80%	Revision / recommendation for DRR inclusion included in this initiative i.e. support to line departments for DRR mainstreaming in development planning
DRR related legislation	Legislation for DRR enabling	Earthquake zoning Building	100%	Action required by PDMA for

and landuse planning	environment required at provincial and sectoral level	code provision available		preparation of hazard specific landuse planning legislation in consultation with other stakeholders. Such provision restrict development in hazard prone areas such as floods plains etc.
Construction design & site selection incorporating DRR principles	This is highly important aspect and disaster physical vulnerability is directly related to this aspect of the project. In line with Building Codes provision, all hazard specific building codes be designed	No such structured design exist except Building and Fire Codes	70%	PDMA may initiate pilot studies on subject matter in consultation with other stakeholders

Implementation Level

Focus Areas	Desired Future State	Current State	Identified Gap	Action Plan
Monitoring of Disaster Risk	Regular studies, research and development be carried out for monitoring of disaster risks	Being monitored by PDMA	100%	PDMA may collaborate with national and international research institutes on subject matter
Review and adjustments in project activities and goals in the event of disaster	Periodic adjustment is always required in projects and policies for improvement. For example, Building Codes are not always fixed and can be reviewed after earthquake to determine their effectiveness	No such practice exists at any level	100%	PDMA and all stakeholders may prepare such mechanism
Building code reinforcement and monitoring of	Be enforced by project sponsoring and executing departments	No such practice present	50% (Require strict enforcement)	Project sponsoring or executing department

construction standards				may develop such framework
Continuing stakeholder consultations on DRR	An epic body be constituted to arrange and ensure regular consultations	No such practice present	100%	PDMA may play leading role to hold meeting on annually or half annually basis

Evaluation Level

Focus Areas	Desired Future State	Current State	Identified Gap	Action Plan
Analysis disaster impacts on project performance and operating environment	Each sponsoring or executing department prepare such mechanism	No such practice present	100%	Project executing departments ensure this practice
Analysis of long-term sustainability in the face of disaster risk	Each sponsoring or executing department prepare such mechanism	No such practice present	100%	Project executing departments ensure this practice
Analysis of Benefits and Achievements of DRR Component	Each sponsoring or executing department prepare such mechanism	No such practice present	100%	Project executing departments ensure this practice
Impact of project of on vulnerability to natural hazards	Each sponsoring or executing department prepare such mechanism	No such practice present	100%	Project executing departments ensure this practice

Chapter

3

RECOMMENDATIONS

CHAPTER THREE
3. RECOMMENDATIONS

3.1. STRATEGIC LEVEL RECOMMENDATIONS

- Focused areas in Gap Matrix are highly important but gradual implementation of full spectrum DRR will prove sustainable.

- All steps towards DRR mainstreaming shall be taken considering opinions of communities at disaster risks.

- Necessary policies and legislation be prepared in consultation with all stakeholders to establish ownership of departments. Consultation on each phase of preparation and implementation will smoothen the DRR implementation process. PDMA may lead the process.

- Trainings, awareness at gross root level and induction of qualified / trained manpower in DRR or related fields is highly important and capacity development programs other than this initiative be prepared and conducted. PDMA may consider this initiative as regular feature of capacity development program.

- **Ideal entry point for mainstreaming disaster risk reduction is inclusion of well-structured and applicable mechanism in appropriate PC Forms.**

- Potential public sector departments for DRR mainstreaming are education, health, agriculture, irrigation, transport and communication, forestry, water and power and local government. DRR entry at project planning (PC-I) will cover most of the departments in mainstreaming. However, agriculture sector for example will require other DRR treatments such as damage compensation, crop insurance etc.

- Government policies may also be reviewed in terms of disaster risk reduction. Policies if not properly vetted for environmental impacts or disaster risks can produce large scale adverse impacts.

- Disaster Risk Reduction section may be created in Planning and Development Department. This will ensure scrutiny of PC-I in terms of DRR measures.

- DRR may be considered in all phases of project cycle as obligatory.

- An epic committee may be created comprising cross sectoral participation including academia and research for directing DRR mainstreaming process in full spectrum of development planning.

- All department may prepare sector related DRR policies and legislation in in-line with provincial disaster management policy. This will greatly facilitate DRR mainstreaming process.

- Provincial Disaster Management Fund may be created to divert fiscal shocks of disasters on development.

3.2. PROJECT LEVEL RECOMMENDATIONS

- If project requires feasibility study it is taken-up through PC-II. Either feasibility study is to be taken in-house or through third party consultant firm, disaster risk reduction assessment and mitigation measures be made part of the study. In case of consultant firm, ToRs for the study be specifically tailored to include DRR assessment and mitigation requirements.

- Cost Benefit Analysis of mitigation measures be also conducted in feasibility study of projects and made part of PC-II. Feasibility of project may be considered with respect to cost benefit analysis of mitigation measures.

- Para-9 of PC-II Form suggest study TORs (for consultant as well), which also include 'Environmental Impact Assessment including CDM and DRRA'. In addition to environmental impact assessment, feasibility of location with respect to multi-hazards and mitigation measures be included in PC-II. Detailed multi-hazard risk assessment study be conducted for mega infrastructure projects.

- In physical progress monitoring of the project, inclusion of DRR mitigation measures be insured in PC-III proforma. Progress on disaster mitigation measures being undertaken in project be reported along with overall progress of the project.

- Completion of disaster risk reduction measures as envisioned in project PC-I be reported in PC-IV. For the purpose provision on reporting be devised on PC-IV proforma.

- PC-V to include compliance reports on DRR intervention mentioned in PC-I or PC-II. In addition to PC-V reporting, performance of mitigation measures be measured after occurrence disaster for which mitigation measures were planned. Such reporting will greatly help in updating disaster mitigation measures and serve the purpose of lesson learned for other similar projects.

- Part-A of PC-I form cover project digest comprising various aspects of project. It is recommended that; Disaster Risk Reduction Analysis be made part of Project Location. As per Manual of Development, following information is required with respect to project location;

    1. Place and administrative district where the project is located.
    2. Map of the project area with GIS/GPS coordinates.
    3. Reasons for selection of location.
    4. The availability of land needs to be assured.

    In addition to above information following information may also be added in for DRR mainstreaming,

    5. Feasibility of project location in terms of multi-hazard risks

- As far as hazards of Sindh province are concerned following hazards and consequential effects be considered in multi-hazard assessment for project location;
    - Floods (all kinds i.e. riverine, urban, torrential, tidal surges)
    - Cyclones (Wind gusts, heavy rains, thunderstorms and tidal surge)
    - Heatwaves
    - Drought
    - Sea intrusion
    - Waterlogging and salinity
    - Erosion and Land sliding
    - Earthquake
    - Tsunami

- Feasibility of project location in terms of multi-hazard risks is recommended to be carried out using modern techniques such as remote sensing and GIS. The same is extensively used globally. Numerous free datasets are available which can be used for the purpose.

- Recommended details and useful information for location / project risk assessment are;

1. **Geographical Location / Coordinates project site**
   (**Instruction:** The geographical coordinates of project sites are highly important and be made part of every project PC-1. On the basis of geographical coordinates, the pertinent analysis can be carried out such as required in project location details i.e. Place and administrative district where the project is located, map of the project area with GIS/GPS coordinates, reasons for selection of location, and the availability of land needs to be assured. Similarly, physical environment of site prior to project can be assessed with the help of satellite imagery. If the site is well-known to executing department then, geographical coordinates of project site can be obtained through freely available mapping service like Google Earth or Map. In other case, same can be obtained through smart phones which is now a days very common commodity in everyday life)

2. **Brief history of disaster events**
   (**Instruction:** District level information can be obtained from NDMA and PDMA Sindh websites and various other sources such as Prevention Web etc. With this information disaster frequency assessment can be done. Determination of disaster frequency is highly important for project design in terms of disaster risk reduction)

3. **Landuse / Landcover Mapping of the area where project is located**

   (**Instruction**: Landuse / Landover is highly important for not only disaster risk reduction but for environmental assessment. Landuse provide information on manmade use of land while Landcover is natural features over the land area. This is also useful in Risk Landscape mapping. For this purpose, freely downloadable satellite imagery can be used if latest landuse / landcover is required, otherwise archived landuse and landcover maps can be used for the purpose)

4. **Topographic mapping of area where project is located**

   (**Instruction:** Topographic assessment is essential and highly useful for site selection specifically in terms of flood management. Digital elevation model, slope mapping, natural flow direction mapping,

natural sinks and depression mapping must be included in topographic mapping. This will answer many questions related to project site such as; whether project is located in a natural depression, or will cause obstruction in natural flow, will there be sufficient slope to naturally drain rain or flood water etc. The topographic mapping can be done with freely available datasets (improved versions of these datasets are available now). Also, such assessment can be done through Google Earth platform.)

5. **Probabilistic and Deterministic Hazard Risk Assessment**
   (**Instructions:** This is essential part of site suitability assessment in terms of hazard and disaster risks. Assessment of all disasters pertinent in Sindh be carried out. Risk assessment manuals and guidelines are provided by NDMA for each hazard. Hazard assessment at district level is available on NDMA website. PMDA Sindh is in process of developing such database at Union Council level which will be launched soon on its completion. The Disaster Management Information System (DMIS) is a web-based application and can be accessed by any one through web. On completion of this database all required information for risk assessment will be readily available and downloadable for users.)

6. **Risk Reduction Measures**
   (Instructions: Once hazard risks are identified, risk mitigation measure be proposed in PC-I. The mitigation measures will vary according to hazard and risks. Example: for road construction, local or regional catchment depending on length of road be studies, all water ways be identified and bridges and culverts be suggested to avoid road damage or possible flooding caused by the road. For road safety recommended practice is to include drain along the road drain rain water such practices be proposed in PC-I.)

- Example of such feasibility of location in terms of hazard risk is given in Box-4.

- DRR Analysis checklist as mentioned in Manual of Development will be more useful and be kept in PC-I Appraisal Section after addition of feasibility study of project location with respect to hazard risks is added in PC forms specially PC-II and PC-I.

Box-4

Geographical Coordinates of Project Area

i) 419483.34 m E; 2692264.70 m N

ii) 416308.01 m E; 2692140.93 m N

iii) 419856.79 m E; 2689084.70 m N

iv) 417603.39 m E; 2688267.65 m N

v) 416256.46 m E; 2689889.38 m N

Disaster chronology, Frequency and Severity

The disaster chronology, frequency and severity are given in Table-1. It is to be noted that Sujawal was part of Thatta district till declared as district in October, 2013.

Table 1 - Chronology of Disaster Events in Thatta & Sujawal Districts

District	Hazard	Frequency	Severity	Years
Thatta	Flood	Monsoon	High	1840,1856, 1874,1942, 1946,1948, 1956,1973, 1974,1976, 1978,1978, 1988,1989, 1992,1994, 1995,1996, 1999,2003, 2006,2007, 2010, 2011 and 2020
	Cyclones	Seasonal	High	1964,1993, 1999,2003
	Monsoon rains	Seasonal	Medium	Every year
	Tsunami	Rare	High	1945
	Earthquake	Rare	Low	2001, 2013
Sujawal	Floods/Rain	Monsoon	Medium	2012
	Droughts	Rare	Medium	1998 to 2012
	Earthquake	Rare	Low	2011,2013

General Description of Site Area

The site location is about 7 Km in south-west of Jati town and about 15 km south-east of Shah Aqeeq town. The site is approximately 10 Km inland from sea / creeks. Landuse in and around of the site is depicted in Figure-1.

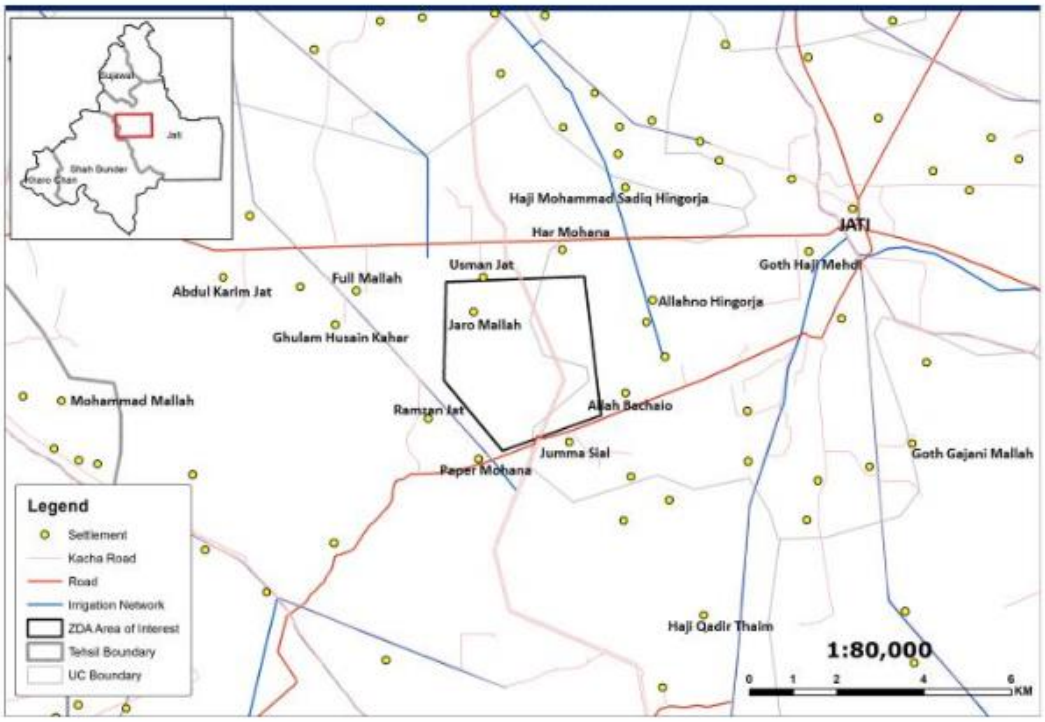


Figure 1 - Landuse features in and around site area

Figure-2 is high resolution satellite image of the site, which precisely focuses on land parcel. Most of land within parcel is barren, except few marshy patches and natural depressions on eastern side, where stagnant water is visible in the image. The obvious manmade feature is drainage channel which crosses the land parcel.

Figure 2 - High Resolution Image of site

Topography of in and around of site area

As it can be seen in Figure-3, natural terrain is almost flat with maximum surface elevation upto 10 m above mean sea level. Most of land within site is either at sea level or just above sea level.

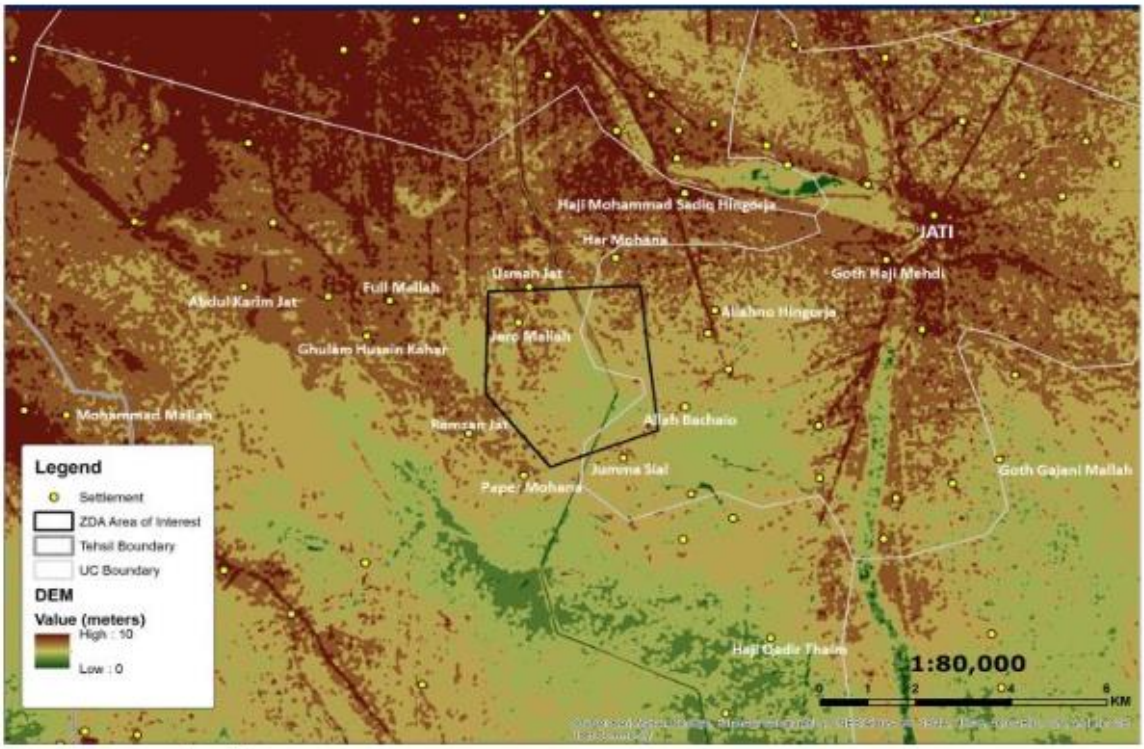


Figure 3 - Topography of the area

6. Landuse / Landcover of the area

It can be seen in Figure-4 Baren Land is dominant feature, specially in site area.

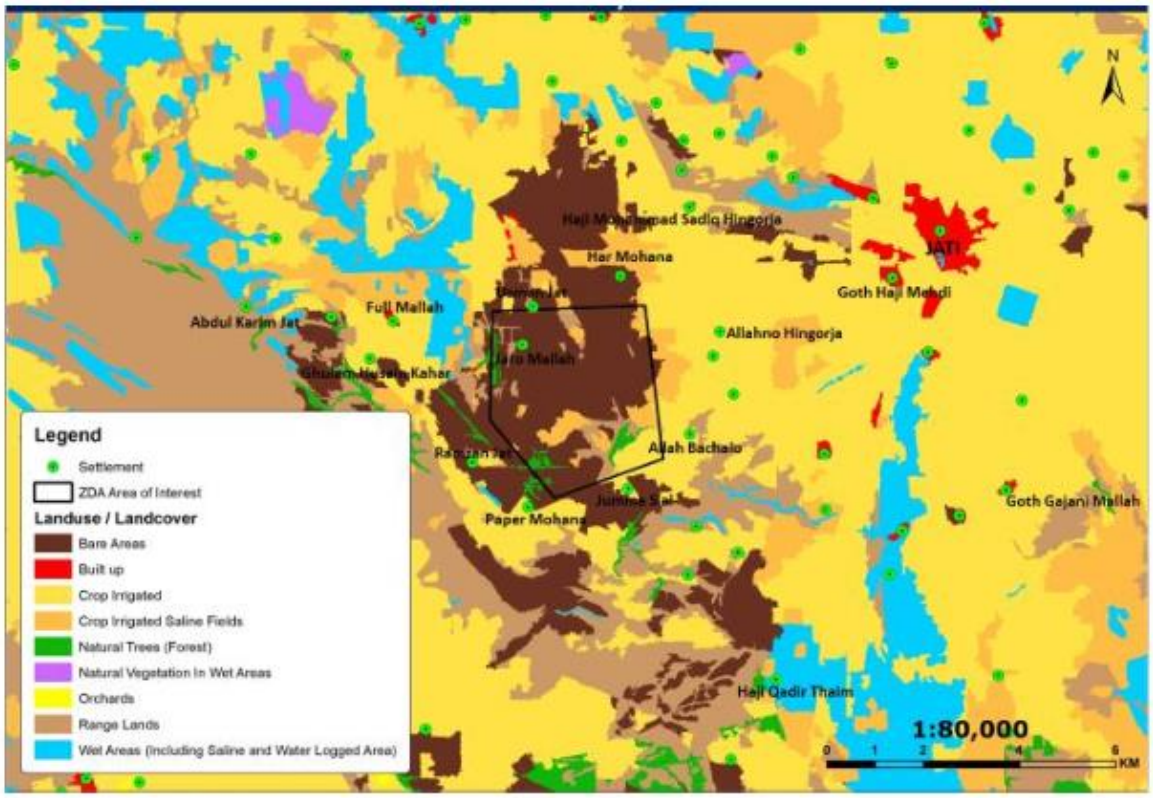


Figure 4 - Landuse / Landcover of the area

7. Flood Hazard

The location of site, falls in low lying area with low gradient and consequently poor natural drainage, therefore, flooding caused by rains is likely permanent hazard in the area. Figure-5 shows rain water accumulation / stagnant water couple of days after rain in the area.

As far as riverine flooding is concerned, the site area is away from active Indus River flood plain. As we know that, during floods, River Indus in Sindh flows above the surrounding lands and is confined by embankments on both sides. The residual risk of breaches in embankments is always present all over the province. As it happened in 2010 floods. Two breaches in embankments at Tori and Kot Aalmo rampaged different districts of upper and lower Sindh. Breach at Kot Aalmo, coupled with rains caused havoc in Thatta and Sujawal districts. As it can be seen in Figure-6, site location was also inundated in flood water. If

similar situation happens, it will pose threat to established infrastructure at the location.

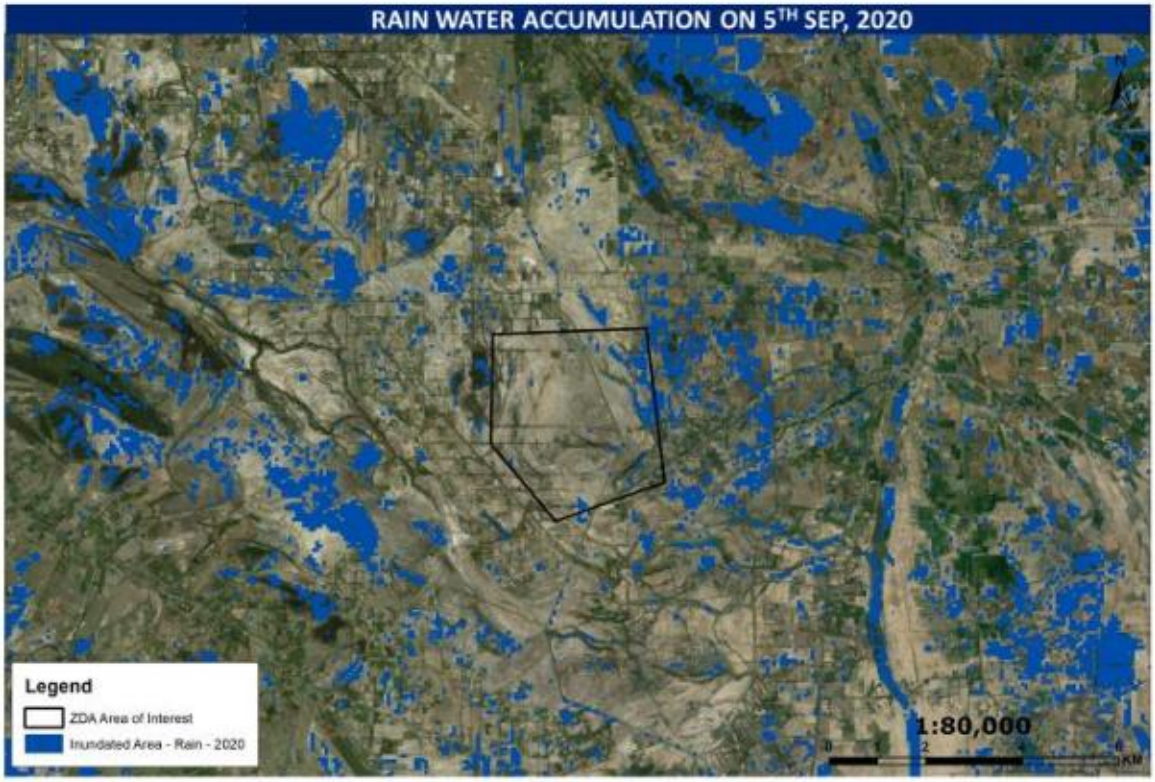


Figure 5 - Rain water accumulation in area during monsoon 2020

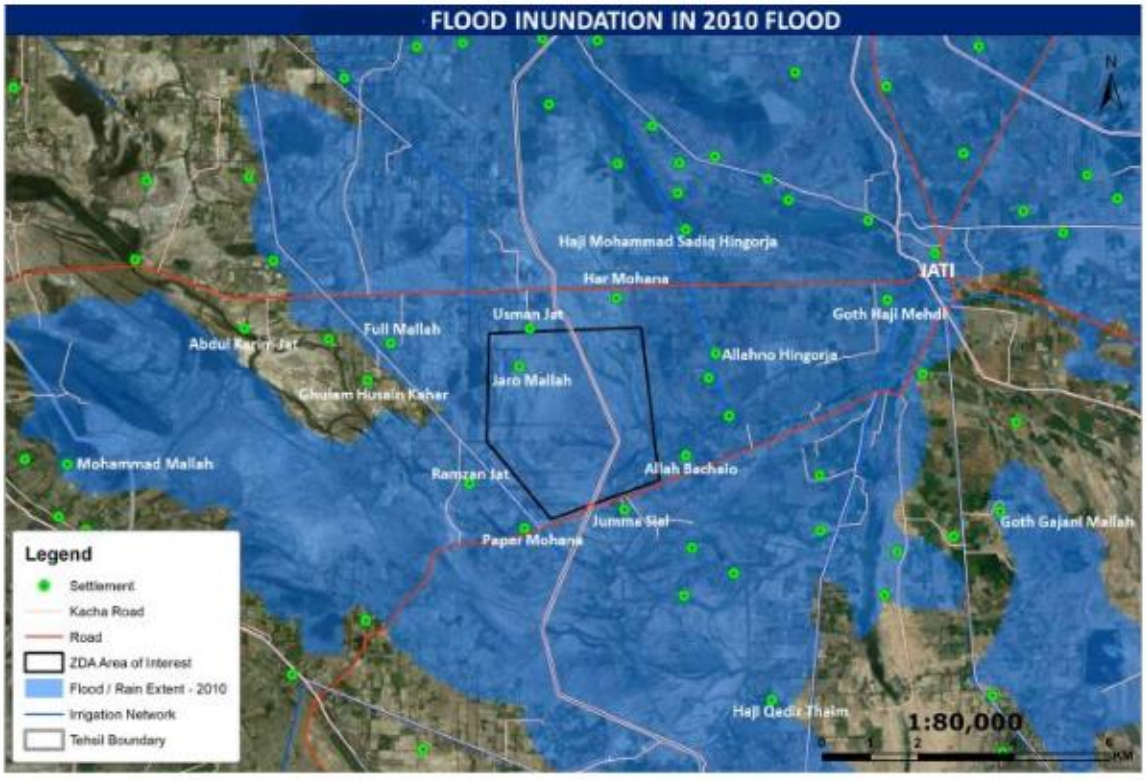


Figure 6 - Flood inundation in area during 2010 Floods

8. Cyclone Hazard

Both probabilistic and deterministic risk assessment suggest high risk of cyclone in the area. Category-3, Cyclone 2-A made landfall on 20 May, 1999 over the south-east coast of Sindh and affected approximately 600,000 people. Over 82,000 houses were destroyed and nearly 68,000 were damaged. While 675 fishing boats were destroyed and 191 fishermen lost their lives. The cyclone caused widespread damage to agricultural land and the infrastructure of the region. Figure-7 shows cyclone hazard risk computed over 100-year return period. However, there is less chance of storm surge in the area. The storm surge computed for 25-year return period is shown in Figure-8.

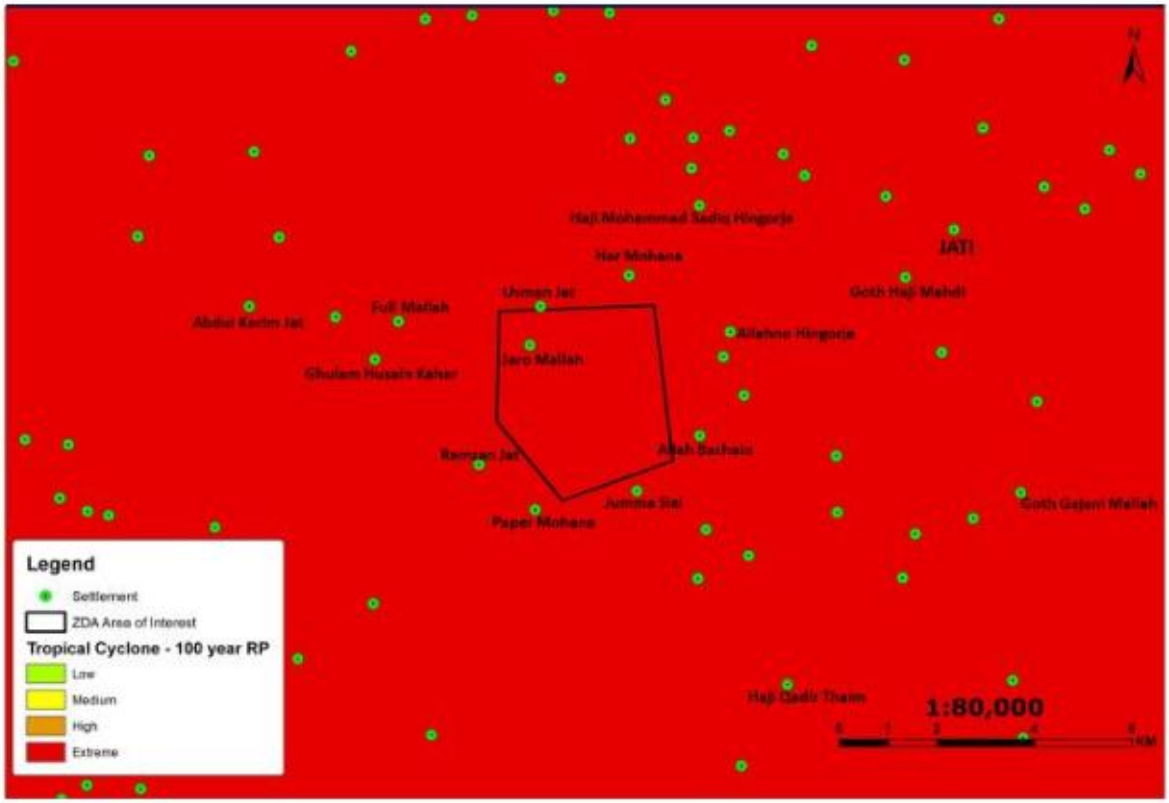


Figure 7 - Cyclone Hazard in the area

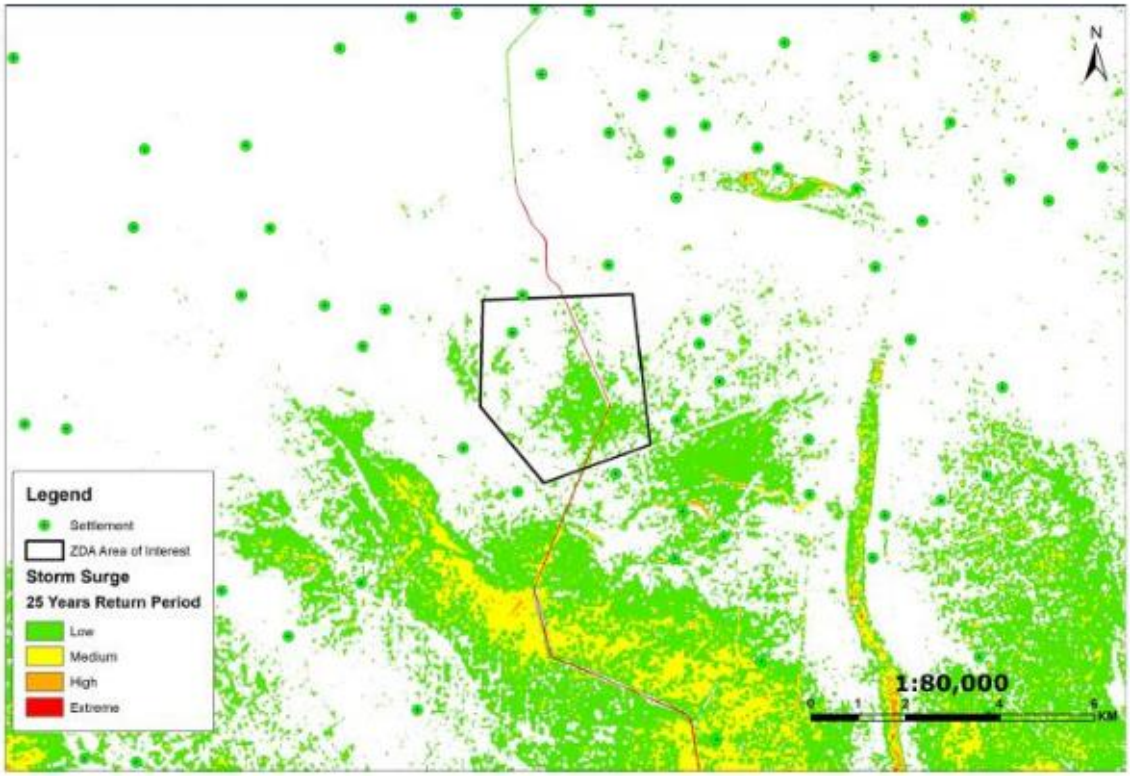


Figure 8 - Storm Surge Map

9. Heatwave Hazard

Due to closeness of site with respect to sea, marine climate is dominant in the area with high humidity. Summers remain bit hot. Values of Heat Index (HI) (used for heatwave computation) for 5-year return are on borderline i.e. in the middle of low and extreme values. Heat Index map is shown in Figure-9. This suggest that area is susceptible to heatwaves.

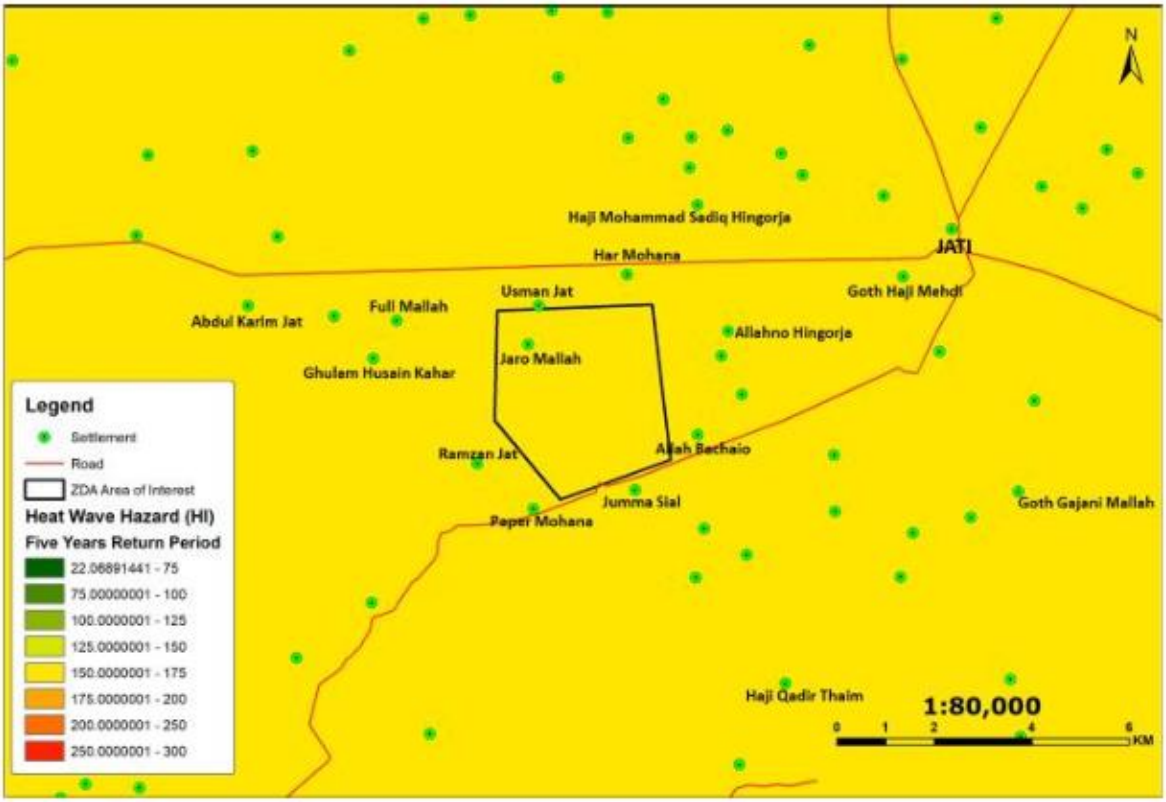


Figure 9- Heatwave Index

10. Earthquake Hazard

Probabilistic and deterministic hazard risk assessment suggest low chances of major earthquake in the area. Earthquake hazard computed for 50-year return period is shown in Figure-10.

11. Tsunami Hazard

Makran subduction zone in Balochistan has the potential to generate tsunami in the area as it happened in 1945. For tsunami hazard in the area of interest, different synthetic (model) tsunami events were generated but susceptibility of tsunami surge remained low for the area.

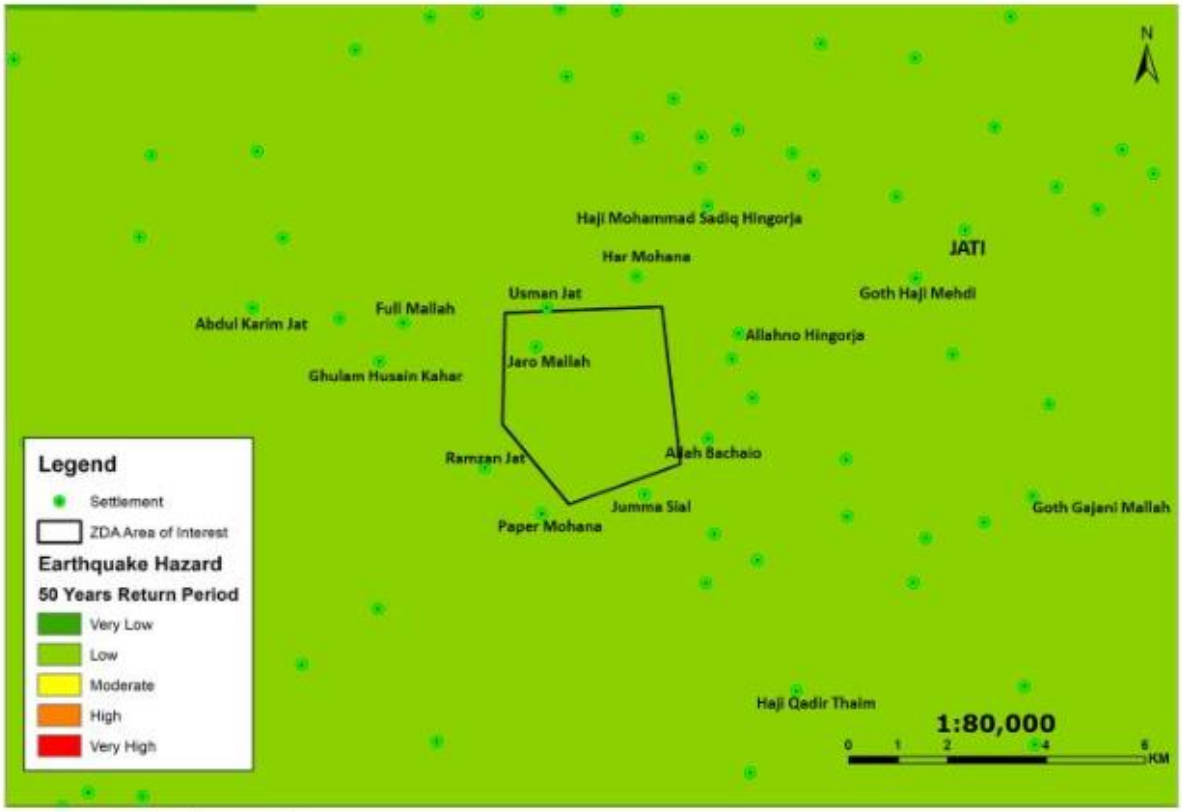


Figure 10 - Earthquake Hazard Map

Conclusion

Conclusion on feasibility of location in terms of natural hazards is follows:

a) Site falls in natural low lying area
b) Land parcel is mostly barren with marshy patches
c) A drainage channel passes through the land parcel and risk of breaching will be high specially in heavy rains / cyclone events
d) Rain water accumulation and residual risk of riverine floods persist in the area
e) Artificial draining of flood / rain water will likely be required in case of unusual event
f) The waterlogging and salinity problems persist in the area and the groundwater is likely brackish
g) Cyclone risk specially high wind gusts accompanied with rain is high in the area
h) The site is well above inland hence in present conditions no chances of sea / tidal effects in the area
i) Tsunami and storm surge hazard in low in the area
j) Earthquake hazard is low in the area
k) Heat Index is on borderline so area can receive occasional heatwaves

Recommendations

Development can be initiated in land parcel but considering the following:

i. All the development must be considered keeping view the rain / flood hazard in the area. The structures and supporting infrastructure should be elevated enough to avoid submergence in rain / flood water.

ii. The designing of structure should be conducted keeping in view cyclone hazard specially, high wind gusts and heavy rain. Also, precautionary measures / system should be in place to avoid lightning strikes during thunder storms.

iii. Environmental friendliness should be considered in structural design.

iv. Though earthquake risk is low in the area still structures should be designed to withstand low to medium earthquake jolts.

v. Due to high humidity, waterlogging and salinity in the area, material to be used in construction should be used to withstand weathering effects in order to avoid regular maintenance requirements of the structures.

Chapter

4

TRAINING SYLLABUS & SCHEDULE

CHAPTER FOUR
4. TRAINING SYLLABUS & SCHEDULE

4.1. SYLLABUS / PRESENTATION OUTLINES

At project inception level, following course outlines were proposed.

Module 1: Introduction to disaster risk reduction

The purpose of the first module is to provide participants with the basic knowledge on disaster risk reduction (DRR) that is required to support a detailed understanding of mainstreaming. The module will cover terminologies related to DRR, discuss the comprehensive link between disasters and development, and provide a basic outline on risk assessment and how to use risk information to guide development decisions.

Module 2: Mainstreaming disaster risk reduction into the development planning process

This module will form the core of the training and will start by providing a detailed explanation of what is mainstreaming and provide a broad framework for mainstreaming DRR. The subsequent session will then aim to break down the development planning processes into key components and suggest the approaches for mainstreaming DRR into the respective component.

Module 3: Enabling environment for mainstreaming

The final module will introduce actions required to initiate and sustain the process of mainstreaming DRR into development. Topics covered include advocacy, monitoring and evaluation for mainstreaming, and financing options for DRR.

With slight modifications made in the light of consultative meeting held with stakeholder held on 8th October, 2020 revised outlines of training course are appended below;

Lecture - 1	
Presentation Title	Understanding Mainstreaming
Outlines	1. What is Mainstreaming 2. Understanding linkages b/w Disaster and Development 3. How can DRR be mainstreamed into local development 4. Comparing DRM and DRR 5. Understanding Sectoral Integration of Risk factor

Lecture - 2	
Presentation Title	Hazard & Disaster Profile of Sindh
Outlines	1. Physiography of Sindh 2. Hazards of Sindh 3. Broad zonation of province with respect to hazards 4. Major manmade sources which multiply or complicate hazardous events in the province 5. Brief history of natural disasters in Sindh 6. Disaster damages and losses of major disasters in province

Lecture - 3	
Presentation Title	Tangible and Intangible Disaster Damages and Losses
Outlines	1. Economic losses 2. Social losses 3. Unaccounted losses of disasters

Lecture – 4	
Presentation Title	Disaster Risk Reduction
Outlines	1. Basic Terminologies 2. Why DRR 3. Spectrum of DRR 4. How DRR can be implemented 5. Resources available on DRR implementation (tools and techniques)

Lecture – 5	
Presentation Title	Evolution of DRR
Outlines	1. Historical background 2. Paradigm Shift 3. Priority Areas 4. Trends in DRR

Lecture – 6	
Presentation Title	DRR Mainstreaming Approaches and Challenges
Outlines	1. Basic Terminologies 2. DRR Implementation Models 3. Potential Sectors for DRR mainstreaming 4. Entry points for DRR streaming 5. DRR mainstreaming requirements 6. Enabling Environment for Mainstreaming (advocacy, M&E)

Lecture – 7	
Presentation Title	Hazard Information
Outlines	1. Exposure, Vulnerability and Risk Assessment 2. Tools and Techniques for Risk Assessment 3. Multi-hazard Vulnerability and Risk Assessment (MHVRA) 4. Disaster Management Information System (DMIS)

Lecture – 8	
Presentation Title	Freely Available sources which can be used in Hazard and Risk Assessment
Outlines	1. Google Earth and Maps 2. Sentinel and Landsat data 3. DEM 4. Think Hazard 5. Prevention Web 6. UN Forums

Lecture – 9	
Presentation Title	DRR Status of Sindh
Outlines	1. What has been identified in Gap Assessment report 2. What has been proposed 3. What should be done for full spectrum DRR mainstreaming

Lecture – 10	
Presentation Title	Requirements of Entry Level DRR
Outlines	1. What has been proposed to include in PC proforma 2. What follow-up is required for implementation of DRR in development process

Lecture – 11	
Presentation Title	Lessons and Good Practices on DRR mainstreaming
Outlines	1. Example from South Asia and rest of developing countries

Lecture – 12	
Presentation Title	Technical resources available on DRR mainstreaming
Outlines	1. UN 2. World Bank 3. ADPC 4. ADB 5. Any other important source

03 Days Training course on "Mainstreaming Disaster Risk Reduction"			
Timings	**Day-1**	**Day-2**	**Day-3**
09:30 - 10:00	Registration of Participants	-	
10:00 - 10:15	Course Overview	DRR Mainstreaming Approaches and Challenges	Lessons and Good Practices on DRR mainstreaming
10:15 - 11:00	Introduction to Mainstreaming		
11:00 - 11:30	**Tea Break**		
11:30 - 12:15	Hazard & Disaster Profile of Sindh	Hazard Information	Technical resources available on DRR mainstreaming
12:15: - 13:00	Tangible and Intangible Disaster Damages and Losses	Freely Available sources which can be used in Hazard and Risk Assessment	
13:00 - 14:00	**Lunch Break**		
14:00 - 15:00	Disaster Risk Reduction	DRR Status of Sindh	**Certificate Distribution Ceremony**
15:00 - 16:00	Evolution of DRR	Requirements of Entry Level DRR	

4.2. TRAINING SCHEDULE

1. 1st Course, Venue '**Karachi**', 21-23 Dec 2020
2. 2nd Course, Venue '**Hyderabad**', 28-30 Dec 2020
3. 3rd Course, Venue '**Mirpurkhas**', 06-08 Jan 2021
4. 4th Course, Venue '**Shaheed Benazirabad**', 13-15 Jan 2021
5. 5th Course, Venue '**Sukkur**', 20-22 Jan 2021
6. 6th Course, Venue '**Larkana**', 27-29 Jan 2021

Annex-I: SURVEY QUESTIONNAIRE - DRR Mainstreaming in Development Planning

The project "Support to Line Departments for DRR Mainstreaming in Development Planning" is a timely and articulated initiative of Provincial Disaster Management Authority (PDMA), Government of Sindh, aiming to inculcate the disaster risk reduction culture across all government sectors for better disaster resilience in the province. This questionnaire is aimed to collect data for assessment of current status of DRR in development planning. Gap analysis and preparation of training syllabus for key stakeholders shall be carried out on the basis of data analysis.

Survey Questionnaire

DRR Mainstreaming in Development Planning

1st Consultative Meeting with Stakeholders

08th October, 2020, Avari Towers, Karachi

Disaster Risk Reduction (DRR) Mainstreaming in Development Planning

Background

Each year, earthquakes, cyclones, floods, drought, and other natural hazards continue to cause deaths, injuries and economic losses around the world. Disasters represent a major source of risk for the poor and wipe out development gains and accumulated wealth in developing countries. It is growing recognition that natural disaster risk must be addressed as a development issue rather than strictly of humanitarian assistance.

The project "Support to Line Departments for DRR Mainstreaming in Development Planning" is a timely and articulated initiative of Provincial Disaster Management Authority (PDMA), Government of Sindh, aiming to inculcate the disaster risk reduction culture across all government sectors for better disaster resilience in the province.

The objective of this survey is to determine existing status of DRR in development planning in province of Sindh. Accordingly, response-based gap analysis, training / awareness sessions for stakeholders and mainstreaming guidelines, in-line with local environment and conditions will be prepared.

Guidelines for filling-up questionnaire

The questions are composed in two sections. Section-01 evolves around data collection for determination of DRR awareness among the participants, while Section-02 is specifically meant to assess current status of DRR Mainstreaming in Development Planning. **Information collected in this survey is solely for official purposes and shall be kept confidential. Personal information of participants shall not be disclosed during analysis of the data.**

Guidelines are as follows:

1) All questions are carefully chosen and have importance in results of the survey. Participants are requested to answer all questions.

2) Most of the question types are, **Choose All that Apply**, **Yes or No**, and **Choose One that Apply.** However, few questions are open ended require a brief answer of participants. Where required, participants are requested to share briefly their professional views. Such are highly important for this assessment and participants are encouraged and requested to share views.

3) In case of any difficulty in filling the questionnaire, participants are requested to consult meeting facilitators.

Disaster Risk Reduction (DRR) Mainstreaming in Development Planning

Participant's Information

Name: _____

Designation: _____

Department: _____

Qualification: _____

Professional Experience (in years): _____

Field of Expertise: _____

Experience in Development Projects (Planning / Implementation / Monitoring (in years): _____

Contacts: Office: _____ Mobile: _____

Email: _____

SECTION - 01

Disaster / DRR Awareness

Q1: **Generally, which natural disaster causes major economic and social impact in Sindh Province?** (Choose any one option from the list)

A. Earthquake
B. Tsunami
C. Heatwaves
D. Cyclones
E. Floods (riverine, urban & torrential floods caused by heavy rains)
F. Landslides
G. Drought

Q2: **In your opinion, which natural disasters occur more frequently in Sindh?** (Choose all that apply)

A. Heatwaves
B. Floods
C. Earthquake
D. Tsunami
E. Cyclones
F. Drought
G. Landslides

Q3: **Have you ever been involved in disaster management / risk reduction activities in your personal or professional capacity?** (Yes / No)

A. Yes
B. No

Q4: How concerned are you with disaster management / DRR knowledge you have about the following disasters? (Choose only one per row)

	Not concerned	Not very concerned	Neutral	Somewhat concerned	Very concerned
Earthquake	◯	◯	◯	◯	◯
Floods	◯	◯	◯	◯	◯
Heatwaves	◯	◯	◯	◯	◯
Tsunami	◯	◯	◯	◯	◯
Drought	◯	◯	◯	◯	◯
Cyclones	◯	◯	◯	◯	◯
Landslides	◯	◯	◯	◯	◯

Q5: What level of knowledge do you have about disaster management for the following disasters? (Choose only one per row)

	A great deal	Almost everything	Somewhat	Little	Nothing
Earthquake	◯	◯	◯	◯	◯
Floods	◯	◯	◯	◯	◯
Heatwaves	◯	◯	◯	◯	◯
Tsunami	◯	◯	◯	◯	◯
Drought	◯	◯	◯	◯	◯
Cyclones	◯	◯	◯	◯	◯
Landslides	◯	◯	◯	◯	◯

Q6: Do frequently occurring natural disasters disrupt the function of your department which you represent? (Yes / No)

A. Yes

B. No

Q7: If your choice is Yes in question 6, then how function of your department is disrupted by the disaster event? (Choose all that apply)

A. Complete closure of your department or setup
B. Partly closure
C. Low attendance in office
D. Difficulties in disposal of office matters due to disturbance like, failure of electricity, closure of roads, flooding in office premises, damage to office building etc

Q8: In your opinion, how disaster losses and damages can be minimized? (Chose all that apply)

A. By adopting and implementing pro-active disaster preparedness plans and strategies
B. Mainstreaming disaster risk reduction in development planning to minimize existing and avoiding future risks associated with development
C. Raising awareness about disasters in government officials and communities
D. Adopting all-out coordinated approach by involving public, private sectors and communities at risk
E. Applying contemporary tools and techniques in disaster management

SECTION - 02

Development Planning & DRR

Q1: Does your department prepare and appraise PC-1 for infrastructure development projects? (Yes / No)

A. Yes
B. No

Q2: Does your department evaluate, recommend or approve PC-1 document? (Yes / No)

A. Yes
B. No

Q3: Have you prepared PC-1 for any infrastructure development project or assisted in preparation from your department? (Yes / No)

A. Yes
B. No

Q4: Do you agree with this statement "Disaster-Development nexus is such that disaster limits development, development causes disaster risks and development reduce disaster risks by overcoming vulnerability" (Choose any one option)

- ◯ Strongly disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly agree

Q5: **Do you agree with this statement "Development activity and Disaster Risk Reduction (DRR) represent two sides of the same coin and need to be dealt with in unison. While natural disasters cannot be prevented from happening, the vicious cycle of disasters and damaging effects in the development activity can be altered. This can be done through mainstreaming Disaster Risk Reduction into the development process."** (Choose any one option)

- ◯ Strongly disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly agree

Q6: **The UNISDR defines DRR as the "concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events". How this can be achieved in context of Sindh?** (Select all that apply)

A. A dedicated disaster management department like PDMA Sindh can achieve this
B. It can be achieved through collective & coordinated efforts by all stakeholders from public & private sectors and communities
C. Sensitization and creating awareness about natural disasters in all stakeholders
D. Realization, prioritization and ownership of DRR in development sectors at all echelons of government functionary
E. Implementation of contemporary tools and techniques in hazard identification, vulnerabilities and risks
F. Formulation and implementation of DRR mainstreaming policy / legislature in development planning

Q7: Do you think current format and contents of PC-1 ensure safety against creation of new infrastructure related hazard risks? and minimize prevailing hazard risks?

A. Yes
B. No
C. May be

Q8: If your answer is Yes in question 7, briefly mention those sections of PC-1 form or any policy document or any relevant material you deem necessary in context of the question. (You can also refer relevant documents by adding links of documents, or source from where it can be obtained)

_____

_____

_____

_____

_____

_____

_____

Q9: Are there any guidelines / policy in vogue for consideration of hazard risks and risk reduction strategies while preparing PC-1 for development planning?

A. Yes
B. No
C. May be

If answer is Yes, kindly describe briefly such guidelines / policy

_____

_____

_____

_____

Q10: In your experience, do you think development planning is considered keeping in view multi-hazard environment of the Province. For example, addressing concerns like: Is earthquake resistance thought-out while constructing a hospital? If located within saline lands, would it withstand effects of salinity and weathering? Is it likely to get submerged or damaged during heavy rains and winds? Does the construction of hospital affect the natural drainage of the area etc?

A. Yes
B. No
C. May be

If answer is Yes, please describe briefly how this is achieved?

_____

_____

_____

_____

_____

_____

Q11: Do you agree that poor development planning can lead to government's investments in "constructing" and "reconstructing" risks, which perpetuate the conditions for unsustainable human development and the scarce resources? (Choose any one option)

- ◯ Strongly disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly agree

Q12: Is there any qualified or trained DRR professional / team in your department overseeing development planning or its implementation?

A. Yes
B. No

Q13: Please scale the importance of training and awareness about DRR to officials engaged in different phases of development process. (Choose any one number)

	1	2	3	4	5	
Less important	◯	◯	◯	◯	◯	Highly important

Q14: Please specify broad outlines of training / awareness course on DRR mainstreaming in development planning.

_____

_____

_____

_____

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_____

Q15: Do you think present format of PC-1 is sufficient to address disaster risk reduction?

A. Yes
B. No

Q16: Do you think inclusion of DRR mainstreaming guidelines in development process including PC-1 preparation will improve disaster risk reduction measures?

A. Yes
B. No
C. May be

Q17: In your opinion, what other than DRR guidelines should be included in development process? (Describe briefly)

_____

_____

_____

_____

_____

Q18: Do you think induction of qualified or trained DDR professional in development process will improve disaster risk reduction?

A. Yes
B. No
C. May be

Q19: Please scale the importance of centralized (provincial level) DRR policy or legislature for development planning. (Choose any one number)

	1	2	3	4	5	
Less important	◯	◯	◯	◯	◯	Highly important

Q20: Which challenges do you foresee in implementation of DRR mainstreaming in development planning? (Select all that apply)

A. Requirements of additional financial resources for implementation of DRR
B. Lack of awareness about hazard risks among officials involved in development process
C. Untrained or unqualified manpower in DRR
D. Lack of willingness or interest of officials
E. Lack of hazard, exposure and vulnerability databases
F. Lack of required tools and techniques for hazard, exposure and vulnerability assessment
G. Lack of centralized, coordinated and systematic approach to implement DDR mainstreaming in development planning
H. Lack of policies and guidelines
I. Social and cultural issues
J. Unsustainable policies and priority shifts

Q21: Please suggest, recommend, advice on the subject of DRR for improvements.
(Briefly describe)

Thank you very much for your active participation in the survey

Annex-II CHECKLIST FOR DISASTER RISK REDUCTION

FROM :ABC FAX NO. : Nov. 24 2010 03:11PM P1

IMMEDIATE

GOVERNMENT OF PAKISTAN
PLANNING COMMISSION
PLANNING AND DEVELOPMENT DIVISION
(Public Investment Authorization Section)
*****

No. 5(7)Misc./PP&H/PD/10 Islamabad, the 23rd November, 2010

C I R C U L A R

Subject: **INTEGRATION OF DISASTER RISK REDUCTION INTO DEVELOPMENT PROCESS**

It has been decided that in future all development projects requiring approval of Government should give due consideration to vulnerability from natural and human induced disasters and incorporate measures of disaster risk reduction at the project design, planning and implementation stages. Accordingly Checklist (Infrastructure, Production and Social Sectors) are enclosed which may be made part of PC-I & PC-II for consideration of competent forum (i.e. DDWP, CDWP, PDWP, ECNEC).

2. This issues with the approval of the Deputy Chairman, Planning Commission.

Encl: Check List

(Zulfiqar Ali Kayhar)
Research Officer
Tel/9093621

All Federal Secretaries / Addl. Secretaries (Incharge of Ministries / Divisions)
All Chief Secretaries / Chairman P&D / ACS (Dev.) Provincial Governments / Departments, Govt. of AJK, Govt. of Gilgit Baltistan and ACS(FATA).

Copy to:-
(1) Members, Planning Commission, Islamabad.
(2) Additional Secretary (Admn.) P&D Division Islamabad
(3) Chiefs/ Heads of Technical Sections, P&D Division, Islamabad.
(4) Chief, PIA, P&D Division, Islamabad.
(5) Project Director (MPFP), Projects Wing, Chughtai Plaza, Islamabad.
(6) NPD (DERA)
(8) All Project Directors, P&D Division, Islamabad.

C.C to.-

(1) PS to Deputy Chairman, Planning Commission, Islamabad
(2) PS to Secretary, Planning & Development Division, Islamabad

Planning Commission of Pakistan

CHECKLIST FOR DISASTER RISK REDUCTION

Infrastructure Sectors

(Circulated vide No. 5(7) Misc./PP&H/PD/10, on 23 November 2010 as part of PC1 & PC2)

1. Which types of hazards have been considered as unavoidable for the project and thus a condition for its planning and design?

   Indicate the relative order of importance of the hazards related to the project.

☐ Earthquake	☐ Drought	☐ Torrential Rains	☐ Fire
☐ Flooding	☐ Glacier Lake Outburst	☐ Windstorm	☐ Technological
☐ Landslides	☐ Locust	☐ Tsunami	☐ Intense Erosion
☐ Avalanche	☐ Cyclone	☐	☐
☐ Others			

2. Has the brief history of the identified hazard(s) in the area included in the PC-I.

   ☐ Yes ☐ No ☐ Partial ☐ N/A

3. Is the project prepared keeping in view the Building Codes of Pakistan 2007?

   ☐ Yes ☐ No ☐ Partial ☐ N/A

4. Is the project prepared keeping in view the prevailing Building bye-laws?

   ☐ Yes ☐ No ☐ Partial ☐ N/A

5. Does the project incorporate the prevailing territorial planning regulations (e.g. hazard zoning, institutional jurisdictions)?

   ☐ Yes ☐ No ☐ Partial ☐ N/A

6. Have the components and activities of the project been designed to resist the impact of hazards, prioritized in Q. No. 1 above, and to contribute to the reduction of its vulnerability, and that of its surroundings and beneficiaries?

   ☐ Yes ☐ No ☐ Partial ☐ N/A

7. What facilities are available in the area for rescue and emergency relief in case of a disaster?

Sr.	Facility	Controlling Organization	Distance from the Project (approx)
1	Fire Fighting Services		
2	1122 Rescue Service		
3	Edhi Service		
4	Other		

8. Are there adequate arrangements within the project site for firefighting?

☐ Fire alarms ☐ Fire hoses ☐ Fire extinguishers
☐ Automatic sprinkler system

9. Are there funds for mitigation and periodical maintenance of its components, incorporated and meant to reduce the vulnerability of the project and its surrounding population?

☐ Yes ☐ No ☐ Partial ☐ N/A

10. Does the budget and cash flow of the project include items allowing the coverage of structural activities for risk management?

☐ Yes ☐ No ☐ Partial ☐ N/A

11. Does the budget of the project include provision to respond to emergencies (e.g. alert, contingencies, mitigation, and rehabilitation)?

☐ Yes ☐ No ☐ Partial ☐ N/A

12. Does the project include a campaign of awareness raising, training and understanding to risk management for planners, workers and beneficiaries?

☐ Yes ☐ No ☐ Partial ☐ N/A

13. Does the budget and cash flow of the project include items allowing the coverage of non-structural activities for risk management?

☐ Yes ☐ No ☐ Partial ☐ N/A

14. Do service, transfer, concession and reclamation contracts incorporate provisions for risk management?

☐ Yes ☐ No ☐ Partial ☐ N/A

15. Does the project incorporate an adequate contingency plan for possible disasters?

☐ Yes ☐ No ☐ Partial ☐ N/A

16. Does the project incorporate any instruments for its financial protection during execution and after the completion of the project (insurance, indemnity, guarantee, contingency credit arrangements, etc.)?

☐ Yes ☐ No ☐ Partial ☐ N/A

17. Are there any financial or moral incentives to promote risk management?

☐ Yes ☐ No ☐ Partial ☐ N/A

18. Is there provision in the budget for the periodic training of workers and staff to use fire extinguishers, first aid kits, and light search and rescue equipments available within the project site?

☐ Yes ☐ No ☐ Partial ☐ N/A

19. Is the evacuation plan prepared, evacuation routes and safe assembly areas indentified?

☐ Yes ☐ No ☐ Partial ☐ N/A

20. Is the communication system for emergencies established, including a warning system wherever appropriate?

☐ Yes ☐ No ☐ Partial ☐ N/A

Guidelines for Incorporating DRR in Infrastructure Projects

Process

1. Has there been a Participatory Situation Analysis?
    a. Have disaster management experts, technicians, and specialists participated in project preparation?
    b. Have vulnerable stakeholders, especially women and disadvantaged groups, been consulted?
    c. Have the private sector and civil society organizations been involved?
2. Has Analysis of Stakeholders been accomplished?
    a. Does the project incorporate poverty alleviation and social equity dimensions, considering that poor people are generally most exposed to disaster risks?
    b. Will the project facilitate the access of vulnerable groups to social safety nets, health, knowledge, education and vocational training?

Legal and Regulatory

1. Does the project comply with applicable laws, regulatory frameworks, and by-laws?
2. Are there clear definitions of roles and responsibilities for institutions, organizations and individuals to ensure that the project complies with applicable laws and regulations?
3. Specifically, is there an inspection mechanism in place to ensure compliance with laws, rules, and by-laws during construction and operational phases?

Capacity Building

1. Does the project promote capacities to assess and monitor local, regional and trans-boundary hazards?
2. Does the project follow existing disaster-related rapid impact and needs assessment guidelines?
3. Does the project enable the utilization of existing disaster-related rapid impact and needs assessment guidelines?
4. Does the project promote capacity building at the community level for disaster management and risk reduction?
5. Specifically, does the project sensitize vulnerable groups, such as informal sector workers, on physical and socio-economic risks?

Knowledge and Information Sharing

1. Is there a hazards map for the locality, region?
2. Has the hazards map been utilized in project design, in risk assessment?
3. Has community-based local knowledge been incorporated, re-evaluated, in project design and project operational procedures?

Early Warning Systems

1. Is an early warning system incorporated into project design and operations?
2. Is there a use for the early warning system during normal times?

Specific Efforts to Reduce Underlying Risks

1. Does the project encourage sustainable land use and management of ecosystems?
2. Does the project support integrated environmental and natural resource management plans?
3. Does the project support mechanisms for improving food security?
4. Does the project support diversified income options for the poor?
5. Does the project engage the private sector in disaster risk reduction activities?

Application of Financial Resources

1. Does the project incorporate financial risk-sharing mechanisms?
2. Does the Benefit-Cost Analysis for the project incorporate the B:C Analysis of risk reduction alternatives?

Planning Commission of Pakistan

CHECKLIST FOR DISASTER RISK REDUCTION

Infrastructure Sectors

(Circulated vide No. 5(7) Misc./PP&H/PD/10, on 23 November 2010 as part of PC1 & PC2)

INSTRUCTIONS FOR CHECKLIST

Q. No. 1

The sponsoring agency would checkout the relevant hazards box which are unavoidable and in order of importance starting with No. 1 as highest and 5 as least important for example in case of Karachi the major identified hazards are Earthquake Tsunami, Cyclone, Flood and Drought. Within Karachi in order of importance Tsunami may be at No. 1 if the project site is located close to the coastal area and in case the project site is located at north of Karachi then the order of importance may be different. Similarly, the most important hazards would become basis of the planning and design on the project.

Q. No. 2

The sponsoring agency would give brief history of the identified hazard (s) in the area. The history would include the frequency, intensity of the hazard, damages it caused and the protective measures both structural and non-structural taken to minimize the damages in case the hazard occurred in future. The information regarding hazards would be available with Meteorological Department while the information regarding protective measures taken would be available with District/Tehsil Administration or some Federal Govt. Department like Federal Flood Commission. The information is to be collected from the secondary sources.

Q. No. 3

The sponsoring agency would plan and design the project keeping in view the Building Codes of Pakistan 2007. Building Code of Pakistan, Seismic Provisions 2007, serves two purposes. First is to define earthquake level for each tehsil of the country, for which buildings have to be designed. Secondly, it provides codified procedures and guidelines for planning, design, analysis and detailing of building structures. The topics covered include site considerations, soils and foundations, general structural design requirements, reinforced concrete buildings, structural steel buildings, masonry buildings, architectural elements and mechanical & electrical systems. Effective implementation of this Code can lead to significant improvement in the seismic safety of buildings in the country.

Q. No. 4

The sponsoring agency would plan and design the project keeping in view the prevailing Building bye-laws of the local planning and development department/Authority like Floor Area Ratio (FAR), Height, Ground Coverage, Setbacks i.e., Front, Rear, Sides, parking requirements, distance between the buildings, etc.

Q. No. 5

The sponsoring agency would plan and design the project keeping in view the territorial planning regulations, i.e., keeping in view the overall zoning of the city/town avoiding restricted areas, flood prone areas, reserve forests, national parks, areas declared not suitable for development, etc.

Q. No. 6

The sponsoring agency would plan and design the project in such a manner that it minimize the impact of hazards and reduce its vulnerability and that of its surroundings and beneficiaries. For example in case of a building to be constructed in a moderate earthquake zone the building components would be designed in such a way that it resists the seismic forces.

Q. No. 7

The sponsoring agency would identify the rescue and emergency relief facilities available in the area in case of a disaster such as Fire Fighting Services, 1122 Recue Services, Edhi Service and any other volunteer service in the area.

Q. No. 8

The sponsoring agency would give details of the firefighting arrangements made within the project like fire extinguishers, fire hoses, fire alarms and automatic sprinkler system.

Q. No. 9

The sponsoring agency is expected to allocate funds for mitigation and periodic maintenance of the project components to reduce the vulnerability of the project and its surrounding population. This is more applicable in case of production sector projects like establishment of industrial units of fertilizer, acid manufacturing, chemical plant, nuclear, thermal or coal power generation plants, etc.

Q. No. 10

The sponsoring agency is to ensure in the budget and cash flow of the project for the coverage of structural activities for risk management. The structural activities include components of a building which are designed to carry vertical load from the member of the building such as columns, beams, walls, lintels, roof slabs, stairs, foundations, etc.

Q. No. 11

The sponsoring agency is expected to allocate budget to respond to emergencies such as alert, contingencies, mitigation and rehabilitation. In case of a disaster the sponsoring agency must have adequate funds to respond to the emergency and carryout measures to mitigate the impacts and rehabilitate the damages to the structural components of the building.

Q. No. 12

The sponsoring agency is expected to launch campaign of awareness raising, training and understanding to risk management for planners, workers and beneficiaries. This would be incorporated at the time of formulation of the project. The awareness raising, training and understanding would be achieved during execution of the project and after execution of the project. For example in case of an educational institution before execution of the project the construction workers and supervisors would be imparted training as how to respond to the emergencies during various stages of project execution. They would also be given training as to how to use fire extinguishers, first aid kits, and light search and rescue equipment available within the project site. Similarly, after completion of the projects the administration, faculty, staff, students and parents would be imparted training as to how to respond to the disaster to save themselves. Disaster Mitigation and response plan of the institution would be prepared and shared with all the stakeholders. They would be informed about the Evacuation plans, evacuation routes, safe assembly areas, etc. The evacuation plan would be shared with nearest police, fire and hospital officials. Staff and students would be encouraged to prepare for disasters at home and would be provided support material for this purpose.

Q. No. 13

The sponsoring agency is expected to allocate budget for coverage on non-structural activities for risk management. The non-structural activities for risk management include awareness raising and training, etc.

Q. No. 14

All the contracts relevant to the project should also incorporate provision for risk management.

Q. No. 15

A contingency plan should be incorporated in the project to cover the risk of disasters.

Q. No.16

The project should also incorporate instruments for its financial protection during the execution of the project and after the completion of the project like insurance or guarantee, indemnity, etc.

Q. No. 17

The project should also incorporate some financial incentives for the promotion of risk management. Like if someone give some good proposal for prevention or mitigation of disaster and that proposal is considered valuable and workable he should be awarded some financial benefit for encouragement.

Q. No. 18

The sponsoring agency is expected to prepare evacuation plan with evacuation routes to reach Safe Assembly Areas already identified.