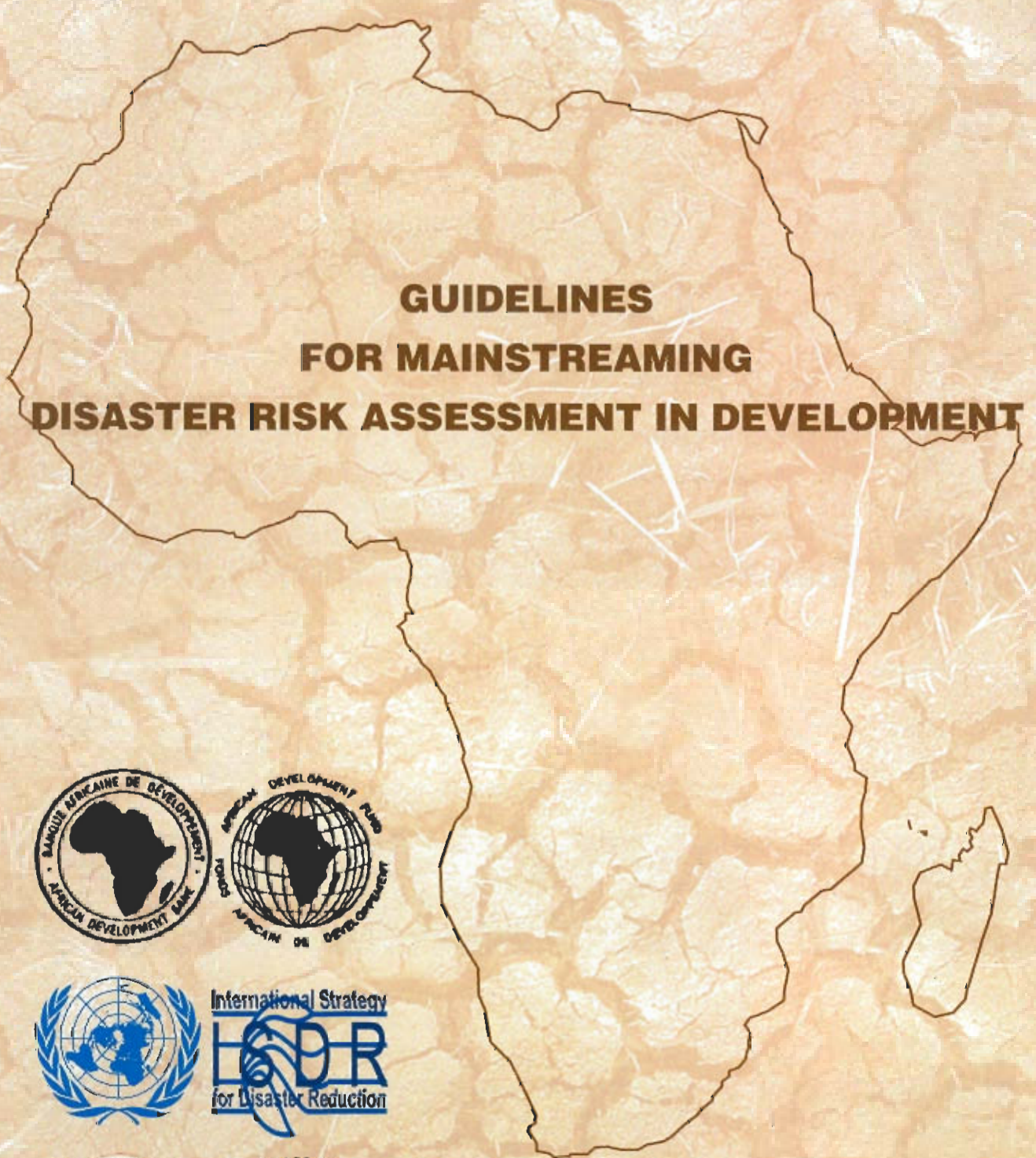
Disaster Risk Reduction for Sustainable Development in Africa



GUIDELINES FOR MAINSTREAMING DISASTER RISK ASSESSMENT IN DEVELOPMENT

African Union

NEPAD

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Contents

Preface

These Guidelines are part of ongoing efforts by the African Development Bank (AfDB), the Commission of the African Union (AU), the Secretariat of the NEPAD (New Partnership for Africa's Development) and the Africa Office of the UN International Strategy for Disaster Reduction (UN/ISDR Africa) to integrate disaster risk reduction in development strategies and programmes in Africa.

This is in recognition of the fact that : (1) disaster risk interventions are development activities ; and (2) development strategies and programmes need to be managed to avoid or minimize the negative impacts of natural hazards on people's vulnerability.

Globally, the evolution of disaster as a development concern has progressed in three stages1 : the first involved viewing hazards as disasters ; the second emphasized the physical protection of assets from hazards ; the third and contemporary stage emphasizes strengthening people's capacity to absorb and recover from hazards - by reducing the negative effects of development practices on vulnerability.

Disaster management practice in Africa is mainly at the first and second stages, but the continent is now moving towards disaster risk reduction through stronger integration with development. This movement entails a shift from managing disasters to reducing disaster risks.

The present Guidelines aim to help make disaster risk reduction and assessment a routine part of development planning and resource allocation.

This means instilling the culture of applying disaster risk assessment as an analytical and decision-making framework at all levels of society. This way, the practice of disaster risk assessment would become another regularly used decision-making tool, such as environmental impact assessment, cost-benefit analysis and social impact assessment.

The present Guidelines are based on current research, information and experience, and also on relevant prescriptions for undertaking risk assessment and integrating disaster risk analysis in development contained in current literature2. As such, it needs to be continuously reviewed and updated.

In fact, disaster risk reduction being a vast subject covering numerous subjects, there is still much more to learn about how to mainstream disaster risk reduction in development.

Meanwhile, this publication, which points towards issues to consider when dealing with disaster risk reduction in a development context, provides a useful starting point.

[1] Key references include: Coburn et al. (1994), UNDP (2004), U.S. EPA (2003), Commonwealth of Australia (2002, 2002 B), Department of Environment, Food and Rural Affairs et al. (2002), SOPAC (2002), UN/ISDR (2002), The Presidential/Congressional Commission on Risk Assessment and Risk Management (1997), UNFCCC (1999), U.S. EPA (1996), WHO (2001) and WHO (2003).

[2] UNDP 2004.

Executive Summary

Disasters induced by natural hazards impede development in Africa, and efforts to address disaster risks are yet to have the desired impacts. This is partly because disaster management practice in Africa is only now moving towards disaster risk reduction.

To facilitate this transformation, the African Development Bank (AfDB), the Commission of the African Union (AU), the Secretariat of the NEPAD (New Partnership for Africa's Development) and the Africa Office of the UN International Strategy for Disaster Reduction (UN/ISDR Africa) are promoting the integration of disaster risk reduction (DRR) in development. The present publication is one output of this joint initiative.

A review of disaster risk reduction in Africa, conducted as part of this joint initiative, showed that disaster risk reduction was not yet integrated in national development frameworks in Africa, partly because of lack of knowledge of the process of integration. There is no guidance on how to close the gap between disasters and development. The present Guidelines have been prepared to help fill that gap.

The Guidelines are aimed at providing direction to users to help them mainstream disaster risk assessment and reduction principles in development policies, plans, projects and activities.

Section 1 of the Guidelines gives the background and context for the Guidelines, and explains why it is needed, and what are its role, purpose, elements, audience and scope.

Section 2 discusses how to understand disaster risk assessment within the context of disaster risk reduction as a development function. It notes that hazards need not cause disasters : it is vulnerability that creates conditions for disasters. The Guidelines then points out the importance of participatory local risk assessment involving multiple risks, hazard and vulnerability factors. It shows that risk assessment is a three-phased management process of problem identification, research and analysis, and decision making. And that it has its own advantages and benefits, but also its own limitations. Last but not least, there is the need to adapt available risk assessment approaches.

Section 3 presents key principles for mainstreaming disaster risk reduction in development and guidance on integrating disaster risk assessment in the project cycle. It also contains recommendations for integrating both disaster risk assessment and the broader disaster risk reduction in nine (9) key development sectors and themes. The development themes and sectors covered in the Guidelines are poverty reduction, agriculture and rural development, environmental protection, water resource management, land use planning, infrastructure development, gender issues, HIV/AIDS and health issues, and climate change adaptation.

Section 4, comprised of guiding principles and guiding questions, seeks to explain how to mainstream disaster risk assessment in development activities. The guiding principles expand the key principles presented in Section 3, while the guiding questions are examples of the types of issues to be considered in identifying the information needed for the mainstreaming process. Both the guiding principles and guiding questions are keyed to the five (5) thematic areas of the Framework for Disaster Risk Reduction accepted under the United Nations International Strategy for Disaster Reduction (UN/ISDR). These are : Political Commitment & Institutional Aspects, Risk Identification, Knowledge Management, Risk Management Applications, Preparedness & Emergency Management.

Section 5 gives, for ease of use as practical guidelines, sixteen (16) checklists for mainstreaming disaster risk assessment in the development process. Most of the checklists comprise the required key principle, guiding principles, guiding questions and success factors.

Also available are a glossary of key terms relating to disasters and risk reduction, and a list of acronyms and abbreviations.

The Guidelines covers generic issues to consider in mainstreaming disaster risk reduction in development, it does not touch on specific analytical methods for assessing risks from various natural hazards. Nor does it cover disasters induced by conflicts.

Nonetheless, it is a useful aid in the journey towards disaster-resilient communities in Africa.

Glossary of Key Terms

Disaster: A serious disruption of the functioning of a community or society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community/society to cope using its own resources.

Disaster risk reduction: The systematic development and application of policies, strategies and practices to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) adverse impact of hazards, within the broad context of sustainable development.

Hazard: A potentially damaging physical event, phenomenon or human activity, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

Mitigation: Structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards.

Resilience: The capacity of a system, community or society to resist or to change in order that it may obtain an acceptable level in function and structure. This is determined by the degree to which the social system is capable of organizing itself, and the ability to increase its capacity for learning and adaptation, including the capacity to recovery from a disaster.

Risk: The probability of harmful consequences, or expected loss (of lives, people injured, property, livelihoods, economic activity disrupted or environment damaged) resulting from interaction between natural or human-induced hazards and vulnerable/capable conditions.

Risk assessment: A process to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability /capacity that could pose a potential threat or harm to people, property, livelihoods and the environment on which they depend.

Risk management: The systematic management of administrative decisions, organization, operational skills and responsibilities to apply policies, strategies and practices for disaster risk reduction.

Vulnerability: A set of conditions and processes resulting from physical, social, economic and environmental factors, which increase the susceptibility of a community to the impact of hazards.

Source: UN/ISDR (2002)

Acronyms & Abbreviations

AfDB	African Development Bank
AU	African Union
CDF	Comprehensive Development Framework
DRR	Disaster Risk Reduction
EIA	Environmental Impact Assessment
ERA	Environmental Risk Assessment
IDNDR	International Decade for Natural Disaster Reduction
HIV/AIDS	Human Immuno-Virus/Acquired Immunity Deficiency Syndrome
MDGs	Millennium Development Goals
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
PRSP	Poverty Reduction Strategy Paper
UNDAF/CCA	United Nations Development Assistance Framework/Common Country Assessment
UN/ISDR	United Nations International Strategy for Disaster Reduction
WSSD	World Summit on Sustainable Development

1. Introduction

1.1. Background

People and communities face threats to their life and livelihood from many sources. These include disasters induced by natural and related hazards, development policy failure, breakdown of social order and armed conflicts. Disaster impacts have become an impediment to sustainable development in Africa. Africa is not the most disaster-prone continent but it is the only continent whose share of reported disasters in the world total has increased over the last decade. More people are affected by natural hazards, and economic losses incurred are rising because Africa is most vulnerable to hazards. Sub-regional economic communities and governments are making various efforts to reduce disasters in Africa but policies and mechanisms for disaster risk reduction are at varied stages of development and have limited impact on disaster risks.

At the international level, there has been renewed commitment to disaster risk reduction under various processes. These include the 1990 – 1999 International Decade for Natural Disaster Reduction (IDNDR), the 1994 World Conference on Natural Disaster Reduction and the 2000 UN International Strategy for Disaster Reduction (ISDR). The multilateral conventions on climate change and desertification also promote disaster risk reduction. The Johannesburg Plan of Implementation of the 2002 World Summit on Sustainable Development called for mainstreaming disaster risk management in development. It also urged actions at all levels to assist Africa to deal effectively with natural disasters and conflicts within the framework of the New Partnership for Africa's Development (NEPAD). This is to help Africa achieve targets for sustainable development and poverty reduction in the Millennium Development Goals (MDGs).

1.2. Context

Development agencies, in partnership with governments and major groups in society, have key roles to play in promoting the objective of sustaining resilient communities to avert or reduce the impact of these disasters. The African Development Bank (AfDB) and the Outreach Office in Africa of the UN Inter-Agency Secretariat for ISDR (UN/ISDR Africa) are collaborating with the African Union and its development programme – NEPAD – to promote the integration disaster risk reduction in sustainable development in Africa. This initiative has involved producing three outputs : (1) a review study entitled *Towards sustainable Development in Africa: Report on the Status of Disaster Risk Management & Disaster Risk Assessment in Africa*, (2) a document entitled *Africa Regional Strategy for Disaster Risk Reduction*, and (3) the present guidelines entitled *Guidelines for Mainstreaming Disaster Risk Assessment in Development*.

1.3. The Guidelines

1.3.1. Need for the Guidelines

One of the reasons for the divergence between disasters and development is that the assessment of development interventions is deterministic and rarely considers disaster risk issues. Sensitivity and risk analyses undertaken as part of economic appraisal of project address potential threats from variability of project prices but not natural hazards specifically. Also, environmental assessments cover the impacts of projects on the environment, but not the effect of environmental and other natural hazards on projects.

A major finding of the review study mentioned above was that disaster risk reduction, including risk assessment, was not yet integrated in national development frameworks in Africa partly because of lack of knowledge of the process of integration. There has been little guidance on how to close the gap between disasters and development. These Guidelines have been designed to help fill that gap.

1.3.2. Role and purpose

The purpose of the Guidelines is to provide direction to users to help them mainstream disaster risk assessment and reduction principles in development policies, plans and projects. The adoption of the Guidelines by the development and disaster communities in African countries will enable them operationalize their commitment to assessing and reducing disaster risks. Governments have multiple and often competing priorities, disaster risk reduction is not always a top priority. By integrating disaster risk assessment

and reduction in development, it becomes a core area of focus of development policy. Also, the Guidelines will provide a common understanding and approach to the process of integrating disaster risk concerns within development approaches at local, national and sub-regional levels. In the long run, it is expected that the Guidelines will contribute to disaster risk assessment and reduction principles becoming an integral part of sustainable development culture and practice in Africa.

1.3.3. Elements

The Guidelines comprise a set of guiding principles and guiding questions meant to direct users to identify and explore key issues that need to be addressed in mainstreaming disaster risk assessment and reduction in development policy and activities. Both the guiding principles and guiding questions are keyed to the five thematic areas of the UN/ISDR Framework for Disaster Risk Reduction (UN/ISDR, 2002):

- political commitment and institutional aspects, involving governance issues of policy and planning, legislation, organizational structures, resources, and, normative frameworks;
- risk identification, involving risk assessment, impact assessment, and, forecasting and early warning;
- knowledge management, involving information management and communication, education and training, public awareness, and, research;
- risk management applications, involving environmental and natural resource management, social and economic development policies, and, technical measures;
- preparedness and emergency management.

The Guidelines also contain direction on mainstreaming disaster risk reduction in selected development themes and sectors. These themes and sectors are : poverty reduction, agriculture and rural development, environmental protection, water resource management, land use planning, and infrastructure. Others are gender issues, HIV/AIDS and other diseases/health issues, and climate change adaptation.

1.3.4. Audience

The intended users of the Guidelines include public officials and disaster risk reduction practitioners, legislators and regulators, private sector interests, development agencies and donor countries, and members of the academic, scientific and research communities. Individuals, community groups and other non-state entities seeking information on disaster risks and risk management will also find these Guidelines useful.

1.3.5. Scope

The Guidelines provide an overall view of issues to consider in ensuring that development strategies and programmes are sensitive to risk from all types of natural hazards. Consequently, the Guidelines are broad and generic. Because of space limitations and the vast scope of disaster risk reduction, these Guidelines do not contain specific analytical methods for assessing risks from various natural hazards such as drought, flood and windstorms. Also, they cover disasters induced by natural hazards, not conflicts, despite the linkages between conflict and disaster risk reduction.

2. Understanding Disaster Risk Assessment

2.1. Disaster risk reduction as a development function

2.1.1. Vulnerability creates conditions for disasters

People face threats to their lives and livelihoods, and societies are confronted with various risks in their pursuit of development. These threats arise from many sources, including disasters induced by natural and related hazards, development policy failure, breakdown of social order, and armed conflicts. The effects of any of these can be harmful to livelihood and ecological resilience but disasters are special because their effects are often devastating and widespread. They often have the potential to cause or exacerbate the other risks.

Disasters happen when a given set of conditions or processes results in an increase in the vulnerability of people and ecosystems to natural hazards. This increase is due to the negative outcomes of underlying economic, social, political and physical factors that shape or determine people's lives, their living environment and how they respond to hazards. These negative situations weaken the ability of people and ecosystems to withstand destruction and loss of lives, livelihoods and the supporting physical infrastructure and natural resource base when hazards occur.

Natural hazards, such as outbreaks of epidemic diseases, drought, flood and cyclones, will not stop occurring. However, their occurrence need not result in disasters: disasters happen when people's resilience is severely impaired. Hence, reducing disasters involves reducing people's vulnerability to the destructive effects of hazards by maintaining or creating greater resilience.

2.1.2. Disaster reduction is a development issue

Since development is human centered and reducing disaster impacts involves regulating human actions that create the conditions in which disasters happen, disaster risk reduction should be seen as a development issue. Disaster reduction makes development sense for many reasons:

- The underlying causes of poverty, unsustainable development and disasters are related and all originate from factors that cause or increase the vulnerability of people;
- Disasters can put development at risk and make it unsustainable, thereby further reducing the already low development potential of the continent. Hence, effective disaster risk management contributes to sustainable development;
- Development can cause or reduce disaster risks. Failed development contributes to poverty because development objectives are not realized and disaster reduction interventions also fail. In contrast, sustainable development strengthens the security of populations so that disaster reduction interventions can effectively help them to alleviate or avoid disaster risks to themselves and the supporting physical, economic and social bases of their livelihoods.

Thus, reducing people vulnerability to disaster risk depends upon emphasizing development processes that enhance resilience, reduce poverty and provide buffers to human and ecosystem vulnerability.

2.1.3. Risk assessment implications of focusing on reducing vulnerability

There are important implications for the risk assessment process when vulnerability reduction is pursued as a primary approach to reducing disaster risks, including the following:

- risk assessment concentrates on vulnerability and risk considerations as well as focusing on hazards. Hence, the risk assessment process comprises both vulnerability assessment and hazard analysis;
- risk assessment involves considering multiple risks and vulnerability factors;
- the integration of disaster risk assessment in development is strengthened through information systems that cover vulnerability factors: such systems can be used for both ongoing development planning and for disaster risk assessment;

- the risk assessment process also emphasizes subjective risk assessment by vulnerable people through multi-stakeholder participation, in addition to objective risk measurement;
- because vulnerability factors express themselves at the local level, the disaster risk assessment process needs to be responsive to local circumstances.

2.2. Understanding disaster risk assessment

2.2.1. What is disaster risk assessment?

Managers of and other stakeholders in development need to make decisions on how to identify and then address disaster risks. To do this effectively, they have to understand the actual harm of past disasters and the potential threats posed by imminent hazards. This is done through risk assessment.

Disaster risk assessment is the process of collecting and analyzing information about the nature, likelihood and severity of disaster risks. The process includes making decisions on the need to prevent or reduce disaster risks, what risks to address, and the optimal approach to tackling those risks found to be unacceptable to the target groups and communities.

Disaster risk assessment emphasizes proactive management of disaster risks through reduction of both prospective and accumulated risks. Hence, it covers assessment of risks from future hazards as well as those that have already occurred.

It is important to note that risk assessment is the first step in effective disaster risk management. Hence, it is best undertaken as part of a comprehensive risk management strategy.

2.2.2. Adapting available risk assessment approaches for disaster risk assessment

Risk assessment can be done as a rapid appraisal for simple risk concerns or as a complex process for major risk issues. Thus, the objectives of risk management determine the type, orientation, scope and approach to risk assessment. Depending on the circumstances, risk assessors can choose from many methods of risk assessment. However, most available approaches are not directly applicable to assessing disaster risks or are limited due to several reasons. These include narrow scope of disaster losses covered, non-coverage of cumulative vulnerability, inadequate incorporation of subjective risk perception and limited attention to the decision-making phase of risk assessment.

2.2.3. Phases in risk assessment

Risk assessment is a management activity that involves problem definition, analysis and decision-making. Problem definition is the process of determining what is to be assessed and planning to undertake that assessment. Research and analysis involve generating information on aspects of risk, such as occurrence, probabilities and effects. Decision-making is the process of ranking risks or outcomes on the basis of specific criteria and then assessing options that can address chosen risks.

2.2.3.1. Problem identification in disaster risk assessment

This is the first phase of disaster risk assessment. At this stage, the disaster risk problem to be addressed is identified and characterized and the problem placed within the context of the complex factors that constitute the nature and scope of the risk concern. It also involves determining the goal of the risk assessment process. To reflect the development context of the risk problem, the scope of risk assessment should cover relevant development concerns, not just risk issues. This promotes mainstreaming disaster risk assessment in development.

To identify the problem to be addressed, risk assessment requires a conceptual model of risk relationships and the determination of resources and planning needs for the assessment process. Input and partnerships with a variety of development sectors and disciplines are required for effective problem definition. This also helps ensure that disaster risk problems issues are known within the development community and are shaped by the interaction between members of the development and disaster management communities.

All these planning steps depend on establishing or maintaining an effective process for stakeholder participation. Such involvement is very important in promoting realistic assessment through incorporation of subjective risk assessments, ensuring that risk assessment is responsive to the circumstances of target groups. These efforts engender ownership of the process, can encourage the utilization of traditional and local knowledge.

2.2.3.2. Research and analyis in disaster risk assessment

This involves identifying and determining the parameters of risk, including the location, intensity and likelihood of the hazard and elements at risk. It also involves determining the vulnerabilities of the elements at risk and their coping capacities. The basic issues to address in undertaking hazard and vulnerability assessments include the following checklist:

- major hazards that affect the target group or sector, how they occur and their frequencies;
- extent of losses, damage and injuries arising from the hazard;
- communities most vulnerable to the negative effects of the hazard;
- extent to which communities are vulnerable to hazards and the major factors that underlie or condition this vulnerability;
- how those communities affected cope with disasters.

A key step in mainstreaming disaster risk assessment in development is to directly link disaster risks to development risks by focusing on the relationships between risk characteristics and the development conditions and status of target communities. Doing this effectively requires detailed consideration of these checklist issues, and emphasis on vulnerability and capacities of affected people during the risk analysis stage.

2.2.3.3. Decision-making in disaster risk assessment

Decision-making on how to address disaster risks consists of three components: risk evaluation, risk characterization and risk communication.

- The *risk evaluation* component comprises the following activities: (a) setting criteria for cost-benefit and other decision models, (b) establishing priorities against which decisions would be judged, (c) comparing risk profiles with the decision criteria to determine acceptable and unacceptable risks, (d) elaborating scenarios, options and measures to address unacceptable risks, and (e) evaluating and selecting measures to adopt.
- *Risk characterization* is an important step when risk assessors integrate information from hazard and vulnerability analyses to indicate the extent to which probable conclusions about the disaster risk can be made from the information and analysis. By presenting the technical accuracy of the analysis, it will highlight any uncertainties, conflicts or alternative viewpoints and indicate any additional requirements for data or analysis. Risk characterization also provides important information for communicating the results of the risk assessment to risk managers and other stakeholders of the process.
- *Risk communication* is not a retrospective activity, it is an iterative process of constant exchange among relevant parties with the intention of bringing congruence between actual, perceived and estimated risks. With respect to mainstreaming risk assessment in development, risk communication provides the means for interaction among stakeholders in the risk assessment process as well as between the risk and development communities. The cultivation of a culture of risk prevention in both risk management and development undertakings depends critically on information and communication.

2.2.4. Balancing objective risk assessment and subjective risk perception

Irrespective of the method of disaster risk assessment adopted, the assessment process must involve an optimal mix of objective risk determination (based on quantitative methods) and the subjective risk perception of people in affected communities and all stakeholders of the disaster risk management process. Risk perception emphasizes individual and subjective factors of intuition, awareness and experience.

2.2.5. Some advantages and benefits of disaster risk assessment

Institutionalizing disaster risk assessment has many advantages and benefits because the efforts involved are important development management tools on its own. Disaster risk assessment is useful for several purposes, including: (a) making risk-responsive physical and economic policy, (b) regulatory framework for development, (c) promoting participatory development through public education and awareness, (d) private sector and business decision-making, (e) risk sharing and transfer interventions.

2.2.6. Limitations of risk assessment

Risk assessment does not always result in a conclusive or compelling outcome regarding the importance of risks and appropriate corrective measures acceptable to all stakeholders. These difficulties could be due to poor identification of the risk problem or target population, why the problem is a concern and how stakeholders perceive the problem. Other constraints could arise because of insufficient data or resources for adequate assessment, or the difficulty in attributing responsibility for disaster risks emanating from different locations and sources. The assessment outcomes may also not be politically acceptable since risk management is essentially a political process. These difficulties underscore the fact that risk assessment is only one of many decision tools that should be applied to any given disaster risk situation and that the process must be part of a broader risk management strategy. However, it is essential to minimize these pitfalls in the risk assessment process itself, partly by adopting suitable methods.

3. Mainstreaming Disaster Risk Assessment in Project Cycle & Development Sectors

3.1. Key principles for mainstreaming disaster risk reduction in development

The present Guidelines are based on seven (7) key principles for mainstreaming disaster risk reduction in development. The seven key principles are:

1. *Political commitment, strong institutions and appropriate governance are essential to integrating risk issues in development processes and to reducing disaster risks.*
2. *The integration of disaster risk reduction in development is based on sound knowledge of disasters, risk and risk reduction.*
3. *Awareness of risk and risk reduction measures conveys knowledge about disaster risk reduction solutions.*
4. *Effectively incorporating risk considerations in development decision-making requires synergies between sustainable development and disaster risk reduction.*
5. *Sound development investment in the face of hazards depends on consideration of risk issues.*
6. *Achieving the objectives of mainstreaming disaster risk reduction depends on enhancing compensatory risk management to help reduce the legacy of accumulated risk.*
7. *Disaster risk reduction is a multi-thematic and multi-sectoral process; mainstreaming it in development involves its integration in development themes or sectors.*

The above key principles are directly linked to the five main areas of focus in the Framework for Disaster Risk Reduction (DRR) promoted by UN/ISDR Secretariat. These are:

- Political commitment and institutional aspects, involving governance issues of policy and planning, legislation, organizational structures, resources, and normative frameworks.
- Risk identification, involving risk assessment, impact assessment, and forecasting and early warning.
- Knowledge management, involving information management and communication, education and training, public awareness and research.
- Risk management applications, involving environmental and natural resource management, social and economic development policies, and technical measures.
- Preparedness and emergency management

Even though integrating risk considerations in development investment decision-making is part of risk management applications, it is treated separately in these Guidelines for emphasis. Similarly, the key principle on integrating disaster risk reduction in development sectors and themes is separated from risk management applications for emphasis.

These key principles are expanded below and are further elaborated in the guiding principles presented in section 4.

3.1.1. Governance and institutional aspects - *Political commitment, strong institutions and appropriate governance are essential to integrating risk issues in development processes and to reducing disaster risks.*

Disaster risk reduction is a governance issue because for the actions of people and communities to be effective in reducing risk, they need to have confidence in public risk warnings and the ability of disaster management institutions to deliver the required services effectively and efficiently in accordance with the dictates of good governance. This rests largely on the ability of leaders to be politically committed to the objective of disaster risk reduction as a development policy objective and to provide adequate resources to strengthen the efficiency and professionalism of disaster risk reduction institutions. Ultimately, since interventions to reduce disaster risk are delivered through mechanisms for development management, the effectiveness of disaster risk reduction depends on the governance of development management systems. Hence, overall good governance of the development process is a requisite condition for effective governance of disaster risk reduction programmes.

3.1.2. Risk identification - *The integration of disaster risk reduction in development is based on sound knowledge of disasters, risk and risk reduction.*

Inadequate knowledge of and competence in risk assessment methodologies is a major constraint to mainstreaming disaster risk reduction in development. Knowledge of risk through participatory disaster risk assessment contributes to better understanding of prospective threats to development actions. This helps improve the efficiency of development activities and the integration of disaster risk reduction in development.

3.1.3. Knowledge management - *Awareness of risk and risk reduction measures conveys knowledge about disaster risk reduction solutions.*

For risk information to be useful in engendering successful risk reduction, people and communities potentially at risk need to be aware of the information and how to use it. True awareness of risk is not merely having knowledge of the existence of the risk, it must be manifest in the ability of people and communities to take effective action to reduce the risk. True awareness also involves knowledge of risk reduction measures. Also, awareness of risk creates conditions for coalitions of common interests to promote disaster risk reduction at all levels because the knowledge of risk contributes to inducing people to act to reduce the potential risk. In this respect, risk awareness is central to inducing risk reduction behaviour.

3.1.4. Risk management applications - *Effectively incorporating risk considerations in development decision making requires synergies between sustainable development and disaster risk reduction.*

Risk reduction principles are applicable to all aspects of development but effective integration of risk in development depends on minimizing trade-offs between the two processes. This is because sustainable development enhances the potential of disaster risk reduction interventions, while successful risk reduction helps establish conducive conditions for sustainable development. The two need to proceed in tandem. The synergy is enhanced and risk management applications are effective when based on knowledge of disaster-development links that regard disaster reduction as a development issue.

3.1.5. Integrating risk considerations in development investment decision-making - *Sound development investment in the face of hazards depends on consideration of risk issues.*

Since every investment decision-making involves considerations of both profitability and risk, there is the need to trade-off risk and efficiency. People are generally averse to risk and take measures to reduce the risk to their investment but the relative lack of risk markets in Africa underscores the importance of risk considerations in the review of investment decisions.

3.1.6. Preparedness and emergency management - *Achieving the objectives of mainstreaming disaster risk reduction depends on enhancing compensatory risk management to help reduce the legacy of accumulated risk.*

Development decisions that exacerbate the vulnerability of people and communities contribute to accumulation of risk. This has negative impacts on the effectiveness of both development and disaster reduction interventions, and increases the difficulty of integrating the two. Thus, development interventions that help reduce accumulated risk through effective preparedness and emergency contribute to enhanced integration of disaster reduction and sustainable development.

3.1.7. Integrating disaster risk reduction in development themes and sectors - *Disaster risk reduction is a multi-thematic and multi-sectoral process; mainstreaming it in development involves its integration in development themes or sectors.*

People and communities maintain their livelihoods through utilizing their assets endowments on sectoral or thematic activities. Also, development interventions are undertaken through sectoral activities. Furthermore, disasters find expression at the sector level. Hence, disaster reduction inherently involves sectoral action, and coherence between actions in several sectors.

3.2. Integrating disaster risk assessment in the project development cycle

The project planning, design and implementation cycle presents a key entry point for linking risk assessment with development. Therefore, it is necessary to fit risk assessment into the process of generating development projects.
Information from the problem identification stage of disaster risk assessment provides input into the preliminary mission phase of the project cycle when the study to be undertaken to formulate development projects is designed. The risk identification and determination stage of risk assessment is linked to the development diagnosis phase of development planning when project options are identified and to the project formulation phase. The links between risk assessment and the project cycle activities are shown in Box 1. These links provide the basis for mainstreaming disaster risk assessment in development processes through risk-responsive development planning.

Box 1 - Linkage between risk assessment stages and project development cycle phases

Stage in risk assessment process	*Phase in project development cycle*
Problem identification	Preliminary project development mission: • Collection of basic information on the project area, including natural hazards • Preparing work plan, including hazard work to be done
Hazard assessment	Development diagnosis • Natural hazard evaluation • Identification of key issues • Collection of vulnerability and risk information • Generation of development strategies
Vulnerability and risk assessment; decision-making	Project formulation: • Formulation of development strategies • Production of hazard maps • Preparation of vulnerability and risk studies • Selection of best project options • Preparation of investment packages

Source : Based on Organization of American States (1990)

3.3. Integrating disaster risk assessment in development sectors

Development takes place within the context of specific sectors but disaster risk management is not a stand-alone sector or programme. It is a mechanism to address multi-faceted issues that constitute vulnerability. Thus, disaster risk management is a multi-sectoral and inter-institutional process. And mainstreaming disaster risk assessment in development therefore involves integrating it in specific development sectors.

Integrating risk assessment in development sectors involves considering three generic issues:

- how the activities of the sector impact disaster risks;
- how to apply risk assessment in planning the sector's development;
- any sector-specific considerations in mainstreaming disaster risk assessment in development strategies and programmes.

The present Guidelines are keyed to the following nine (9) key sectoral or thematic areas: poverty reduction, agriculture and rural development, environmental protection, water resource management, land use planning, and infrastructure. Others are: gender issues, HIV/AIDS and other diseases/health issues, and climate change adaptation.

3.3.1. Poverty reduction

Effective mainstreaming of risk assessment in poverty reduction interventions involves regulating those interventions to avoid or minimize their contribution to disaster and other development risks. This integration depends on adopting risk-sensitive development policies. This is facilitated by determining, during the risk assessment process, how poverty reduction interventions can cause or exacerbate disaster risks, as well as identifying constraints to adopting poverty risk assessment in development planning.

The first step in mainstreaming risk assessment in poverty reduction is to undertake a poverty risk profile to understand the nature, incidence, severity and exposure of people to poverty and how poverty causes or worsens disaster risks. Relevant issues to analyze include the living standards of the poor, their main sources of income and major consumption items, the public services they have access to, and the quality, reliability and cost of those services. Another consideration is what assets the poor own and the security of their access to natural resources.

At the risk identification and identification stage, it is essential to analyze the major disaster risks the poor face, how those risks are determined by natural hazards and people's vulnerability to those hazards. This requires considering the types and sources of physical, environmental, economic and social vulnerability that the poor face. It also includes determining how poverty affects the onset, intensity, distribution of some types of hazards, particularly those of biological and environmental origin.

Decision-making in poverty risk assessment involves identifying what the poor do to deal with disaster risks they face, including the strengths and weaknesses of their survival and coping strategies. In addition, it is necessary to determine what levels of risk are acceptable for the poor and the suitability of measures and options for addressing unacceptable risks for the poor. Effective participation of the poor in the process is essential in identifying risks in their relevant context and in evaluating and selecting appropriate measures to prevent or reduce those risks.

3.3.2. Agriculture and rural development

Agricultural and rural livelihoods depend significantly on the natural resource base. Consequently, several effects of natural hazards and climate change affect agriculture and rural development. Natural hazards and disasters impact agriculture through three main pathways, namely (1) input systems (including biological inputs), (2) services (such as processing and marketing infrastructures) and (3) management practices (such as water use and disease control). In turn, negative agriculture and rural development practices exacerbate some hazards. Therefore, mainstreaming disaster risk reduction in agriculture and rural development should aim to reduce the impact of disasters on the sector and the negative effects of sectoral practices on disaster risks.

The majority of the poor in Africa live in rural areas. However, the basic resources of land and water are constrained and rural productivity is low partly due to poor natural resource management. Also, rural non-farm activities do not adequately contribute to sustainable growth in agricultural productivity and the rural economy. Being the dominant economic sector, developments in the agricultural and rural sector have major implications for the vulnerability of livelihoods to disaster risks in African countries. Reducing rural poverty and improving rural livelihoods depends strongly on reducing the risk to agriculture and rural development from disasters. Minimizing negative cause and effect links between disasters and agriculture involves interventions in technology, institutions, information and markets aimed at preventing and mitigating disaster risks.

3.3.3. Environmental management

In terms of disaster risks that can be caused by a development sector, environmental degradation damages the natural resource base and severely alters the natural ecosystem processes underlying environmental outcomes. The former effect compounds the impacts of disasters and reduces the ability of people and ecosystems to absorb those impacts, while the latter contributes to environmental change and variations in the patterns of natural hazards.

Mainstreaming disaster risk assessment in environmental management requires assessment of disaster risks arising from environmental factors. Environmental risk assessment (ERA) offers an approach than can be adapted to country and local circumstances. This is essentially an environmental impact assessment (EIA) that incorporates risk assessment with decision outputs on alternative risk management solutions. Risk-based environmental impact assessment is best conducted early in the cycle of developing environmental management interventions and during the implementation review stage.

Specific issues in the relationship between environment, poverty and sustainable development to be analyzed during environmental risk assessment include the following:

- environmental consequences of disaster reduction interventions;
- how environmental management interventions can cause or exacerbate disaster risks;
- environmental policies and practices that reduce disaster and livelihood risks;
- extent of use of environmental valuation in development decision-making.

3.3.4. Water resource management

The majority of disasters that occur in Africa originate from water-related threats. Therefore, the extent to which risk considerations are mainstreamed in water resource management will determine progress in institutionalizing disaster risk management. Achieving this progress depends on effectively assessing water resource risks.

Water risks emanate from many sectors and sources, and water resource management is an inter-sectoral and multi-disciplinary process. Hence, issues to consider during the problem definition stage of water resource risk assessment include the following:

- the involvement of many stakeholders in water resource development, including government, private sector, the science and technology communities, and donors;
- trade-offs among competing interests in water use for meeting human, settlement and ecosystem sustenance needs;
- multi-dimensional aspects of integrated water resource management, involving technical, economic, environmental and other aspects of decision parameters.

During the hazard assessment, it is necessary to analyze factors such as the types of water-related hazards and their distribution characteristics, risks to water resources from natural hazards, and sources of water resource development risks.

At the vulnerability assessment stage, issues to address include the contribution of water resources to human exposure and vulnerability to hazards, including assessment of how water resource degradation worsens disaster risks arising from natural hazards. Another issue involves assessing vulnerabilities arising from the process chain (comprising production, processing, distribution, utilization, conservation and recycling) in integrated water resource development. Also, it is important to assess continuity in monitoring relevant environmental and related factors causing drought, including in non-drought years.

Issues to take into account during the decision-making stage include the comprehensiveness of decision parameters and risks involved in pursuing multiple objectives relating to the quality, accessibility, efficiency, sustainability and affordability of water resources, and balancing trade-offs among those factors. Other factors include the extent of community awareness of water risks and risk management and inter-country cooperation in watershed-level integrated water resource management.

3.3.5. Land use planning

Mainstreaming disaster risk assessment in land use planning implies applying integrated land use management to reduce disaster risks and to meet land management objectives at the same time. This also implies using land resources as a risk-reducing factor through risk-sensitive land use planning.

In land use risk assessment, the planning background stage includes identifying the risks to be assessed, analyzing the resource profile of target communities, establishing the regulatory context for land use planning, and reviewing existing land use plans.

The next step in land use risk assessment is to develop the planning strategy. This involves risk analysis and evaluation, determination of strategic directions or end-uses, and design of a strategic land use and development plan.

During risk analysis, it is important to determine trade-offs in competing land uses and to document land use capability as a key factor in undertaking useful risk analysis. Sources of land-use risks to assess include the extent to which natural processes help maintain ecological balance in hazard-prone areas. Others are the location of elements at risk (particularly human settlements, socio-economic activities, and infrastructure) in relation to hazardous incidence areas, and responsiveness of land developments to risk and other conditions of target areas.

A major challenge is how to reconcile the risk perspectives of different end-uses (such as land development, infrastructure, environmental protection, open space and recreation) through informed consultative processes. These end-uses also constitute the strategic directions of the integrated land use plan.

3.3.6. Infrastructure

Development investments in infrastructure are physical risk reduction measures that contribute to reducing structural vulnerability. Hence, the design and construction of hazard-resistant buildings and infrastructures is an effective way of reducing disaster risks. This depends on applying risk assessment in infrastructure development.

At the problem identification stage, issues to consider include the status of present infrastructure protection programmes and procedures to determine the criticality of infrastructure assets.

The research and analysis stage comprises the following key steps:

- Identification and ranking of critical assets based on loss impacts and other agreed criteria. Risk assessment issues to analyze at this stage include the strengths and weaknesses of the infrastructure under specific hazard conditions, and the extent of development and enforcement of codes, policies and procedures to protect public safety during disasters. Others include the extent to which the infrastructure system is robust and protected and has back-ups, and the potential for cascading effects and interdependence of critical infrastructure systems.
- Characterization of hazard and analysis of vulnerabilities, which include analyzing the types and degree of vulnerability (physical, technical, operational) facing the infrastructure and the characteristics of the asset that make it vulnerable.
- Assessment of risks and determination of priorities for protecting infrastructures.

The integration of disaster risk assessment in infrastructure development can be strengthened through various means, including:

- Adopting the system approach in infrastructure development. This requires regarding infrastructures not as discrete units of physical development but as a framework of interdependent networks and systems of physical development and institutions that provide a flow of services vital for society and ecosystems.
- Promoting hazard-resistant structures, including safe non-engineered buildings, by enhancing compliance with physical development legislation and codes to help institutionalize risk standards, thereby instilling the culture of risk assessment.
- Utilizing post-disaster possibilities to improve the safety of infrastructures through improved engineering and construction.

3.3.7. Gender issues

All aspects of life, including disasters and development processes are gendered. Hence, mainstreaming risk assessment in gender development involves identifying gender differences in vulnerabilities and coping strategies, and determining gender-appropriate measures for risk reduction.

Knowledge of how gender relations affect risk accumulation and coping capabilities is currently limited. Hence, effective planning of the risk assessment process depends on careful analysis of available information complemented with informed participation of women in all stages of the assessment process. In addition, the risk problem to be assessed needs to be placed within the context of broader gender and development considerations at the problem identification stage.

During the research and analysis stage, it is important to understand how gender relations affect disaster risk accumulation processes such as demographic factors, urbanization, rural deprivation, social exclusion and environmental degradation. This involves analyzing gender-based inequalities (such as education, health, political and economic status, resource ownership), roles and relations in society (such as family and community care responsibilities) and attitudes that affect women's vulnerability to hazard impacts and recovery from disasters.

Making sound decisions on what risks to reduce and how to do that includes the consideration of the following: responsibilities of women during and after disasters, reaction to potential disaster situations with gender concerns, extent of women's participation in decision-making on disaster risk management issues and, gender-sensitivity of risk communication messages and programmes.

3.3.8. HIV/AIDS and other health issues

Epidemics of HIV/AIDS, malaria and the other major diseases constitute disasters themselves but these diseases are also hazard factors that can interact with vulnerability conditions to engender disaster. In turn, disasters from natural hazards, climatic conditions

and other shocks can create favourable environmental conditions which, together with mass population movements, can lead to epidemics. Hence, any effort to reduce disaster risk from disease epidemics has to be comprehensive and reflect the complex interactions among climatic, vector-specific, political, demographic and development-based factors that worsen health risks.

Enhancing the limited capacity to effectively manage infectious disease epidemics in Africa requires comprehensive assessment of health risks associated with these hazards.

The risk analysis stage involves assessing the epidemic transmission potential of the disease in relation to the degree of vulnerability of the population. It identifies locations and populations at risk to the epidemic through routine monitoring of indicators derived from systematic, ongoing and population-based analysis.

In general, three types of indicators are used to assess epidemic risk: long-term vulnerability factors (such as low immunity, malnutrition, sexual behaviour and population movement); seasonal transmission risk indicators (such as weather peaks) and early detection indicators. Regarding malaria epidemics, the following indicators help estimate the likelihood and extent of an epidemic occurring: seasonal climate, weather and environment monitoring, disease vectors, parasites and their characteristics, exposure to infection, vulnerability to and onset of the disease, and morbidity.

Key issues to address at the decision-making stage of health risk assessment involve how to balance effects of different time frames, population groups and stakeholders, criteria for ranking risks and addressing uncertainty issues in deciding optimal interventions. In addition, the following checklist is useful in facilitating effective decision-making regarding risk management options:

- What is being done to reduce the burden of disease and how effective are they?
- When and how are epidemic control decisions taken?
- When and where should surveillance be strengthened?

3.3.9. Climate change adaptation

Adaptation includes the strategies, policies and activities undertaken to reduce potential adverse effects of climate change and to take advantage of potential beneficial effects. Mainstreaming risk assessment in climate change adaptation involves assessing risks facing the poor in utilizing their adaptive capacities to reduce climate change risks.

Determining the scope of the assessment at the problem identification stage can be challenging because climate change outcomes aggravate existing poverty as they impact nearly all development sectors as well as several processes underlying changes in the natural and physical asset base. Hence, assessing the risk of climate change adaptation requires adopting the multi-hazard approach.

The research and analysis stage is focused on assessing key sectors at risk, measuring the likelihood and impacts of climate change factors and ranking assessed risks. Key issues to consider include how climate change-related damage and losses occur in climate-sensitive sectors of concern presently and how the poor and other elements at risk handle climate-sensitive effects. Others include estimating of the future potential impact in the sector, based on scenarios of future climate change, population growth and other factors.

During the decision-making stage, it is necessary to determine adaptation strategies and measures to address negative effects of climate change in the target sector, and to identify additional adaptation measures in other sectors complementary to those in the sector of concern. This involves identifying potential adaptive options, determining the most economically efficient option and assessing adaptation strategies across several sectors.

The following points should be noted regarding the risk assessment process when climate change adaptation is considered:

- uncertainty plays a large role at the analysis and decision-making stages, due to the uncertainty in climate change predictions at the regional level and more so at the country level;
- the scientific community plays a major role in assessing risks from climate change adaptation, particularly in participatory processes to agree on risk standards. Hence, care should be taken that voices of other stakeholders are not overshadowed.

4. Mainstreaming Disaster Risk Assessment in Development Activities

4.1. Guiding principles

4.1.1.Governance and institutional aspects

Governance is the process of decision-making at all levels of society by the state, non-state actors and the private sector. It comprises the set of instruments - mechanisms, processes and institutions - and capacities through which people govern themselves. Good governance involves decision processes that follow the rule of law and are consensus-oriented, participatory, coherent, effective and efficient, equitable, transparent and accountable.

Governance considerations are paramount for all components of the disaster risk reduction framework. Hence, mainstreaming disaster risk reduction in development should aim at improving the governance of disaster risk reduction mechanisms. In addition disaster risk reduction itself should be seen as a mechanism for enhancing overall economic, political and administrative governance. Therefore, it is also essential that disaster risk reduction interventions be designed to contribute to strengthening the governance of development processes in general.

A major aspect of sound development is the commitment of stakeholders, particularly the political leadership, to promote disaster risk reduction. Committed leadership and stewardship involves government visibly providing clear vision, a sense of mission, priorities, influence, enabling conditions and resources in the direct interest of disaster risk reduction. Strong commitment raises the value of disaster risk reduction in development policy, helps create a culture of risk reduction at all levels, and contributes to mobilizing sustained national commitment to disaster risk reduction.

A committed government empowers those at risk to achieve protection from disaster impacts by discharging its governance responsibilities, including providing a conducive environment for disaster risk reduction. The enabling environment includes the institutional framework (policies, legislation, plans), resources and actions. The development of the institutional framework is a key process for political governance.

Good administrative governance depends on well-functioning and sustainable organizational structures at local levels through effective decentralization of disaster risk reduction mechanisms using participatory approaches. Effective decentralization of disaster risk reduction institutions and mechanisms requires, among others, adequate competencies, fiscal devolution and strong public-private partnerships.

Disaster risk reduction, as a multi-disciplinary and multi-sectoral endeavour, falls under the programme of diverse institutions. Hence, disaster risk reduction policies need to be comprehensive, integrated and balanced across sectors. Effective design and implementation of disaster risk reduction involves institutional collaboration between various stakeholder interests and requires clear assignment of roles, assumption of responsibilities, and coordination of activities. These enable stakeholders to develop a common vision and the requisite institutional framework, and sustain concerted action for reducing disaster risks.

A major gap at the organizational level is that the orientation of the governance of official disaster management mechanisms towards disaster risk reduction is limited. To address this, it is necessary to integrate disaster risk reduction in the activities of these agencies more purposely. Successful institutional reorientation depends on clear and committed leadership of agencies towards disaster risk reduction and re-engineering their capacities, competencies, procedures and performance management systems towards achieving disaster risk reduction objectives.

4.1.2. Risk identification

Both the identification of risks and the management of information for disaster risk reduction involve knowledge management to enable people take decisions to reduce the risks they face from natural hazards. All information, communication, education,

training, public awareness and research endeavours directed at disaster risk reduction should be aimed at enhancing knowledge of people and communities about hazards, vulnerabilities, risks, capacities and optimal risk reduction options. Risk identification is a relatively well developed area with a significant knowledge base on methods for assessing hazards, vulnerabilities, and potential disaster risks. This knowledge is derived from risk assessment, risk forecasting and early warning.

Risk assessment is an important starting point for disaster risk reduction. It is the process of collecting and analyzing information about the nature, likelihood and severity of disaster risks through risk monitoring and risk mapping. Risk monitoring and mapping includes hazard, vulnerability and capacity assessment.

In terms of process, disaster risk reduction involves: estimating the magnitude of risks from disasters, evaluating their relative importance to decision-makers, planning to address those risks judged important, and assessing the outcomes of the risk reduction interventions. Thus, risk assessment, as a management activity, involves problem definition, analysis and decision-making. Problem definition involves identifying the risk issue to be addressed within a development context. Research and analysis generates information on aspects of risk such as occurrence, probabilities and effects. Decision-making is the process of ranking risks or outcomes on the basis of specific agreed criteria, identifying those risks that must be addressed, and then assessing measures that can address chosen risks.

However, risk assessment does not always result in a conclusive or compelling outcome for several reasons, including difficulties in valuing likely losses from a hazard and disagreement on the importance of risks and appropriate corrective measures acceptable to all stakeholders. Nevertheless, risk assessment should be pursued.

One reason for the importance of risk assessment is that it provides input into risk forecasting and early warning. Early warning is the means to inform the public and authorities on potential risks. Consequently, early warning is necessary for timely actions to reduce disaster risks.

Early warning systems often focus on sub-systems for producing and communicating information on potential hazards and vulnerabilities to authorities responsible for disaster risk reduction. Early warning systems also emphasize risk information sub-systems for generating scenarios of potential impacts of imminent disaster risks. However, to be effective, early warning further needs to emphasize preparedness sub-systems for developing strategic actions to be taken to avoid or reduce potential hazard loss. Early warning systems also must highlight education and communication sub-systems for disseminating information and creating awareness on potential threats, risk scenarios and recommended preparedness strategies.

4.1.3. Knowledge management

Disaster risk reduction comprises a series of management actions that require the involvement of varied stakeholders and partners. This depends on information management. Data and information, especially from risk information management systems, are required to monitor hazards, assess risks and analyze optimal risk reduction interventions. Extensive awareness by the public and authorities is required to engender and sustain stakeholder participation in disaster risk reduction interventions. A fundamental way to create effective public awareness is to include disaster reduction at all levels of education. Training of communities and staff of organizations involved in disaster risk reduction helps create a culture of and capacity for disaster reduction. Targeted research provides the basis for disaster risk reduction to embody monitoring and continuous learning and improvement.

4.1.4. Risk management applications

Given the cause-and-effect links between development and disaster, the challenge for development policy is two-fold: (1) how to reduce the impact of disasters on development outcomes, (2) how to promote development processes that help to reduce disaster risks. Promoting risk-sensitive development depends on the integration of disaster risk reduction in development planning and practices.

The core task in mainstreaming disaster risk reduction in development is the effective application of disaster risk reduction principles and practice in development policies, projects, regulations and standards. Generating the required synergy between sustainable development and disaster risk reduction involves an inter-connected set of actions. These are: (a) making disaster risk reduction and development interventions mutually supportive, (b) integrating disaster risk reduction in development

policies, (c) integrating risk considerations in project investment decision making, (d) managing trade-offs to achieve policy coherence and concerted action for disaster risk reduction, and (e) developing and applying risk reduction instruments.

Effective mainstreaming of disaster risk reduction into development should start with a fundamental attitudinal change: both development and disaster communities need to see disasters as development outcomes. This attitude takes into account disaster-development links and aims to make development more sensitive to disasters.

For disaster risks to be reduced, development policy needs to change at the national level to address issues directly related to disasters. Countries use varied frameworks to plan their development agenda, including national visions for sustainable development, the United Nations Development Framework's Common Country Assessment (UNDAF/CCA), the Comprehensive Development Framework (CDF), the process of Poverty Reduction Strategy Papers (PRSPs) and sector-wide processes. They constitute a strategic tool to integrate disaster risk considerations in development. To achieve this integration, these development frameworks need to contain explicit reference to the objective of reducing risk from disasters and take into account the links between disasters and development. Also, effective integration of disaster risk reduction in development policies depends on ensuring coordination, consistency and coherence of national development policies towards that objective.

Achieving policy and programme coherence and motivating concerted action by all stakeholders in disaster risk reduction depends on success in managing competing interests. People and communities face several sources of threats to their lives and livelihoods. Consequently, they constantly trade-off risks from multiple sources of hazards in their decision making. To minimize trade-offs between disaster risk reduction and development, disaster risk reduction interventions need to contribute to strengthening generic capacities for resilience against all livelihood risks as well as those capacities specific to disaster risks.

Effective disaster risk reduction depends on applying knowledge about risks to concrete actions aimed at creating resilient communities. This requires that knowledge and instruments from different areas of development practice complement and enhance risk management measures. Areas of interface between development practices and disaster risk reduction include land use planning, structural engineering, environmental management, social protection and safety nets, and financial management. For example, principles of environmental and natural resource management can be applied to reduce and control natural hazards such as floods, droughts, epidemics and landslides. In addition, strategic environmental impact assessments and similar decision tools are useful in planning disaster risk reduction. Also, physical and technical measures, such as land use planning and soil conservation practices, help in controlling hazards; while financial instruments such as micro-credit, insurance, catastrophe bonds, help reduce disaster impacts.

4.1.5. Integrating risk considerations in development investment decision-making

The project planning, design and implementation cycle presents a key entry point for integrating disaster risk reduction with development. A framework of the links between phases of risk assessment and those in the project cycle is shown in Table 1. As seen from the Table, information from the problem identification stage of disaster risk assessment provides input into the preliminary mission phase of the project cycle. This is the initial stage of the project cycle when the project formulation study is designed. The risk identification and determination stage of risk assessment is linked to the development diagnosis phase of project planning when project options are identified. It is also linked to the project formulation phase of the project cycle.

Operationalizing the above framework for integrating disaster risk reduction in project development involves:

(a) evaluating threats from hazards and vulnerabilities facing the project;

(b) analyzing the political and institutional frameworks;

(c) identifying structural and non-structural measures for mitigating disaster risks facing the project;

(d) determining the extent to which the execution of the project ensures that disaster risks facing the project will be addressed;

(e) determining the viability of the project by analyzing the risks and benefits of the project.

4.1.6. Preparedness and emergency management

The first step in enhancing the contribution of preparedness and emergency planning to disaster risk reduction is to improve the effectiveness of contingency planning. Sound preparedness and contingency planning depend on effective early warning, regular rehearsal and practice of the plans, well-functioning communication and coordination systems, and adequate logistics and financial support.

Table 1 - Linkage between risk assessment stages and project development cycle phases

Stage in Risk Assessment Process	*Phase in Project Development Cycle*
Problem identification	Preliminary project development mission: • Collection of basic information on the project area, including natural hazards • Preparing work plan, including hazard work to be done
Hazard assessment	Development diagnosis: • Natural hazard evaluation • Identification of key issues • Collection of vulnerability and risk information • Generation of development strategies
Vulnerability and risk assessment; decision-making	Project formulation: • Formulation of development strategies • Production of hazard maps • Preparation of vulnerability and risk studies • Selection of best project options • Preparation of investment packages

Source: Based on Organization of American States (1990)

The second step is to transform disaster assistance management practice towards the disaster risk reduction approach. Emergency assistance is important but not sufficient for disaster risk reduction. It is necessary to strengthen the potential of emergency management to help address prospective disaster risks by transforming recovery activities to mitigation functions. The recovery phase of disasters is an opportune period to review existing development to minimize potential risk accumulation from future development interventions. Developing resilience through disaster recovery can be facilitated by adopting innovative approaches to emergency response aimed at longer-term recovery. These approaches include cash for relief, need-targeted input programmes, and integrated food, health and functional education programmes.

Also, timely and comprehensive recovery can reduce vulnerability and promote development provided the transition stage after disasters is effectively managed. This depends on ensuring that local coping capacities begin to contribute to sustainable recovery when external relief support starts being phased out. This way, post-disaster development interventions can help build capabilities of people to cope with future disasters.

4.1.7. Integrating disaster risk reduction in development themes and sectors

Disaster risk reduction falls within various sectoral programmes and is part of some crosscutting development themes. Consequently, this section of the Guidelines covers mainstreaming disaster risk reduction in selected development themes and sectors.

Poverty reduction

Poverty is the dominant cause of vulnerability to disasters in Africa because it weakens the capacity of the majority of the population of the continent to withstand disasters. Consequently, the poor are the most vulnerable to disaster effects and suffer the worst adverse impacts of natural and related hazards.

The poor are also susceptible to other livelihood hazards, partly because disaster losses often interact with and tend to worsen other livelihood threats. Thus, disaster risks and other development risks are mutually reinforcing. Consequently, both disaster risk reduction and poverty reduction focus on reducing the multiple sources of risks and empowering poor people to face them.

Disaster risk reduction helps safeguard human development, which involves protecting people from deprivation resulting from shocks induced by natural hazards. Dealing with disaster risk through poverty reduction interventions aims to build the overall capacity of people so that vulnerability can be better addressed.

The key to mainstreaming disaster risk reduction in poverty reduction is to implement interventions that minimize risk accumulation while resulting in reduction of poverty. Some specific measures include the following:

- institutionalizing the application of risk sensitive-poverty assessment in development planning;
- improving governance of poverty reduction interventions for them to contribute more to building the capacity of the poor to address vulnerability;
- implementing sustainable livelihood measures that strengthen the livelihood assets of the poor, thereby building their capacities to address vulnerability;
- improving the quality of growth to help the poor address accumulated disaster risks from past development interventions.

Agriculture and rural development

Agricultural and rural livelihoods depend significantly on the natural resource base. Consequently, several effects of natural hazards and climate change affect agriculture and rural development. Natural hazards and disasters impact agriculture through three main pathways, namely (1) input systems (including biological inputs), services (such as processing and marketing infrastructures) and management practices (such as water use and disease control). In turn, negative agriculture and rural development practices exacerbate some hazards. Therefore, mainstreaming disaster risk reduction in agriculture and rural development should aim to reduce the impact of disasters on the sector and the negative effects of sectoral practices on disaster risks.

The majority of the poor in Africa live in rural areas. However, the basic resources of land and water are constrained and rural productivity is low partly due to poor natural resource management. Also, rural non-farm activities do not adequately contribute to sustainable growth in agricultural productivity and the rural economy. Being the dominant economic sector, developments in the agricultural and rural sector have major implications for the vulnerability of livelihoods to disaster risks in African countries. Reducing rural poverty and improving rural livelihoods depends strongly on reducing the risk to agriculture and rural development from disasters. Minimizing negative cause and effect links between disasters and agriculture involves interventions in technology, institutions, information and markets aimed at preventing and mitigating disaster risks.

Environmental management

Environment and disasters are closely linked. Several environmental factors, such as land degradation and desertification, ecosystem loss, environmentally related diseases, pollution, and, climate variability and change act as both hazards and factors of vulnerability. Environmental degradation can cause or worsen disaster risks alone or in combination with other natural hazards. For example, environmental degradation can affect biological hazards, such as epidemics, hydrometeorological hazards and some geological hazards, including landslides. Inadequate environmental protection also damages the natural resource base, further weakening the ability of people and ecosystems to withstand hazards. For these reasons, it is necessary to integrate disaster risk reduction in environmental management and vice-versa to minimize the impact of natural hazards on the environment and the role of environmental factors in disasters.

In general, environmental management tools do not systematically incorporate trends in hazards and vulnerabilities. However, these environmental tools were designed from a risk management perspective and can be adapted for identifying disaster risks in project development. For example, disaster risks arising from environmental factors can be identified and analyzed using adapted environmental risk assessment (ERA). In addition, to help determine what measures to take to address disaster risk from environmental protection measures, socio-economic gains from environmental management activities can be demonstrated using such tools as strategic environmental impact assessment and ERA.

Water resource management

Water resources and disasters are linked in many ways. First, several natural hazards arise from hydrological factors. Second, disasters triggered by natural hazards can destroy or severely damage water infrastructure, affecting water supply and reducing its quality. For example, drought can reduce surface or groundwater flows, flood and volcano can contaminate water quality, and, earthquakes can divert groundwater. Third, water resource degradation causes or worsens disaster risks arising from natural hazards. For example, degradation of watersheds can adversely induce or exacerbate river basin flooding or landslides. Unsustainable water resource utilization also weakens the resilience of communities at risk.

Because of these reasons, it is important to reduce risks to water resources in a multi-hazard context. Also, because water risks emanate from many sectors, sources and competing uses, water resource management is inter-sectoral and multi-disciplinary. Therefore, any approach to understanding and managing water risks must be comprehensive and integrated.

Land use planning

Land use planning is an effective tool for guiding rural and urban development and managing risks associated with them. A well-prepared and risk-sensitive land use plan is a risk reduction tool that also facilitates disaster response and recovery. However, effective land use planning is challenging because of the multiple interests, uses and sectors associated with land. Land use planning addresses spatial issues connected with the physical vulnerability of communities. Therefore, within the context of disaster risk reduction, land use planning is essentially a form of risk assessment. Consequently, mainstreaming disaster risk reduction into the land use planning process involves assessing land risks and applying strategic and integrated measures to meet land management objectives.

Integrating risk reduction in land use planning involves three phases, namely (1) establishing the planning background, (2) formulating the planning strategy and the strategic land use plan, and (3) developing the implementation plan.

The planning background stage involves planning the entire process of integrating disaster risk reduction in land use, including identifying risks and reviewing the existing institutional framework.

Formulating the planning strategy and the strategic land use plan involves analyzing risks, determining strategic directions or end-uses of the land management plan, and designing actual strategic land use and development plans. Strategic land use plans are very crucial because they establish planning and development strategies for the area and provide guidance on how to develop programmes to implement the strategic plans.

Developing the implementation plan involves determining the tools to be used to put strategic land use and development plans into operation. The developed strategic land use plans can be implemented through land use schemes at regional and local levels, development regulations, ground management practices, and education and compliance enforcement measures.

Infrastructure

Infrastructure is part of the physical asset base of people's livelihoods. However, the increasing size, complexity and interconnectedness of infrastructure, particularly those providing critical services, pose challenges for reducing risks to them from disasters. Critical infrastructure are those physical and information technology facilities, networks and assets whose disruption or destruction from natural hazards or other causes would seriously impair people's lives and livelihoods. These often comprise infrastructures in the following sectors: government, energy and utilities, communications, services, transportation and safety. Since complete security or assurance is neither feasible nor affordable, the priority task in reducing the risk of disaster to infrastructures is to ensure the protection and safety of these critical services. However, this must consider the links between critical and non-priority infrastructure.

Developing and managing hazard-resistant infrastructure is a physical risk reduction tool. It contributes to reducing structural vulnerability through risk measures that prevent damage, limit consequences, hasten recovery or reduce vulnerability.

Integrating risk reduction in infrastructure development and management helps to prevent the potential for disruption of reliable services from the impact of natural hazards. However, it is also necessary to prevent physical failure of infrastructure installations from causing disasters, such as upstream dam failure resulting in downstream flooding. Hence, mainstreaming disaster risk reduction in infrastructure development should aim at minimizing the negative effects of disasters on infrastructure, and vice-versa.

Gender issues

Gender factors determine development patterns, vulnerability to natural hazards, coping strategies and community response to disasters. Gender bias in access to productive resources and capital formation increases women's vulnerability to hazards in Africa, partly because it reduces their coping capacities. Also, gender inequalities exacerbate the suffering and discrimination associated with disasters and increase inefficiencies in reducing disaster risks. Therefore, there are development costs to gender bias and clear growth benefits from reversing gender inequality, which would help reduce vulnerability of people to natural hazards.

Mainstreaming gender in disaster risk reduction is the process of fully considering and integrating the concerns of women and men in policies and programmes to prevent and mitigate disasters. It depends on identifying gender differences in vulnerabilities and coping strategies, and determining gender-appropriate measures for risk reduction. However, enhancing gender aspects of disaster risk reduction is not about simply increasing women's chances of survival and resilience to livelihood risks. It is about balancing the entitlements and responsibilities of both males and females, and the terms of women's participation in the disaster risk reduction process.

Integrating gender considerations in risk reduction involves interventions that expand women's livelihood opportunities and reduce their vulnerability to hazards. Some specific interventions to achieve this include:

- promoting the application of gender mainstreaming tools in disaster reduction programmes;
- expanding opportunities for women participation in decision-making and leadership roles in disaster management organizations and disaster risk reduction programmes;
- ensuring equitable access by both women and men to disaster risk reduction interventions, particularly post-disaster entitlements;
- increasing women's access to disaster risk management information, including through public awareness on the gender perspective in disaster reduction;
- strengthening comparative research and analysis on gender aspects of disaster risk configuration.

HIV/AIDS and other health issues

Mainstreaming disaster risk reduction in health implies reducing disaster risk arising from disease epidemics and minimizing the health impacts of disasters. This is because epidemics of HIV/AIDS, malaria and the other major diseases constitute disasters themselves. In turn, disasters from natural hazards, climatic conditions and other shocks can create favourable environmental conditions, which together with mass population movements, can lead to epidemics. Consequently, issues pertaining to disaster and health reflect a complex interaction of climatic, vector-specific, political, demographic and development-based factors.

The risk characteristics of various epidemic diseases differ. However, some generic issues of risk reduction can be applied to a variety of disease situations. The following are among measures that can be implemented to mainstream disaster reduction activities in health management:

- adopting a multi-hazard approach to disaster risk management that includes epidemics and other biological hazards;

- re-orienting the current focus on post-epidemic response towards the culture of prevention in managing health effects of disasters;
- integrating health concerns in hazard control measures, such as health implications of large open flood control water channels;
- developing strategies for epidemic preparedness and emergency action;
- developing integrated monitoring systems that include early detection of epidemics based on epidemiological data, early warning system based on meteorological data, and long-range forecasting;
- integrating health information collection and monitoring in general vulnerability information systems, such as environmental information systems;
- monitoring and addressing long-term factors of vulnerability to epidemics, such as health care entitlement, immunity status, nutrition level, sexual behaviour, land use patterns, population movement, and status of routine control.

Climate change adaptation

The impacts of climate change in Africa are likely to encompass the following: (1) increase in drought, flood, windstorms and other extreme climate phenomena, (2) changes in rainfall, river sensitivity and more intense land use, (3) sea level rise leading to coastal erosion and flooding. Given the relatively undeveloped state of Africa, climate change will worsen Africa's vulnerability to natural hazards, quite apart from exacerbating their effects. Also, mitigation interventions are economically unsustainable and currently ineffective against climate change effects. Consequently, mainstreaming risk assessment and reduction in climate change adaptation should aim to enhance the adaptive capacities of people to assess and reduce climate change risks.

Climate change outcomes impact nearly all development sectors as well as several natural processes. Also, climate change issues are subject to a large degree of uncertainty. Hence, reducing the risk of disasters from climate change adaptation involves adopting a multi-hazard and iterative approach.

Specific interventions to apply to reduce the risk of disasters from climate change will depend on the sector and the climate change impact of concern. However, the following will help mainstream disaster risk reduction in climate change adaptation interventions:

- increasing the use of vulnerability and adaptation assessment in development activities;
- reducing vulnerability to sustain livelihoods;
- improving the management of climate-sensitive natural resources and economic production systems;
- promoting economic diversification to reduce over reliance on climate-sensitive primary industries;
- increasing the resilience of infrastructure and physical development;
- restructuring risk sharing through improved financial intermediation and mechanisms;
- mainstreaming climate issues and adaptation into policies, programmes and budgets;
- strengthening information and communication on climate change effects and adaptation options;
- enhancing inter-country cooperation to improve management of shared resources.

4.2. Guiding questions

Guiding questions are examples of issues to be considered in identifying information needed for the mainstreaming process.

As a full list of relevant guiding questions is provided for each of the above areas of focus in the various Checklists presented in Section 5, only a sample of guiding questions is provided below.

4.2.1. Governance and institutional aspects

- How does the highest political authority show its commitment to disaster risk reduction? How adequate are the mechanisms for demonstrating this commitment?
- To what extent are the civil society and the private sector committed to disaster risk reduction?
- How does government finance disaster risk reduction?
- Is there a policy that specifies disaster risk reduction as a priority? Is there a process for developing, coordinating and continuously improving policies and strategies for disaster risk reduction?
- Does there exist separate legislation for disaster risk reduction?
- What participatory approaches do government and NGOs adopt in their risk reduction programmes and activities?
- How conducive is the enabling environment to investment in disaster risk reduction activities?
- Do disaster risk reduction mechanisms promote personal and community responsibility for protection from disasters and ultimately compliance with disaster warnings?
- What mechanisms exist to coordinate disaster risk reduction programmes and stakeholders at national and local levels?

4.2.2. Risk identification

- What are the elements (people, livelihood, ecosystems and physical assets) at risk?
- What is the extent of likely losses, damage and injuries arising from the hazard?
- Is there systematic analysis of impacts and economic loss analysis after each disaster? How are results of impact assessments used in risk identification?
- To what extent is risk characterization and communication an integral part of risk assessment processes?
- To what extent is early warning developed as a risk reduction mechanism?

4.2.3. Knowledge management

- Are there disaster risk information management systems in operation? Do they include web sites on disasters, hazards and risks?
- Are there networks for exchanging disaster risk reduction information?
- Is disaster risk education part of the curriculum of schools at all level?
- Does there exist systematic capacity development programmes for communities and agency staff?
- Does there exist national policy, programmes and materials for public awareness on disaster risk reduction?
- What is the extent of coverage of disaster reduction activities by the media?
- Are there any academic and research institutions dealing with disaster risk reduction issues?

4.2.4. Risk management applications

- How can mainstreaming disaster risk reduction in development accentuate positive links between disasters and development and minimize effects of potentially negative ones?
- What are the major needs and key priorities for disaster risk reduction?
- To what extent do economic and social development policy and practices embody explicitly these priorities?
- How can development policies and strategies integrate disaster risk reduction?

- What are the areas of trade-off between disasters and development?
- What mechanisms are used to promote consistency and coherence between development frameworks to achieve disaster risk reduction objectives?
- What structural and non-structural measures are in place to reduce disaster risks?
- To what extent are financial instruments utilized as a measure to control hazards and reduce the impacts of disasters?
- Are there tax or financing incentives for promoting greater use of engineered and disaster-resistant construction?
- How can compliance with regulations and standards be improved?

4.2.5. Integrating risk considerations in development investment decision-making

The following questions provide guidance to project analysts, the private sector and development agencies in determining what to do to address disaster risks in their investment decisions. The questions should be complemented with guidance contained in other parts of these Guidelines, particularly those on risk identification, risk knowledge management and risk management applications.

- Is the location of the project adequate for reducing vulnerability?
- To what extent have natural phenomena been considered in the design of technological and physical components of the project?
- Does the project include information and communication, awareness, training and research components or programmes for risk reduction?
- Are the disaster reduction responsibilities of project partners regarding mitigation activities and emergency response clearly identified and agreed?
- Are there similar experiences with disaster risks that can inform the design of the project?
- To what extent is the financial and economic viability of the project sensitive to disaster risks?
- Are there reserve or contingency financing arrangements for the project in the event of disasters?

4.2.6. Preparedness and emergency management

- To what extent is early warning and risk assessment used in planning disaster risk reduction interventions?
- Do post-disaster relief, rehabilitation and reconstruction adequately incorporate measures to prevent or mitigate future disasters?
- To what extent do disaster recovery activities integrate local and traditional coping strategies and knowledge?

4.2.7. Integrating disaster risk reduction in development themes and sectors

Poverty reduction

- What major hazards affect the poor?
- What is the evidence of linkages between poverty alleviation, development and disaster reduction?
- What is the comparative advantage of incorporating disaster risk reduction in development?
- How do disasters cause or exacerbate poverty?
- What trade-offs between risk and poverty reduction would the poor accept in poverty reduction programmes?

Agriculture and rural development

- What natural hazards affect agriculture and rural development?
- What are the likely effects of climate change on agriculture?
- What agricultural practices adversely affect environmental and natural resources and contribute to disasters?
- How do policies and programmes for agriculture and rural development take into account issues of hazards and disaster risks that negatively impact rural environment and livelihoods?
- How resilient is agricultural infrastructure to disasters?

Environmental management

- What factors affect environmental change?
- How do environmental factors cause or impact natural hazards?
- How do natural hazards cause or impact the environment?
- What factors cause human vulnerability to environmental change?
- How do environmental policies, legislation, institutions and standards help address requirements for disaster risk reduction?
- To what extent can environmental management interventions cause, exacerbate or reduce disaster risks?

Water resource management

- What are the major types of water-related hazards? What are their risk characteristics?
- How do hydrological processes contribute to human exposure and vulnerability?
- Are there water sector policies, legislation and institutional arrangements?
- How are communities and beneficiaries involved in managing water resources?
- Are traditional and local methods of water risk management incorporated in water resource development interventions?

Land use planning

- How does land use planning contribute to identification of acceptable risks in disaster risk reduction interventions?
- How extensive is the use of risk mapping in land use planning?
- What is the regulatory context for land use?
- What policies and legislation on land use planning impact disaster risk reduction?
- How does the institutional framework for development promote a culture of risk reduction in land use planning?

Infrastructure development

- How susceptible are various infrastructure systems to hazard events?
- Is there adequate understanding of the major natural hazards that pose a risk to infrastructure?
- What is the disaster survivability of key and critical infrastructure?
- Is there a national critical infrastructure assurance programmes, including protection and emergency preparedness measures?
- Is there a national alert system for critical infrastructure?

Gender

- How are risk problems placed within the context of broader gender and development considerations?
- Is gender-based risk assessment included at the appraisal stage of development and disaster reduction interventions?
- How do gender relations affect natural hazard patterns?
- Are women and girls more at risk during disasters than males and boys?
- Is there gender balance in participation in all stages of the disaster risk reduction process?

Diseases

- What is the current incidence and prevalence of the disease?
- Why is the disease a disaster risk problem?
- How severe is the disease burden on affected populations?
- How do natural hazards contribute to the disease burden?
- Are there training programmes and information systems to enhance the capacity of individuals, communities and institutions to reduce the risk of epidemic disasters?

Climate change

- What are the extent, probability and effect of climate change-related damage and losses?
- What is the potential risk impact of climate change effects, based on scenarios of future climate change, population growth and other factors?
- Do governments implement development policy and budget processes that anticipate effects of climate change?
- Are systematic research and analysis efforts continuing to identify and understand individual, country-level and time-phased effects of climate change?
- To what extent are national adaptation programmes network linked to international initiatives?

4.3. Success factors

Effectively mainstreaming disaster risk assessment in development depends on several factors, including the following key ones:

1. *Addressing the information implications of disaster risk assessment*: Risk assessment requires data and information. Most of them, needed for planning disaster risk management interventions, are collected and analyzed during this stage. Disaster risk assessment therefore becomes central to reducing disaster risks because it provides the basic information for other components. These include early warning, preparedness, awareness, public commitment, knowledge development and application of risk reduction measures.

   Because of such information requirements, useful information may be developed at any point in the risk assessment process. Hence, disaster risk assessment needs to be an iterative process, with earlier outcomes of the process modified by information available at later stages. Consequently, the risk assessment process should make maximum use of existing data resources and allow progressive revisions as data improves.
2. *Implementing supportive policies*: This requires strengthening political commitment, including through implementing policy and institutional frameworks that explicitly incorporate disaster risk assessment concerns, facilitate the investment of requisite resources for risk assessment, and strengthen the social capital of vulnerable communities, thus enhancing the success of their participation in risk assessment.

3. *Utilizing local experience and wisdom in risk assessment*: The occurrence of disasters often depends on local conditions and people's experience of disasters and mitigation actions at the local level. Hence, mainstreaming traditional and local knowledge, metaphors and wisdom in risk assessment processes is essential to ensure that the risk assessment process is responsive to the local conditions of communities at risk, thereby enhancing its effectiveness.
4. *Basing risk assessment on information management*: Governments have a basic governance responsibility of providing information on potential and actual risks. Public awareness and advocacy are therefore important in disaster risk assessment and reduction.
5. *Ensuring professional management of risk assessment systems*: Disaster risk assessment is best undertaken by professional risk assessors who have the requisite expertise and aptitude. Ensuring professionalism in risk assessment requires investment in data, information and communication systems and in developing the requisite institutional and human capability to manage the process. Development institutions can facilitate the mainstreaming process within their organizations by developing implementation programmes that provide clear direction for the mainstreaming process. For example, development finance institutions may find it necessary to develop circumstance-specific operational policy, handbooks and procedure manuals, and staff capabilities to institutionalize disaster risk assessment in their operations.

5. Checklists for Mainstreaming Disaster Risk Assessment in Development

CHECKLIST 1

Key Entry Point for Linking Disaster Risk Assessment with Development

Key Principle

It is necessary to fit risk assessment into the process of generating development projects. **The project planning, design and implementation cycle presents a key entry point** for linking risk assessment with development.

Guiding Principles

1. Information from the problem identification stage of disaster risk assessment provides input into the preliminary mission phase of the project cycle when the study to be undertaken to formulate development projects is designed.
2. The risk identification and determination stage of risk assessment is linked to the development diagnosis phase of development planning when project options are identified and to the project formulation phase.
3. The links between risk assessment and the project cycle activities are shown in the table below entitled *Linkage Between Risk Assessment Stages and Project Development Cycle Phases.*
4. These links provide the basis for mainstreaming disaster risk assessment in development processes through risk-responsive development planning.

Stage in risk assessment process	Phase in project development cycle
Problem identification	Preliminary project development mission • Collection of basic information on the project area, including natural hazards • Preparing work plan, including hazard work to be done
Hazard assessment	Development diagnosis • Natural hazard evaluation • Identification of key issues • Collection of vulnerability and risk information • Generation of development strategies
Vulnerability and risk assessment; decision-making	Project formulation • Formulation of development strategies • Production of hazard maps • Preparation of vulnerability and risk studies • Selection of best project options • Preparation of investment packages

Source: Based on Organization of American States (1990)

CHECKLIST 2

Governance & Institutional Aspects

Key Principle

Political commitment, strong institutions and appropriate governance are essential to integrating risk issues in development processes and to reducing disaster risks.

Guiding Principles

1. Good governance involves decision processes that follow the rule of law and are consensus oriented, participatory, coherent, effective and efficient, equitable, transparent and accountable.
2. Governance considerations are paramount for all components of the disaster risk reduction framework because:
    - mainstreaming disaster risk reduction in development should aim at improving the governance of disaster risk reduction mechanisms;
    - disaster risk reduction should be seen as a mechanism for enhancing overall economic, political and administrative governance;
    - disaster risk reduction interventions should be designed to contribute to strengthening the governance of development processes in general.
3. A major aspect of sound development is the commitment of stakeholders, particularly the political leadership, to promote disaster risk reduction. Committed leadership and stewardship involves government visibly:
    - providing clear vision, a sense of mission, priorities, influence, enabling conditions and resources for disaster risk reduction;
    - raising the value of disaster risk reduction in development policy;
    - helping create a culture of risk reduction at all levels;
    - contributing to the mobilization of sustained national commitment to disaster risk reduction;
    - providing a conducive enabling environment, including the institutional framework (policies, legislation, plans), resources and actions.
4. Good administrative governance depends on well-functioning and sustainable organizational structures at local levels through effective decentralization of disaster risk reduction mechanisms using participatory approaches.
5. Effective decentralization of disaster risk reduction institutions and mechanisms requires, among others, adequate competencies, fiscal devolution and strong public-private partnerships.
6. Disaster risk reduction, as a multi-disciplinary and multi-sectoral endeavour, falls under the programme of diverse institutions. Hence, disaster risk reduction policies need to be comprehensive, integrated and balanced across sectors through:
    - institutional collaboration between various stakeholder interests;
    - clear assignment of roles, assumption of responsibilities and coordination of activities;
    - a common vision by stakeholders;

For ease of use as practical guidelines, sixteen (16) checklists have been developed in this section for mainstreaming disaster risk assessment in the development process. For each of the areas of focus of disaster risk assessment, most of the checklists comprise the *key principle*, *guiding principles*, *guiding questions* and *success factors*.

The 16 checklists are on the following areas of focus : (1) Key entry point for linking disaster risk assessment with development ; (2) Governance & institutional aspects; (3) Risk identification ; (4) Knowledge management ; (5) Risk management applications ; (6) Integrating risk considerations in development investment decision-making; (7) Preparedness & emergency management ; and (8) Integrating disaster risk reduction in development themes and sectors.

Checklist 8 (Integrating disaster risk reduction in development themes and sectors) is composed of the following checklists : (8/1) Poverty reduction ; (8/2) Agriculture and rural development ; (8/3) Environmental management ; (8/4) Water resource management ; (8/5) Land use planning ; (8/6) Infrastructure Development ; (8/7) Gender issues ; (8/8) HIV/AIDS and other health issues ; (8/9) Climate change adaptation.

- the requisite institutional framework;
- sustained and concerted action towards disaster risk reduction is limited.

7. A major gap at the organizational level is that the orientation of the governance of official disaster management mechanisms towards disaster risk reduction is limited. Successful institutional reorientation depends on:
    - clear and committed leadership of agencies towards disaster risk reduction;
    - re-engineering their capacities, competencies, procedures, and performance management systems towards achieving disaster risk reduction objectives.

Guiding Questions

Good governance

- Do existing political structures promote good governance, including the rule of law, public participation, consensus and equity, responsiveness, accountability and strategic vision?
- How does the economic governance of the state affect citizens' vulnerability to natural hazards? Does economic governance promote poverty eradication, improved quality of life and equity?

Political commitment to disaster risk reduction

- How does the highest political authority show its commitment to disaster risk reduction? How adequate are the mechanisms for demonstrating this commitment?
- Are there frequent official statements on disaster risk reduction? Are there any high-level programmes to promote disaster risk reduction?
- What agreed benchmarks have government achieved in implementing the national disaster risk reduction strategy?
- To what extent is government adhering to commitments under international agreements and development frameworks, such as the UN/ISDR and the WSSD (World Summit on Sustainable Development) Plan of Implementation?
- To what extent are the civil society and the private sector committed to disaster risk reduction?
- Do the citizens exhibit a culture of disaster risk reduction?
- How does government finance disaster risk reduction?
- To what extent are financial resource requirements for national disaster risk reduction mechanisms met fromfor budgetary resources?
- What other mechanisms for financing disaster risk reduction are available?

Institutional framework

- Is there a policy that specifies disaster risk reduction as a priority? How adequate are government policies for promoting disaster risk reduction? Is there a process for developing, coordinating and continuously improving policies and strategies for disaster risk reduction?
- Does there exist separate legislation for disaster risk reduction?
- Does this legislation provide adequate and clear responsibilities, entitlements, sanctions and remedies in connection with disaster risk reduction?
- How effective is the legislative framework in promoting disaster risk reduction?

- To what extent is national legislation for disaster risk reduction coherent with other legislation on risk management applications?
- Is there a lead organization for coordinating national efforts in disaster risk reduction?
- Do the culture, systems and practices of the organization promote its objective of reducing disaster risks?
- How is the organization developing and strengthening the knowledge, competencies and capacities it requires to continuously improve the effectiveness of its disaster risk reduction interventions?
- What in-country resources exist to develop national policies, legislation, programmes and capacities for disaster risk reduction? How adequate are those resources? How can they be enhanced?

Participation

- Are risk assessment problems placed in their proper context?
- What participatory approaches do government and NGOs adopt in their risk reduction programmes and activities? To what extent is subjective risk or risk perception approaches used during hazard and vulnerability assessments?
- How is consensus reached on risk reduction options during the decision-making stage of risk assessment and reduction?
- What roles do development agencies, NGOs, professional associations and other non-state partners play indisaster reduction at national and local levels? How can those roles be enhanced?
- How conducive is the enabling environment to investment in disaster risk reduction activities?
- To what extent is the private sector involved in disaster risk reduction?
- How does the private sector incorporate disaster risk reduction considerations in their criteria for project financing?
- To what extent is insurance and similar risk spreading mechanisms used in reducing disaster risks?
- Are there public-private partnerships aimed at disaster risk reduction? How can they be improved?

Decentralization

- Does government promote participatory structures at community level that focus on disaster risk reduction?
- Do decentralized structures have the necessary authority, competence and resources to plan and implement local disaster risk reduction programmes within a national framework?
- What measures exist for building the capacity of communities to plan and implement local level disaster risk reduction activities?
- To what extent is the collaboration between risk reduction agencies and communities based on the self-interest and self-consent of the communities?
- Do disaster risk reduction mechanisms promote personal and community responsibility for protection from disasters and ultimately compliance with disaster warnings?

Coordination

- What mechanisms exist to coordinate disaster risk reduction programmes and stakeholders at national and local levels?
- Have these mechanisms been effective in ensuring the coordination, consistency and coherence of policies and programmes of varied partners in disaster risk reduction?
- How can this coordination be improved?

Success Factors

1 Good governance of the political organization of a country depends on the extent to which economic governance safeguards the lives and livelihoods of its people.

2. The commitment of political leadership to disaster risk reduction depends on its ability to provide the requisite visibility, direction, policy efficiency, material and non-material support, and conditions for harnessing all available participation and resources for disaster risk reduction.

3. The development of the culture and effective practice of disaster risk reduction depends on the effective utilization of the totality of national institutional resources, including policy, legislation, structures, resources and competencies.

4. Rights-based, active and value-enhancing involvement of all sectors of the nation, based on self-interest and personal consent, is a necessary factor for good governance.

5. Emphasizing local action while linking the local with the national is a precondition for successful governance of disaster risk reduction programmes.

6. Coherence of action by all stakeholders is essential for public participation, consensus and strategic vision in enhancing governance of and for disaster risk reduction.

CHECKLIST 3

Risk Identification

Key Principle

The integration of disaster risk reduction in development is based on sound knowledge of disasters, risk and risk reduction.

Guiding Principles

1. Both the identification of risks and the management of information for disaster risk reduction involve knowledge management to enable people take decisions to reduce the risks they face from natural hazards. This knowledge is derived from risk assessment, risk forecasting and early warning, and disaster impact assessment.
2. All information, communication, education, training, public awareness and research endeavours directed at disaster risk reduction should be aimed at enhancing knowledge of people and communities about hazards, vulnerabilities, risks, capacities and optimal risk reduction options.
3. Risk assessment is the process of collecting and analyzing information about the nature, likelihood and severity of disaster risks through risk monitoring and risk mapping, including hazard, vulnerability and capacity assessment.
4. In terms of process, disaster risk reduction involves:
    - estimating the magnitude of risks from disasters
    - evaluating their relative importance to decision-makers
    - planning to address those risks judged important
    - assessing the outcomes of the risk reduction interventions.
5. Risk assessment, as a management activity, involves:
    - problem definition (identifying the risk issue to be addressed within a development context)
    - research and analysis (generating information on aspects of risk, such as occurrence, probabilities and effects)
    - decision-making (ranking risks or outcomes on the basis of specific agreed criteria, identifying those risks that must be addressed, and then assessing measures that can address chosen risks).
6. Risk assessment does not always result in a conclusive or compelling outcome for several reasons, including:
    - difficulties in valuing likely losses from a hazard
    - disagreement on the importance of risks and appropriate corrective measures acceptable to all stakeholders
7. Risk assessment provides input into risk forecasting and early warning (the means to inform the public and authorities on potential risks). To be effective, early warning needs to:
    - emphasize preparedness sub-systems for developing strategic actions to be taken to avoid or reduce potential hazard loss
    - highlight education and communication sub-systems for disseminating information and creating awareness on potential threats, risk scenarios and recommended preparedness strategies.

Guiding Questions

- What are the elements (people, livelihood, ecosystems and physical assets) at risk?
- What major hazards affect the elements at risk? How do they occur? How often do they occur?
- What is the extent of likely losses, damage and injuries arising from the hazard?

- Is there systematic analysis of impacts and economic loss analysis after each disaster? How are resultsof impact assessments used in risk identification?
- Has the risk problem been adequately identified?
- Is there sufficient data or resources for an adequate assessment?
- To what extent are individuals and communities vulnerable to hazards? What major factors underlie or condition this vulnerability?
- How do affected communities cope with disasters?
- What are the relative roles of traditional coping strategies and modern interventions?
- To what extent have participatory approaches been used to determine stakeholders' perception of the risk problem, the goal of the assessment process, modeling of risk relationships and planning needs for the assessment process?
- How is responsibility for disaster risks emanating from different locations and sources attributed?
- What models are used to make decisions on risk measures in risk identification?
- How do risk evaluation processes set criteria for cost-benefit and other decision models and establish priorities against which decisions would be judged?
- Do risk evaluation processes adequately elaborate scenarios and measures to address unacceptable risks?
- To what extent is risk characterization and communication an integral part of risk assessment processes?
- Do risk assessment reports present the technical accuracy of the analysis, any uncertainties or alternative viewpoints?
- Are risk and impact assessment outcomes acceptable to partners?
- How are risk maps and vulnerability assessment used in early warning?
- To what extent is early warning developed as a risk reduction mechanism?
- How effective are warning messages in risk prevention at the local level?

Success Factors

1. Effective identification of risk characteristics and optimal response options depends on good and broad knowledge of risk and risk management that recognizes the utility of both modern and traditional approaches.
2. Successful risk assessment depends on efficient and consensual processes that also effectively trade off competing interests.
3. The effectiveness of risk warning depends on good knowledge of risk and the utility of the message in safeguarding life and livelihoods.

CHECKLIST 4

Knowledge Management

Key Principle

Awareness of risk and risk reduction measures conveys knowledge about disaster risk reduction solutions.

Guiding Principles

1. Disaster risk reduction comprises a series of management actions that require the involvement of varied stakeholders and partners. This depends on information management.
2. Data and information, especially from risk information management systems, are required to monitor hazards, assess risks and analyze optimal risk reduction interventions.
3. Extensive awareness by the public and authorities is required to engender and sustain stakeholder participation in disaster risk reduction interventions.
4. A fundamental way to create effective public awareness is to include disaster reduction at all levels of education.
5. Training of communities and staff of organizations involved in disaster risk reduction helps create a culture of and capacity for disaster reduction.

   Targeted research provides the basis for disaster risk reduction to embody monitoring and continuous learning and improvement.

Guiding Questions

Information management and communication

- Are there disaster risk information management systems in operation? Do they include web sites on disasters, hazards and risks?
- Are there networks for exchanging disaster risk reduction information?
- Does there exist information centres on disaster reduction?
- What kind of information is available?
- Is traditional knowledge in disaster risk reduction systematically documented and disseminated?
- How is the information disseminated?
- Who are the main users of the information?

Education and training

- Is disaster risk education part of school curriculum at all levels?
- Are educational material and references on disasters and risk reduction available?
- Are there scialized training courses and institutions in disaster risk reduction?
- Does there exist systematic capacity development programmes for communities and agency staff?

- To what extent do training programmes cover other disaster risk reduction components apart from emergency management?
- Have these training programmes been effective in changing disaster risk reduction practices?

Public awareness

- Does there exist national policy, programmes and materials for public awareness on disaster risk reduction?
- What are the main instruments for public awareness?
- Who are the targeted groups for awareness campaigns?
- How often and effectively is the public accessed and informed?
- Is public awareness of disaster risk reduction part of public discourse into government policies?
- To what extent is the aftermath of disasters and public events used as opportunities to widen public awareness of disaster risk reduction?
- What is the extent of coverage of disaster reduction activities by the media?

Research

- Do there exist any mechanisms for undertaking targeted research on disaster risk reduction?
- Are there any academic and research institutions dealing with disaster risk reduction issues?
- What mechanisms exist to disseminate the results of research and to apply them to risk reduction interventions?

Success Factors

1. Successful knowledge of disaster risks depends on an effective policy and programme for managing information and communication on disaster risks and risk reduction mechanisms.
2. Risk reduction is enhanced by education and training at all levels on broad issues of risk reduction within an enabling environment that creates opportunity to apply risk knowledge to change disaster risk reduction practices.

CHECKLIST 5

Risk Management Applications

Key Principle

Effectively incorporating risk considerations in development decision making requires synergies between sustainable development and disaster risk reduction.

Guiding Principles

1. Promoting risk-sensitive development depends on the integration of disaster risk reduction principles and practice in development planning and polices, projects, regulations and standards through application of knowledge about risks to concrete actions aimed at creating resilient communities.
2. Given the cause and effect links between development and disaster, the challenge for development policy is two-fold: (1) how to reduce the impact of disasters on development outcomes, (2) how to promote development processes that help to reduce disaster risks.
3. Generating the required synergy between sustainable development and disaster risk reduction involves:
    - a fundamental attitudinal change whereby both development and disaster communities see disasters as development outcomes;
    - making disaster risk reduction and development interventions mutually supportive;
    - integrating disaster risk reduction in development policies;
    - integrating risk considerations in project investment decision making;
    - managing trade-offs to achieve policy coherence and concerted action for disaster risk reduction;
    - developing and applying risk reduction instruments.
4. For disaster risks to be reduced, development policy needs to change at the national level to address issues directly related to disasters. Countries use varied frameworks to plan their development agenda, including national visions for sustainable development.
5. Frameworks for national development (such as the process of Poverty Reduction Strategy Papers) constitute a strategic tool to integrate disaster risk considerations in development and need to:
    - contain explicit reference to the objective of reducing risk from disasters;
    - take into account the links between disasters and development;
    - ensure coordination, consistency and coherence of national development policies towards disaster risk reduction.
6. People and communities face several sources of threats to their lives and livelihoods. Consequently, they constantly trade-off risks from multiple sources of hazards in their decision making. Achieving policy and programme coherence and motivating concerted action by all stakeholders in disaster risk reduction depends on success in managing competing interests.
7. To minimize trade-offs between disaster risk reduction and development, disaster risk reduction interventions need to contribute to strengthening generic capacities for resilience against all livelihood risks as well as those capacities specific to disaster risks.
8. Effective disaster risk reduction requires that knowledge and instruments from different areas of development practice complement and enhance risk management measures. Areas of interface between development practices and disaster risk reduction include land use planning, structural engineering, environmental management, social protection and safety nets, and financial management.

Guiding Questions

Considering disaster-development links

- How can mainstreaming disaster risk reduction in development accentuate positive links between disasters and development and minimize effects of potentially negative ones?
- What are the major livelihood risks people face?
- How do these livelihood risks relate to disasters?
- What strategic directions in past and current development policies and practices add to or reduce vulnerability?
- How does development contribute to building capacities to reduce disaster risks?
- To what extent do vulnerability factors expose people to other livelihood risks?

Integrating disaster risk reduction in development policies

- What are the major needs and key priorities for disaster risk reduction?
- To what extent do economic and social development policy and practices embody explicitly these priorities?
- Is disaster risk reduction incorporated in national visions for sustainable development, national plans for the implementation of the MDGs (Millennium Development Goals), the UN Development Framework's Common Country Assessment (UNDAF/CCA), the Comprehensive Development Framework (CDF), the process of Poverty Reduction Strategy Papers (PRSPs), National Adaptation Plans of Action, National Environmental Action Plans or sector-wide pment policies use to consider disaster risk issues, including the impact of disasters on development?
- What mechanisms do national development policies use to consider disaster risk issues, including the impact of disasters on development?
- How can development policies and strategies integrate disaster risk reduction?
- What are the socio-economic, environmental and technological requirements for integrating disaster risk reduction in development policies?
- How can development policies and strategies integrate disaster risk reduction?
- What are the socio-economic, environmental and technological requirements for integrating disaster risk reduction in development policies?

Managing trade-offs

- What are the areas of trade-off between disasters and development?
- How are trade-offs between risk and efficiency objectives addressed in the design and appraisal of development policies?
- To what extent does addressing those tensions compromise the objective of disaster risk reduction?
- What mechanisms are used to promote consistency and coherence between development frameworks to achieve disaster risk reduction objectives?

Developing and applying risk reduction instruments

- What structural and non-structural measures are in place to reduce disaster risks?
- What are the impacts of specific risk reduction measures?
- Are there control mechanisms for land use applications, and urban and regional development planning?

- How effectively are development and zoning plans enforced in mapped hazard-prone areas?
- To what extent is technical knowledge applied in construction and engineering to reduce vulnerability?
- How effectively are technical construction standards applied in structural measures to mitigate disasters?
- How extensive is hazard resistant construction and infrastructure?
- To what extent are financial instruments utilized as a measure to control hazards and reduce the impacts of disasters?
- Are there tax or financing incentives for promoting greater use of engineered and disaster-resistant construction?
- What good public examples exist of incorporating sound mitigating measures in public infrastructure?
- Are there programmes to improve the application of disaster risk prevention techniques and instruments?
- How can compliance with regulations and standards be improved?
- What mechanisms are in place to enforce compliance with controls and directives?

Success Factors

1. Accentuating positive links between disasters and development and minimizing effects of potentially negative ones depend on adopting the livelihood approach by focusing on reducing vulnerability and enhancing resilience in both disaster risk reduction and development interventions.
2. Successful integration of disaster risk reduction in development depends on adopting a holistic approach that sees disaster risk reduction as a development issue and on explicitly implementing planned mechanisms to integrate them at the level of policies and programmes.
3. Effectively managing trade-offs by ensuring that development practices reflect societal risk preferences depends on adopting the participatory, consensual and integrative approach to development and disaster risk reduction.
4. Ensuring effective application of risk reducing instruments depends on:
    - balancing performance and incentive-based approaches with prescriptive standards whilst not compromising compliance and sanctions;
    - applying disaster risk reduction (DRR) principles in all types of development measures;
    - utilizing all development instruments in reducing disaster risks.

CHECKLIST 6

Integrating risk considerations in development investment decision-making

Key Principle

Sound development investment in the face of hazards depends on consideration of risk issues.

Guiding Principles

1. The project planning, design and implementation cycle presents a key entry point for integrating disaster risk reduction with development.
2. Information from the problem identification stage of disaster risk assessment provides input into the preliminary mission phase of the project cycle. This is the initial stage of the project cycle when the project formulation study is designed.
3. The hazard assessment of risk assessment is linked to the development diagnosis phase of project planning when project options are identified. Development diagnosis involves:
    - natural hazard evaluation;
    - identification of key issues;
    - collection of vulnerability and risk information;
    - generation of development strategies.
4. The vulnerability assessment and decision-making stages of risk assessment are linked to the project formulation phase of the project cycle. Project formulation involves:
    - formulation of development strategies;
    - production of hazard maps;
    - preparation of vulnerability and risk studies;
    - selection of best project options;
    - preparation of investment packages.
5. Operationalizing the linkages between risk assessment stages and project development cycle phases in integrating disaster risk reduction in project development involves:
    - evaluating threats from hazards and vulnerabilities facing the project;
    - analyzing the political and institutional frameworks;
    - identifying structural and non-structural measures for mitigating disaster risks facing the project;
    - determining the extent to which the execution of the project ensures that disaster risks facing the project will be ad dressed;
    - determining the viability of the project by analyzing the risks and benefits of the project..

Guiding Questions

Evaluating threats

- Do disasters from natural hazards occur in the project area?
- What are the disaster risk characteristics of the project area and community based on the risk identification process?

- Are project beneficiaries located where hazards occur?
- Is the location of the project adequate for reducing vulnerability?

Political and institutional framework

- To what extent are the state and the non-state public aware of the project disaster risks?
- Are development policies, programmes, institutional responsibilities and capacities, and regulatory norms adequate for reducing vulnerability and the risk of disaster in the project area?
- Does the government or the project promoters have a financial strategy for post-disaster reconstruction?

Structural and non-structural measures

- To what extent have natural phenomena been considered in the design of technological and physical components of the project?
- Are there technical norms for developing projects in the sector that include risk reduction measures?
- What project services, components or infrastructure are classified as critical or non-critical?
- Are there plans, such as contingency plans, that provide back-up services and emergency response?
- To what extent do territorial planning instruments allow determination of the risk characteristics of the project area?
- Does the project include information and communication, awareness, training and research components or programmes for risk reduction?

Project execution

- Are the disaster reduction responsibilities of project partners regarding mitigation activities and emergency response clearly identified and agreed?
- Does the management of the project have the requisite competence and orientation to guide the project to achieve its objectives in disaster risk reduction?
- Are there similar experiences with disaster risks that can inform the design of the project?
- To what extent are monitoring mechanisms in place to track progress in implementing the project and the achievement of its disaster risk reduction objectives?
- How effective are monitoring mechanisms in generating update information on new threats or changing conditions of existing ones?

Project viability

- To what extent do the natural hazard threats in the project area represent a risk for attaining project objectives?
- To what extent is the financial and economic viability of the project sensitive to disaster risks?
- Which of the project components or programmes are not viable or financially worthwhile when the cost of mitigating disasters is considered?

- What government interventions will it take to make the project viable?
- Are there reserve or contingency financing arrangements for the project in the event of disasters?
- To what extent is the project infrastructure and other components protected financially through insurance and similar risk spreading mechanisms?

Success Factors

Effectively addressing disaster risks in investment decisions depends on:

- effective location-specific evaluation of threats;
- responsive political and institutional framework that adequately addresses project risks;
- adopting a broad range of measures to prevent and mitigate disaster risks;
- gearing project implementation towards achieving DRR objectives;
- ensuring project viability by determining policy, management, financial and other requirements for minimizing project exposure to disaster risks.

CHECKLIST 7

Preparedness & Emergency Management

Key Principle

Achieving the objectives of mainstreaming disaster risk reduction depends on enhancing compensatory risk management to help reduce the legacy of accumulated risk.

Guiding Principles

1. The first step in enhancing the contribution of preparedness and emergency planning to disaster risk reduction is to improve the effectiveness of contingency planning.
2. Sound preparedness and contingency planning depends on effective early warning, regular rehearsal and practice of the plans, well-functioning communication and coordination systems, and adequate logistics and financial support.
3. The second step is to transform disaster assistance management practice towards the disaster risk reduction approach.
4. Emergency assistance is important but not sufficient for disaster risk reduction. It is necessary to strengthen the potential of emergency management to help address prospective disaster risks by transforming recovery activities to mitigation functions.
5. The recovery phase of disasters is an opportune period to review existing development to minimize potential risk accumulation from future development interventions.
6. Developing resilience through disaster recovery can be facilitated by innovative approaches to emergency response aimed at longer-term recovery. These approaches include cash for relief, need-targeted input programmes, and integrated food, health and functional education programmes.
7. Timely and comprehensive recovery can reduce vulnerability and promote development provided the transition stage after disasters is effectively managed.
8. Effective management of the transition stage depends on ensuring that local coping capacities begin to contribute to sustainable recovery when external relief support starts being phased out. This way, post-disaster development interventions can help build capabilities of people to cope with future disasters.

Guiding Questions

- To what extent is early warning and risk assessment used in planning disaster risk reduction interventions?
- What is the importance of contingency planning and other preparedness measures in pre-emergency functions of humanitarian agencies?
- Does the government promote comprehensive development programmes directed at areas affected by disasters?
- To what extent is financing of post-disaster development activities inadequate or delayed?
- What local capacities exist for development?
- How adequate are these capacities?
- Do disaster authorities have adequate experience, capacity and resources to undertake or coordinate comprehensive recovery programmes involving rehabilitation and reconstruction?
- Are there disaster contingency plans at national, local and sectoral levels?

- Are these plans regularly rehearsed?
- Do the plans have adequate capacity and resources to be effective in helping reduce disaster risks?
- What mechanisms do development agencies use in their disaster recovery programmes?
- Do post-disaster relief, rehabilitation and reconstruction adequately incorporate measures to prevent or mitigate future disasters?
- To what extent do disaster recovery activities integrate local and traditional coping strategies and knowledge?

Success Factors

Transforming emergency management towards the disaster risk reduction approach:

- is based on comprehensive risk knowledge and information;
- depends on effective, adequately resourced, publicly known and well coordinated contingency strategic, tactical and activity plans;
- depends on effectively managed disaster recovery programmes based on adequate institutional and local strategies and capacities aimed at strengthening local resilience.

CHECKLIST 8/1

Integrating Disaster Risk Reduction in Development Themes & Sectors

Poverty Reduction

Key Principle

Disaster risk reduction is a multi-thematic and multi-sectoral process ; mainstreaming it in development involves its integration in selected development themes or sectors including poverty reduction.

Guiding Principles

1. Poverty is the dominant cause of vulnerability to disasters in Africa because it weakens the capacity of the majority of the population of the continent to withstand disasters. Consequently, the poor are the most vulnerable to disaster effects and suffer the worst adverse impacts of natural and related hazards.
2. The poor are also susceptible to other livelihood hazards, partly because disaster losses often interact with and tend to worsen other livelihood threats. Thus, disaster risks and other development risks are mutually reinforcing. Consequently, both disaster risk reduction and poverty reduction focus on reducing the multiple sources of risks and empowering poor people to face them.
3. Disaster risk reduction helps safeguard human development, which involves protecting people from deprivation resulting from shocks induced by natural hazards. Dealing with disaster risk through poverty reduction interventions aims to build the overall capacity of people so that vulnerability can be better addressed.
4. The key to mainstreaming disaster risk reduction in poverty reduction is to implement interventions that minimize risk accumulation while resulting in reduction of poverty. Some specific measures include the following:
    - institutionalizing the application of risk sensitive-poverty assessment in development planning;
    - improving governance of poverty reduction interventions for them to contribute more to building the capacity of the poor to address vulnerability;
    - implementing sustainable livelihood measures that strengthen the livelihood assets of the poor, thereby building their capacities to address vulnerability;
    - improving the quality of growth to help the poor address accumulated disaster risks from past development interventions.

Guiding Questions

- What are the incomes, economic activities and living conditions of the poor? Is there adequate understanding of the poverty profile of the community at risk?
- What major hazards affect the poor?
- What are the types and sources of physical, environmental, economic and social vulnerability of the poor?
- How are major risks facing the poor determined or affected by natural hazards and the vulnerability of the poor to those hazards?
- What is the evidence of linkages between poverty alleviation, development and disaster reduction?
- How does poverty affect the onset, intensity and distribution of hydrometeorological, biological and environmental hazards in vulnerable communities?
- Has there been adequate analysis of how poverty causes or contributes to accumulation of risks?

- What aspects of poverty reduction interventions have the potential to increase vulnerability of the poor to natural hazards? How should disaster risk-enhancing components of poverty reduction programmes be dealt with?
- To what extent will poverty reduction reduce people's vulnerability to hazards on its own?
- Are additional interventions required?
- What is the comparative advantage of incorporating disaster risk reduction in development?
- How do disasters cause or exacerbate poverty?
- What intervention options can be adopted to minimize negative effects of disaster risks on poverty reduction programmes?
- Do the poor cope with disaster risks they face?
- What are strengths and weaknesses of the survival and coping strategies of the poor?
- What measures and options can be used to address unacceptable risks for the poor?
- Are there measures to expand the natural asset base of the poor, promote investment by the poor in environmental services or enhance the capacity of the poor to manage the environment?
- Are there measures to implement pro-poor economic reforms?
- Are there measures to increase the use of poverty assessment in development and disaster interventions?
- Are there measures targeting compensatory resource transfers to the poor?
- What trade-offs between risk and poverty reduction would the poor accept in poverty reduction programmes?
- What is the extent of private sector involvement in pro-poor programmes?
- How can greater private sector involvement be encouraged?

Success Factors

1. Effective integration of DRR in development depends on recognizing that the basic DRR principle of strengthening resilience is an approach to reducing livelihood risks that can be applied to sectoral and thematic development policies and programmes.
2. Integration of DRR also depends on:
    - the mindset and attitudes of partners and stakeholders;
    - information on and awareness of risk reduction principles and practice;
    - methodological compatibility, applicability or ease of integration approaches;
    - management of the integration processes.

CHECKLIST 8/2

Integrating Disaster Risk Reduction in Development Themes & Sectors

Agricultural & Rural Development

Key Principle

Disaster risk reduction is a multi-thematic and multi-sectoral process ; mainstreaming it in development involves its integration in selected development themes or sectors including agriculture and rural development.

Guiding Principles

1. Agricultural and rural livelihoods depend significantly on the natural resource base. Consequently, several effects of natural hazards and climate change affect agriculture and rural development.
2. Natural hazards and disasters impact agriculture through three main pathways, namely (1) input systems (including biological inputs), (2) services (such as processing and marketing infrastructures), and (3) management practices (such as water use and disease control).
3. Negative agriculture and rural development practices exacerbate some hazards. Therefore, mainstreaming disaster risk reduction in agriculture and rural development should aim to reduce the impact of disasters on the sector and the negative effects of sectoral practices on disaster risks.
4. Being the dominant economic sector, developments in the agricultural and rural sector have major implications for the vulnerability of livelihoods to disaster risks in African countries. Reducing rural poverty and improving rural livelihoods depends strongly on reducing the risk to agriculture and rural development from disasters.
5. Minimizing negative cause and effect links between disasters and agriculture involves interventions in technology, institutions, information and markets aimed at preventing and mitigating disaster risks.

Guiding Questions

- What natural hazards affect agriculture and rural development?
- What are the impacts of land degradation on long-term sustainable productivity in agriculture and rural livelihoods?
- What are the likely effects of climate change on agriculture?
- What is the structure of rural economies and society?
- What factors in rural areas determine vulnerability to hazards?
- How do exogenous factors such as rural-urban migration, poor rural infrastructure and HIV/AIDS configure risk to natural hazards in rural areas?
- How does flawed development affect vulnerability and risk in rural areas?
- What agricultural practices adversely affect environmental and natural resources and contribute to disasters?
- How does the performance of agriculture and rural development impact factors that determine the vulnerability to hazards?
- What factors contribute to loss of adaptive capacity in rural areas?
- What livelihood strategies do the rural poor employ to reduce the risk of disasters?
- How do national and local development policies promote an integrated approach to agriculture and rural development?

- How do policies and programmes for agriculture and rural development take into account issues of hazards and disaster risks that negatively impact rural environment and livelihoods?
- How do economic policies affect the values and use of resources for agriculture and rural development?
- How do land tenure and related policies affect sustainable resource use in agriculture and the rural economy?
- Are there perverse incentives that encourage unsustainable exploitation of natural resources in agriculture and rural development?
- How do policies promote sustainable water resource use in agriculture and rural livelihoods?
- Do agriculture and rural development policies contain specific measures to combat drought, land degradation, desertification and climate change?
- How are conservation-oriented practices promoted to permit sustained higher productivity and incomes from agriculture and rural livelihoods?
- What role does the private sector play in contributing to sustained increase in productivity and employment in agriculture and rural development?
- How is the capacity of rural communities, entrepreneurs and service providers being strengthened to support sutainable agriculture and rural development?
- To what extent do policies, programmes and technologies emphasize women-friendly approaches to agriculture and rural development that positively impact the environment?
- How resilient is agricultural infrastructure to disasters?
- Are physical development and land use planning regulations equally enforced in both rural and urban areas?
- How do policies promote effective and viable rural financial intermediation as a means to mitigate disaster risks in agriculture and rural development?
- To what extent does research on agriculture-disaster links take place? Does research promote practices that develop the sustainable use of resources in agriculture and rural development?
- How does farmer education and agricultural extension foster the adoption of risk-sensitive agricultural practices in rural areas?
- What institutional arrangements and tools are used to track the changing relations between socio-economic, environmental and disaster risks in rural areas?

Success Factors

1. Effective integration of DRR in development depends on recognizing that the basic DRR principle of strengthening resilience is an approach to reducing livelihood risks that can be applied to sectoral and thematic development policies and programmes.
2. Integration of DRR also depends on:
   - the mindset and attitudes of partners and stakeholders;
   - information on and awareness of risk reduction principles and practice;
   - methodological compatibility, applicability or ease of integration approaches;
   - management of the integration processes.

CHECKLIST 8/3

Integrating Disaster Risk Reduction in Development Themes & Sectors
Environmental Management

Key Principle

Disaster risk reduction is a multi-thematic and multi-sectoral process ; mainstreaming it in development involves its integration in selected development themes or sectors including environmental management.

Guiding Principles

1. Environment and disasters are closely linked. Several environmental factors, such as land degradation and desertification, ecosystem loss, environmentally related diseases, pollution, and climate variability and change, act as both hazards and factors of vulnerability.
2. Environmental degradation can cause or worsen disaster risks alone or in combination with other natural hazards. For example, environmental degradation can affect biological hazards such as epidemics, hydrometeorological hazards and some geological hazards, including landslides. Inadequate environmental protection also damages the natural resource base, further weakening the ability of people and ecosystems to withstand hazards.
3. In general, environmental management tools do not systematically incorporate trends in hazards and vulnerabilities. However, these environmental tools were designed from a risk management perspective and can be adapted for identifying disaster risks in project development.
4. Disaster risks arising from environmental factors can be identified and analyzed using adapted environmental risk assessment (ERA).
5. In addition, to help determine what measures to take to address disaster risk from environmental protection measures, socio-economic gains from environmental management activities can be demonstrated using such tools as ERA and strategic EIA (environmental impact assessment).

Guiding Questions

- What factors affect environmental change?
- What factors determine the relationships between the environment, poverty, sustainable development and disasters?
- How do environmental factors cause or impact natural hazards?
- How do natural hazards cause or impact the environment?
- What factors cause human vulnerability to environmental change?
- What are the environmental consequences of disaster reduction interventions?
- How effectively do they address key environmental management issues such as drought and land degradation, wetland conservation, marine, coastal and freshwater resources, climate change, and cross-border management of natural resources?
- How do environmental policies, legislation, institutions and standards help address requirements for disaster risk reduction?
- What environmental management tools can be applied to reduce vulnerability to disaster risks?
- To what extent does the disaster risk reduction community anticipate environmental requirements under environmental legislation?
- To what extent do environmental policies and regulations promote understanding and application of key environmental management principles?

- How are environmental valuation techniques applied to analyze disaster risk reduction interventions?
- To what extent can environmental management interventions cause, exacerbate or reduce disaster risks?
- What win-win options exist to simultaneously address environmental degradation and disaster risk reduction?
- To what extent are environmental benefits to be gained from disaster risk reduction activities determined and pursued?

Success Factors

1. Effective integration of DRR in development depends on recognizing that the basic DRR principle of strengthening resilience is an approach to reducing livelihood risks that can be applied to sectoral and thematic development policies and programmes.
2. Integration of DRR also depends on:
    - the mindset and attitudes of partners and stakeholders;
    - information on and awareness of risk reduction principles and practice;
    - methodological compatibility, applicability or ease of integration approaches;
    - management of the integration processes.

CHECKLIST 8/4

Integrating Disaster Risk Reduction in Development Themes & Sectors
Water Resource Management

Key Principle

Disaster risk reduction is a multi-thematic and multi-sectoral process ; mainstreaming it in development involves its integration in selected development themes or sectors including water resource management.

Guiding Principles

1. Water resources and disasters are linked in many ways :
    - several natural hazards arise from hydrological factors;
    - disasters triggered by natural hazards can destroy or severely damage water infrastructure, affecting water supply and reducing its quality. For example : drought can reduce surface or groundwater flows, flood and volcano can contaminate water quality, and earthquakes can divert groundwater;
    - water resource degradation causes or worsens disaster risks arising from natural hazards: for example, degradation of watersheds can adversely induce or exacerbate river basin flooding or landslides;
    - unsustainable water resource utilization also weakens the resilience of communities at risk.
2. Because of these reasons, it is important to reduce risks to water resources in a multi-hazard context.
3. Water risks emanate from many sectors, sources and competing uses; water resource management is inter-sectoral and multi-disciplinary. Therefore, any approach to understanding and managing water risks must be comprehensive and integrated.

Guiding Questions

- What are the major types of water-related hazards? What are their risk characteristics?
- How do hydrological processes contribute to human exposure and vulnerability?
- To what extent do water resource management interventions cause or exacerbate disaster risks?
- How are good governance principles applied in water resource management?
- Are there water sector policies, legislation and institutional arrangements?
- To what extent does the institutional framework for water resource development promote increased water productivity and supply development, including through conservation and efficiency in water use?
- Are policies and options for water resource management analyzed in an integrated and comprehensive manner that incorporates disaster risk considerations and takes into account relevant technical, economic, social, environmental and political concerns?
- To what extent is the development of surface and groundwater sources integrated?
- Are decisions on water resource development and allocation based on economic cost recovery principles that balance the competing interests of varied stakeholders?
- Are relevant sectors and stakeholders involved in water resource development?

- How are communities and beneficiaries involved in managing water resources?
- Is the enabling environment conducive for effective public-private partnerships in water resource management?
- Has water resource management been decentralized to correspond to the level of hydrological boundaries and watersheds?
- Are there river-basin development initiatives that cover countries sharing common water resources?
- How are trade-offs among competing interests for human use, settlement consumption and ecosystem sustenance to be addressed?
- How are risks from the various components of the process chain in undertaking integrated water resource development – involving production, processing, distribution, utilization, conservation and recycling - balanced?
- Is there a system for water information, including data and knowledge acquisition on a long-term basis?
- Does the information system include adequate mechanisms for monitoring the quantity and quality of water resources?
- Are traditional and local methods of water risk management incorporated in water resource development interventions?

Success Factors

1. Effective integration of DRR in development depends on recognizing that the basic DRR principle of strengthening resilience is an approach to reducing livelihood risks that can be applied to sectoral and thematic development policies and programmes.
2. Integration of DRR also depends on:
    - the mindset and attitudes of partners and stakeholders;
    - information on and awareness of risk reduction principles and practice;
    - methodological compatibility, applicability or ease of integration approaches;
    - management of the integration processes.

CHECKLIST 8/5

Integrating Disaster Risk Reduction in Development Themes & Sectors
Land Use Planning

Key Principle

Disaster risk reduction is a multi-thematic and multi-sectoral process ; mainstreaming it in development involves its integration in selected development themes or sectors including land use planning.

Guiding Principles

1. Land use planning is an effective tool for guiding rural and urban development and managing risks associated with them. Also, a well-prepared and risk-sensitive land use plan is a risk reduction tool that also facilitates disaster response and recovery.
2. However, effective land use planning is challenging because of the multiple interests, uses and sectors associated with land.
3. Land use planning addresses spatial issues connected with the physical vulnerability of communities. Therefore, within the context of disaster risk reduction, land use planning is essentially a form of risk assessment.
4. Consequently, mainstreaming disaster risk reduction into the land use planning process involves assessing land risks and applying strategic and integrated measures to meet land management objectives.
5. Integrating risk reduction in land use planning involves three phases, namely:
    - establishing the planning background;
    - formulating the planning strategy and the strategic land use plan;
    - developing the implementation plan.
6. The planning background stage involves planning the entire process of integrating disaster risk reduction in land use, including identifying risks and reviewing the existing institutional framework.
7. Formulating the planning strategy and the strategic land use plan involves analyzing risks, determining strategic directions or end-uses of the land management plan, and designing actual strategic land use and development plans.
8. Strategic land use plans are very crucial because they establish planning and development strategies for the area and provide guidance on how to develop programmes to implement the strategic plans.
9. Developing the implementation plan involves determining the tools to be used to put strategic land use and development plans into operation.
10. The developed strategic land use plans can be implemented through land use schemes at regional and local levels, development regulations, ground management practices, and education and compliance enforcement measures.

Guiding Questions

- Does physical development occur in locations of high risk in the planning area?
- Is there adequate understanding of the relationships between natural hazards, vulnerability and communities in the planning area?
- Is knowledge of the resource background of communities adequate?
- How does land use planning contribute to identification of acceptable risks in disaster risk reduction interventions?

- How extensive is the use of risk mapping in land use planning?
- To what extent do the population, buildings, land use activities, infrastructure and the environment in a planning area contribute to risk or are at risk from disasters?
- To what extent do interventions to reduce risk interfere with natural processes or result in an increase in vulnerability to hazards?
- What is the regulatory context for land use?
- What policies and legislation on land use planning impact disaster risk reduction?
- Do planning policy and legislation contain goals for community safety and risk reduction?
- How does the institutional framework for development promote a culture of risk reduction in land use planning?
- How does land use planning utilize spatial controls, design guidelines, performance standards and specific criteria to address disaster risks?
- How extensively are performance-based approaches used as the basis for directing development plans and codes, instead of prescriptive standards?
- To what extent do public and private landowners comply with planning scheme requirements?
- Are current planning standards applied where there is change of use or purpose of existing development?
- To what extent are outdated risk thresholds still being applied in land use plans?
- How do approval processes in land use planning ensure that disaster risk reduction issues are addressed for whole development rather than individual components?
- Does risk analysis in land use planning emphasize identification of conflicting land uses and determination of land capability? To what extent does the strategic land use and development plan take a long-term view, focus on addressing environmental concerns and recognize cultural and local sensitivities?
- How does the land use planning process address trade-offs in strategic directions, such as between environmental protection and open space and recreation?

Success Factors

1. Effective integration of DRR in development depends on recognizing that the basic DRR principle of strengthening resilience is an approach to reducing livelihood risks that can be applied to sectoral and thematic development policies and programmes.
2. Integration of DRR also depends on:
    - the mindset and attitudes of partners and stakeholders;
    - information on and awareness of risk reduction principles and practice;
    - methodological compatibility, applicability or ease of integration approaches;
    - management of the integration processes.

CHECKLIST 8/6

Integrating Disaster Risk Reduction in Development Themes & Sectors

Infrastructure Development

Key Principle

Disaster risk reduction is a multi-thematic and multi-sectoral process ; mainstreaming it in development involves its integration in selected development themes or sectors including infrastructure development.

Guiding Principles

1. Infrastructure is part of the physical asset base of people's livelihoods. However, the increasing size, complexity and interconnectedness of infrastructure, particularly those providing critical services, pose challenges for reducing risks to them from disasters.
2. Critical infrastructure are those physical and information technology facilities, networks and assets whose disruption or destruction from natural hazards or other causes would seriously impair people's lives and livelihoods. These often comprise infrastructures in the following sectors: government, energy and utilities, communications, services, transportation and safety.
3. Since complete security or assurance is neither feasible nor affordable, the priority task in reducing the risk of disaster to infrastructures is to ensure the protection and safety of these critical services. However, this must consider the links between critical and non-priority infrastructure.
4. Developing and managing hazard-resistant infrastructure is a physical risk reduction tool. It contributes to reducing structural vulnerability through risk measures that prevent damage, limit consequences, hasten recovery or reduce vulnerability.
5. Integrating risk reduction in infrastructure development and management helps to prevent the potential for disruption of reliable services from the impact of natural hazards.
6. However, it is also necessary to prevent physical failure of infrastructure installations from causing disasters, such as upstream dam failure resulting in downstream flooding. Hence, mainstreaming disaster risk reduction in infrastructure development should aim at minimizing the negative effects of disasters on infrastructure, and vice-versa.

Guiding Questions

- How susceptible are various infrastructure systems to hazard events?
- Is there adequate understanding of the major natural hazards that pose a risk to infrastructure?
- Are threat, incident and vulnerability analyses of infrastructure regularly conducted?
- What current and potential procedures are available for conducting infrastructure risk assessment?
- What is the methodology for assessing economic losses to infrastructure from disasters?
- Is the assessment of the potential of loss of infrastructure services adequate?
- What are the procedures to determine criticality of infrastructure assets, prioritize those assets and integrate them with other critical infrastructure?
- How does risk analysis prioritize risks on the basis of criticality and threat rating criteria?
- What are the impact ratings of various hazards for each asset?
- What is the disaster survivability of key and critical infrastructure?
- What is the potential for cascading effects from disruption of infrastructure services due to disasters?

- How interdependent are critical infrastructure systems?
- Is there a coordinated approach to the provision of infrastructure that meets requirements for disaster risk reduction?
- Does the enabling environment provide policy direction, incentives and sanctions to promote infrastructure safety and institute risk standards?
- What is the extent of development and enforcement of codes, policies and procedures to protect public safety?
- Are there safety programmes for non-engineered buildings?
- What is the extent of utilizing unique post-disaster re-development opportunities to improve safety of infrastructure through improved engineering and construction?
- What mechanisms are used to maintain appropriate standards of reliability of critical infrastructure?
- What is the status of present infrastructure protection programmes?
- Is there a national critical infrastructure assurance programmes, including protection and emergency preparedness measures?
- Do infrastructure assurance programmes adopt an all-hazards approach?
- Do organizations have formal critical infrastructure management plans and procedures?
- Is there adequate coordination of critical infrastructure protection responsibilities among various partner organizations?
- Is there a national alert system for critical infrastructure?
- What information distribution processes exist for sharing information on disaster threats to infrastructure?
- What mechanisms are used to raise awareness of critical infrastructure issues?
- Is there a re-orientation of the mindset of authorities, professionals and the public towards viewing infrastructure as an interdependent system of physical development and institutions providing services vital for society and ecosystems?

Success Factors

1. Effective integration of DRR in development depends on recognizing that the basic DRR principle of strengthening resilience is an approach to reducing livelihood risks that can be applied to sectoral and thematic development policies and programmes.
2. Integration of DRR also depends on:
    - the mindset and attitudes of partners and stakeholders;
    - information on and awareness of risk reduction principles and practice;
    - methodological compatibility, applicability or ease of integration approaches;
    - management of the integration processes.

CHECKLIST 8/7

Integrating Disaster Risk Reduction in Development Themes & Sectors

Gender Issues

Key Principle

Disaster risk reduction is a multi-thematic and multi-sectoral process; mainstreaming it in development involves its integration in selected development themes or sectors including gender issues.

Guiding Principles

1. Gender factors determine development patterns, vulnerability to natural hazards, coping strategies and community response to disasters. For example:
    - gender bias in access to productive resources and capital formation increases women's vulnerability to hazards in Africa, partly by reducing their coping capacities.
    - gender inequalities exacerbate the suffering and discrimination associated with disasters and increase inefficiencies in reducing disaster risks.
2. There are development costs to gender bias and clear growth benefits from reversing gender inequality, which would help reduce vulnerability of people to natural hazards.
3. Mainstreaming gender in disaster risk reduction is the process of fully considering and integrating the concerns of women and men in policies and programmes to prevent and mitigate disasters.
4. It depends on identifying gender differences in vulnerabilities and coping strategies, and determining gender-appropriate measures for risk reduction.
5. However, enhancing gender aspects of disaster risk reduction is not about simply increasing women's chances of survival and resilience to livelihood risks. It is about balancing the entitlements and responsibilities of both males and females, and the terms of women's participation in the disaster risk reduction process.
6. Integrating gender considerations in risk reduction involves interventions that expand women's livelihood opportunities and reduce their vulnerability to hazards. Some specific interventions to achieve this include:
    - promoting the application of gender mainstreaming tools in disaster reduction programmes;
    - expanding opportunities for women participation in decision-making and leadership roles in disaster management organizations and disaster risk reduction programmes;
    - ensuring equitable access by both women and men to disaster risk reduction interventions, particularly post-disaster entitlements;
    - increasing women's access to disaster risk management information, including through public awareness on the gender perspective in disaster reduction;
    - strengthening comparative research and analysis on gender aspects of disaster risk configuration.

Guiding Questions

- How are risk problems placed within the context of broader gender and development considerations?
- Is gender-based risk assessment included at the appraisal stage of development and disaster reduction interventions?

- Are the relative subjective risk perceptions of women and men taken into account during risk assessment?
- How do gender relations affect natural hazard patterns?
- Does risk assessment recognize the occurrence of frequent and regular small-scale disasters?
- What is the gender division of labour and access and control of assets?
- How do gender relations affect disaster risk accumulation processes, such as demographic trends, urbanization, rural deprivation, social exclusion and environmental degradation?
- What are the relative responsibilities of men and women during and after disasters?
- Are the responsibilities of women amplified during disasters?
- Are women and girls more at risk during disasters than males and boys?
- How do gender-based inequalities interact with other social factors - such as family and community care responsibilities - to place women and girls at high risk?
- What gender differences in coping capabilities exist?
- Are there gender-based differences in access to disaster response services?
- How do these differences impact the flexibility with which women can react to potential disaster situation?
- To what extent are development opportunities arising from post-disaster reconstruction interventions used to transform disaster recovery activities towards gender balance in disaster risk reduction?
- Are there programmes in place to strengthen the livelihood capacities of women and men during disaster recovery?
- Is there a rights-based approach to development and disaster risk reduction?
- Is there gender balance in participation in all stages of the disaster risk reduction process?
- How can women participation in decision-making on disaster risk reduction issues be enhanced?
- Are disaster risk communication messages and programmes tailored to gender needs?
- Does research in disaster risk reduction cover gender-disaggregated risk parameters and risk management using gender-disaggregated data and gender-specific tools?

Success Factors

1. Effective integration of DRR in development depends on recognizing that the basic DRR principle of strengthening resilience is an approach to reducing livelihood risks that can be applied to sectoral and thematic development policies and programmes.
2. Integration of DRR also depends on:
    - the mindset and attitudes of partners and stakeholders;
    - information on and awareness of risk reduction principles and practice;
    - methodological compatibility, applicability or ease of integration approaches;
    - management of the integration processes.

CHECKLIST 8/8

Integrating Disaster Risk Reduction in Development Themes & Sectors

HIV/AIDS & Other Health Issues

Key Principle

Disaster risk reduction is a multi-thematic and multi-sectoral process; mainstreaming it in development involves its integration in selected development themes or sectors including HIV/AIDS and other health issues.

Guiding Principles

1. Mainstreaming disaster risk reduction in health implies reducing disaster risk arising from disease epidemics and minimizing the health impacts of disasters. This is because epidemics of HIV/AIDS, malaria and the other major diseases constitute disasters themselves.
2. In turn, disasters from natural hazards, climatic conditions and other shocks can create favourable environmental conditions, which together with mass population movements, can lead to epidemics.
3. Consequently, issues pertaining to disaster and health reflect a complex interaction of climatic, vector-specific, political, demographic and development-based factors.
4. The risk characteristics of various epidemic diseases differ. However, some generic issues of risk reduction can be applied to a variety of disease situations. The following are among measures that can be implemented to mainstream disaster reduction activities in health management:
    - adopting a multi-hazard approach to disaster risk management that includes epidemics and other biological hazards;
    - re-orienting the current focus on post-epidemic response towards the culture of prevention in managing health effects of disasters;
    - integrating health concerns in hazard control measures, such as health implications of large open flood control water channels;
    - developing strategies for epidemic preparedness and emergency action;
    - developing integrated monitoring systems that include early detection of epidemics based on epidemiological data, early warning system based on meteorological data, and long-range forecasting;
    - integrating health information collection and monitoring in general vulnerability information systems, such as environmental information systems
    - monitoring and addressing long-term factors of vulnerability to epidemics, such as health care entitlement, immunity status, nutrition level, sexual behaviour, land use patterns, population movement, and status of routine control.

Guiding Questions

- What is the current incidence and prevalence of the disease?
- Why is the disease a disaster risk problem?
- What populations and locations are at risk from the disease?
- How severe is the disease burden on affected populations?
- How do natural hazards contribute to the disease burden?
- What factors have the potential to increase the incidence and public health impact of infectious disease threats?
- Does the monitoring of the disease include early detection variables, seasonal transmission risk indicators and long-term vulnerability factors?

- Is there routine monitoring of risk assessment and surveillance indicators?
- Have health, hazard indicators, socioeconomic changes and other factors of vulnerability been integrated in disease risk assessment models?
- Does health risk assessment cover cross-border risks?
- What is the transmission dynamics and potential of the disease?
- How vulnerable is the population to transmission potential from variations in exposure or coping ability?
- What is the expected outcome of the epidemic transmission potential in relation to the vulnerability of the population?
- What is the level of awareness of the risk of epidemics at local and national levels?
- What is the ability of public health units and allied institutions to provide emergency services during disasters?
- How vulnerable are these services to disasters?
- Are there policies and programmes to tackle health issues during disasters?
- How effective are activities and measures that individuals, communities and institutions take to reduce the burden of the disease?
- Does the prevention and control of the disease burden cover the use of multiple mitigation measures?
- What is the relative effectiveness of vector control, sanitation, education and other control measures in reducing the epidemic potential of the disease?
- What measures are taken to reduce case fatality rates by reducing constraints on health care seeking by the affected population?
- To what extent are evidence-based policies and strategies used to prevent, control and eliminate epidemic diseases?
- How is local and traditional knowledge and experience used to guide interventions aimed at reducing the risk of epidemic disease burden?
- Are there training programmes and information systems to enhance the capacity of individuals, communities and institutions to reduce the risk of epidemic disasters?

Success Factors

1. Effective integration of DRR in development depends on recognizing that the basic DRR principle of strengthening resilience is an approach to reducing livelihood risks that can be applied to sectoral and thematic development policies and programmes.
2. Integration of DRR also depends on:
    - the mindset and attitudes of partners and stakeholders;
    - information on and awareness of risk reduction principles and practice;
    - methodological compatibility, applicability or ease of integration approaches;
    - management of the integration processes.

CHECKLIST 8/9

Integrating Disaster Risk Reduction in Development Themes & Sectors

Climate Change Adaptation

Key Principle

Disaster risk reduction is a multi-thematic and multi-sectoral process; mainstreaming it in development involves its integration in selected development themes or sectors including climate change adaptation.

Guiding Principles

1. The impacts of climate change in Africa are likely to encompass the following:
    - increase in drought, flood, windstorms and other extreme climate phenomena;
    - changes in rainfall, river sensitivity and more intense land use;
    - sea level rise leading to coastal erosion and flooding.
2. Given the relatively undeveloped state of Africa, climate change will worsen Africa's vulnerability to natural hazards, quite apart from exacerbating their effects.
3. Also, mitigation interventions are economically unsustainable and currently ineffective against climate change effects.
4. Consequently, mainstreaming risk assessment and reduction in climate change adaptation should aim to enhance the adaptive capacities of people to assess and to reduce climate change risks.
5. Climate change outcomes impact nearly all development sectors as well as several natural processes. Also, climate change issues are subject to a large degree of uncertainty. Hence, reducing the risk of disasters from climate change adaptation involves adopting a multi-hazard and iterative approach.
6. Specific interventions to apply to reduce the risk of disasters from climate change will depend on the sector and the climate change impact of concern. However, the following will help mainstream disaster risk reduction in climate change adaptation interventions:
    - increasing the use of vulnerability and adaptation assessment in development activities;
    - reducing vulnerability to sustain livelihoods;
    - improving the management of climate-sensitive natural resources and economic production systems;
    - promoting economic diversification to reduce over reliance on climate-sensitive primary industries;
    - increasing the resilience of infrastructure and physical development;
    - restructuring risk sharing through improved financial intermediation and mechanisms;
    - mainstreaming climate issues and adaptation into policies, programmes and budgets;
    - strengthening information and communication on climate change effects and adaptation options;
    - enhancing inter-country cooperation to improve management of shared resources.

Guiding Questions

- What are the extent, probability and effect of climate change-related damage and losses?
- What is the potential risk impact of climate change effects, based on scenarios of future climate change, population growth and other factors?
- How are effects of climate change in various sectors taken into account?
- What are the determinants of adaptive capacity?
- What initial survey techniques are used to identify potential adaptive options?
- What methods are used to assess adaptation strategies across several sectors?
- Is the uncertainty factor in climate change analysis adequately understood and considered in identifying adaptation measures?
- How does the enabling environment promote strengthening of climate change adaptation measures?
- Do governments implement development policy and budget processes that anticipate effects of climate change?
- To what extent do adaptation interventions incorporate risk transfer and spreading mechanisms?
- Is the capacity of individuals, organizations and authorities at the community, local, national, sub-regional and continental level developed to institutionalise adaptive management?
- Is the development of risk management capabilities based on an enhanced science and technology foundation?
- Do adaptive management strategies build on the foundation of indigenous and local knowledge systems, and traditional wisdom and coping and survival practices?
- Are programmes for climate change adaptation based on the precautionary principle?
- How developed is the information, analysis and planning base for instituting adaptive risk management at local and national levels?
- Are systematic research and analysis efforts continuing to identify and understand individual, country-level and time-phased effects of climate change?
- To what extent are national adaptation programmes linked to international initiatives?

Success Factors

1. Effective integration of DRR in development depends on recognizing that the basic DRR principle of strengthening resilience is an approach to reducing livelihood risks that can be applied to sectoral and thematic development policies and programmes.
2. Integration of DRR also depends on:
   - the mindset and attitudes of partners and stakeholders;
   - information on and awareness of risk reduction principles and practice;
   - methodological compatibility, applicability or ease of integration approaches;
   - management of the integration processes.

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