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ENVIRONMENT AND ENERGY

SCREENING TOOLS AND GUIDELINES TO SUPPORT THE MAINSTREAMING OF CLIMATE CHANGE ADAPTATION INTO DEVELOPMENT ASSISTANCE – A STOCKTAKING REPORT

United Nations Development Programme
Environment & Energy Group
304 East 45th Street
New York, NY 10017
www.undp.org/climatechange

Production coordination: Marjolaine Côté, Project Specialist, UNDP Energy and Environment Group

Authors: Anne Olhoff, Senior Economist, and Caroline Schaer, Research Assistant, UNEP Risø Centre on Energy, Climate and Sustainable Development.

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Climate change is the defining challenge of our time. It will affect the poor and vulnerable first and foremost. The world's response to climate change today will bear directly on the development prospects of a large part of the world's population, particularly those who contributed least to the cause of climate change.

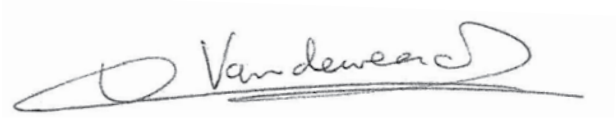
Integrating climate change considerations in national and sectoral decision-making processes and in development assistance programmes is critical to meeting this challenge. Mainstreaming climate change, by integrating the risks and opportunities it poses, can help ensure that our efforts today continue to advance development even in the face of climate change.

The donor community has elaborated myriad climate risk screening tools and mainstreaming guidelines in the past decade to meet this goal. The result of this effort is a wide array of methodologies with different approaches, geared to audiences covering different levels of activity and showcasing a variety of practical applications. This proliferation of available tools and guidelines calls for an assessment of their respective strengths and identification of any overarching gaps.

It is within this context that the United Nations Development Programme (UNDP) Energy & Environment Group called for a study to take stock of the climate risk screening tools, mainstreaming guidelines, and portfolio screening experience from the donor community. Under the umbrella of the project "Integrating climate change risks into UN country programming and national development processes", which received funds from the Government of Spain, UNDP commissioned the UNEP-Risø Centre to prepare this report. This publication is therefore a welcome example of collaborative inter-agency work which builds on each others' comparative strengths and complementary mandates.

I am pleased to note that the report is already demonstrating its relevance and usefulness within the UN system. In particular, the UN Development Group Task Team on Climate Change and Environmental Sustainability is drawing on this early work in preparing its upcoming Guidance Note on Including Climate Change Considerations in the Country Analysis and the UN Development Assistance Framework, which will be used by UN Country Teams.

We hope that this assessment of tools and guidance that support mainstreaming will be widely used by development practitioners within and beyond UNDP.



Veerle Vandeweerd
Director, Environment & Energy Group
Bureau of Development Policy
UNDP

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1. INTRODUCTION

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The linkages between development and climate are by now commonly recognized. Hand in hand with this recognition, the need to integrate or 'mainstream' climate change adaptation into development planning and decision-making processes has gradually emerged. In this report, we adopt the USAID (2009, p.47) definition of mainstreaming as "the integration of climate concerns and adaptation responses into relevant policies, plans, programs, and projects at the national, sub-national, and local scales."

A range of climate change adaptation activities and related climate change adaptation mainstreaming efforts have been undertaken over the past 5-10 years, presenting a wealth of information and insights on the subjects. At one end of the spectrum, we find the generic mainstreaming guidance documents attempting to conceptualize a framework for mainstreaming at the various levels (national, sectoral, local, programme and project) rather than providing detailed, operational instructions on how to implement mainstreaming in practice. Efforts in this category include the recently published report: *Policy Guidance on Integrating Climate Change Adaptation into Development Co-operation*, by the Organisation for Economic Co-operation and Development (OECD 2009). The report not only outlines a conceptual framework for addressing mainstreaming at all levels, but also presents a rare example of a coordinated effort on mainstreaming and climate change adaptation led by the Joint OECD Environment-Development Task Team with inputs from a total of 29 countries and institutions.

At the other end of the spectrum, we find tools and methodologies developed to support specific components of mainstreaming. Though these, again, are at different levels of mainstreaming and exhibit significant variation – say in terms of breadth of detail or the extent to which they are readily operational in practice. Climate risk approaches, exercises and screening tools figure prominently at this end of the spectrum.

Apart from the OECD Policy Guidance, the above-mentioned efforts have to a large extent been undertaken independently by various national and international NGOs, donors, and institutions. They have different rationales and objectives and follow numerous approaches. In addition, in the absence of a common terminology for key climate change adaptation and mainstreaming terms, the same terms are frequently used differently in the variety of mainstreaming guidance documents, tools and methodologies used to support specific components of mainstreaming.

It is subsequently not straightforward even for experts within the field of climate change adaptation and development – and much less so for development policy and project planners in developing countries – to establish a clear picture of what mainstreaming is, let alone how it can be made operational, supported, and strengthened at the various national and sub-national levels. It is equally challenging to assemble an overview of available tools and resources to support various components of mainstreaming, their differences and similarities, and their comparative strengths and limitations. The purpose of this stocktaking report is to shed light on these issues.

There are several examples of efforts that have addressed some of the issues above, but they have primarily either targeted a specific level of mainstreaming or a sub-set of climate risk screening exercises. For example, Klein et al. (2007) provides a detailed assessment of the portfolio screening exercises conducted by different bilateral and multilateral donor agencies and identifies opportunities for donor agencies to expand their focus on the links between development and climate. On at least two occasions, workshops have furthermore been held to bring together key stakeholders (researchers and practitioners) to discuss and exchange climate change adaptation tools, approaches and experiences (IISD[1] 2007 and GTZ[2] 2009). Both workshops provided summaries of available tools and guidance, but a comparative overview and analysis of climate risk screening efforts has so far not been undertaken, with the mainstreaming context of tools and guidance left underexplored.

This report is structured in the following way: Section 2 explores the rationale for mainstreaming, outlines the main components necessary to operationalize mainstreaming, and indicates the various relevant levels and associated entry points to consider in the mainstreaming process. After this, Section 3 discusses and illustrates how key climate change adaptation and mainstreaming concepts are defined and used – both in relevant literature and in practice – as well as how they relate to development. Whereas Section 2 and 3 take the concept of mainstreaming as the point of departure, Sections 4 and 5 focus on climate risk screening methods tools and guidance. Section 4 explores how climate risk screening efforts can be categorized in relation to mainstreaming, plus the components of mainstreaming that are addressed in the variety of climate risk screening tools and guidance. A comparative overview and analysis of climate risk screening tools and guidance is provided in Section 5, followed by brief conclusions in Section 6.

[1] International Institute for Sustainable Development (IISD)

[2] Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ). English translation: German society for technical co-operation

2. MAINSTREAMING CLIMATE CHANGE ADAPTATION

Sophia Paris/UNDP (Haiti)

2.1. The Rationale for Climate Change Adaptation Mainstreaming

Climate change generates both risks and opportunities[3]. These are, however, unevenly distributed across regions, countries, population groups and individuals. Furthermore, the capacity of individuals and societies – to plan for and adapt to climate change, to take advantage of potential opportunities, and to deal with potential risks – varies significantly worldwide. The available research and case studies uniformly confirm that developing countries face the largest impacts and risks associated with climate variability and change and simultaneously have the highest vulnerability and lowest capacity to deal with such impacts and risks. There is also a growing body of evidence that the additional burden of climate variability and change falls disproportionately on the poorest and most vulnerable population segments and countries within the group of developing countries[4].

The need to integrate or mainstream climate change adaptation into development planning and in decision-making processes has become increasingly apparent with the general recognition of the linkages between development and climate change adaptation[5], plus their significance as reflected in:

1) The scientific evidence on climate variability and change;
2) The observed current and projected future impacts of climate variability and change on natural as well as socio-economic systems[6];
3) The increasing knowledge and wealth of studies on how such impacts may jeopardize the results and impacts of many development efforts and further compromise the achievement of key development goals, including the Millennium Development Goals (MDGs);
4) The concern that development activities may lead to 'maladaptation' – an increase in exposure and/or vulnerability to climate change – either by overlooking climate change impacts, or by undertaking climate change adaptation actions that fail to adequately address the impacts of climate change[7]; and
5) The recognition that development activities targeting and alleviating the root causes of vulnerability, and increasing the adaptive capacity of individuals and societies in general, have positive implications for climate change adaptation – even in cases where climate change has not been explicitly considered[8]. By integrating climate change, the synergies between development and adaptation can be further exploited[9].

Consequently, a quest for operational approaches and tools to support climate change adaptation mainstreaming has begun, and a burgeoning number of climate change adaptation approaches, methods, guidance and tools have been developed over the past 5-10 years. These efforts have to a large extent been undertaken independently by various national and international agencies, organizations, institutions, and NGOs, based on different rationales and objectives, and target various levels of climate change adaptation mainstreaming. In this section, we focus on the national, sectoral, and project levels.

2.2. Conceptualizing Mainstreaming and Steps towards Operationalization

Although there is consensus at the general level on the precept of climate change adaptation mainstreaming (hereafter for convenience simply termed mainstreaming), there is no universally agreed definition of the concept.

Available definitions (see Box 1), while pointing to the need for mainstreaming, give limited practical guidance as to how to integrate climate concerns into the various levels of planning and decision-making (Ahmad 2009). Most definitions refer to mainstreaming as a process and indicate – either explicitly or implicitly – that the components of and entry points to mainstreaming will depend on the level that is under consideration. An entry point provides one or more opportunities for incorporating specific climate change adaptation considerations into a given plan, programme, or project. The various stages of the project cycle (identification, appraisal, design, implementation and monitoring & evaluation) provide natural entry points for mainstreaming at the project level.

In line with this, OECD (2009) provides detailed mainstreaming guidance based on the identification of entry points at, respectively, the national, sectoral, and project levels, as well as separate figures for policy cycles at each level that indicate core adaptation actions for each entry point[10]. To establish an overview that will allow us to compare the differences and similarities of entry points, adaptation actions, and generic components in the mainstreaming process across the three levels, information from OECD (2009) is synthesized and combined with additional information into Figure 1 below. The purpose is to outline key policy and project cycle entry points for adaptation actions and generic components in the mainstreaming process, at national, sectoral, and project level. Figure 1 introduces a number of key adaptation and mainstreaming concepts which we will return to in Section 3, where we discuss definitions, uses and development linkages of key climate change adaptation and mainstreaming concepts.

Box 1: Definitions of climate change adaptation mainstreaming

- "Mainstreaming means integrating climate concerns and adaptation responses into relevant policies, plans, programs, and projects at the national, sub-national, and local scales." (USAID 2009, p.47).
- "…in most [other] cases adaptation measures will need to be implemented as part of a broader suite of measures within existing development processes and decision cycles. This is known as "mainstreaming"." (OECD 2009, p.56).
- "Incorporating climate change risks and adaptation into:

  1. National policies, programmes and priorities: ensuring that information about climate-related risk, vulnerability, and options for adaptation are incorporated into planning and decision-making in key sectors, such as agriculture, water, health, disaster risk management and coastal development, as well as into existing national assessments and action plans, including Poverty Reduction Strategies and Priorities.

  2. Development agency programmes and policies: ensuring that plans and priorities identified in development cooperation frameworks incorporate climate change impacts and vulnerability information to support development outcomes…

  Ideally, integration should become a systematic process rather than a one-off process of utilizing climate information in decisions." (UNDP 2009).
- "Mainstreaming involves the integration of policies and measures that address climate change into development planning and ongoing sectoral decision-making, so as to ensure the long-term sustainability of investments as well as to reduce the sensitivity of development activities to both today's and tomorrow's climate." (Klein et al. 2007).

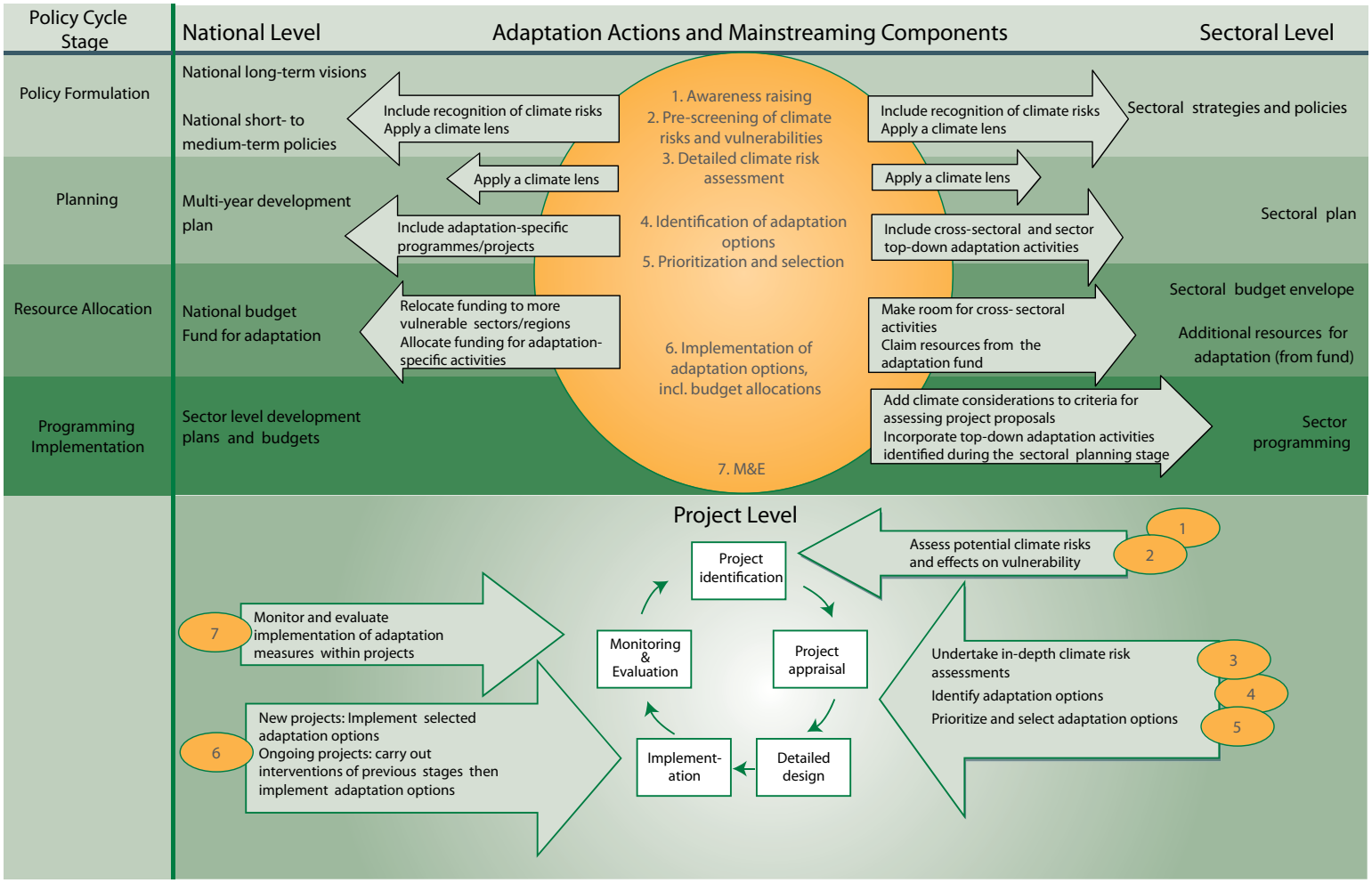
The first column in Figure 1 lists the policy cycle stages at the national and sectoral level. Entry points corresponding to each policy cycle stage are presented under, respectively, the National Level column (to the left of the figure) and the Sectoral Level column (to the right of the figure). The block arrows illustrate key adaptation actions for each entry point, whereas the numbered items placed in the orange ovals in the upper centre and lower edges of the figure are a list of key mainstreaming components that are applicable at all levels.

At the project level, in the lower part of Figure 1, the numbers in the orange ovals thus refer back to the numbered list of key mainstreaming components in the upper centre part of the figure. The project level entry points are depicted in the squares, with the block arrows indicating corresponding key adaptation actions.

Figure 1 supports the notion from above that mainstreaming is most appropriately viewed as a continuous process and implies many inter-linkages between the cycles as well as mainstreaming efforts at the national, sectoral, and project levels. Figure 1 also illustrates that the types of adaptation actions and associated analyses required to support mainstreaming at the project level will differ from the types of adaptation actions and analysis required at the sectoral and national levels. However, as the generic list of key mainstreaming components illustrate, we argue that the main differences lie in the specifics – in terms of scope, approach and/or analysis, (including choice of indictors and level of analysis detail) – rather than in the basics of mainstreaming. We discuss this in more detail below, where we go through the key mainstreaming components and adaptation actions of the block arrows in Figure 1.

Let us begin by taking a closer look at Figure 1. The very first adaptation action introduced in the top block arrow is to ensure that climate risks are recognized in the formulation of national and sectoral strategies and policies. In order for climate risks to be recognized in the policy formulation stage at the national and sectoral levels, as well as

Figure 1: Illustration of key mainstreaming entry points and components in the policy and project cycles.



Note: The figure draws on information from figures 7.2, 8.2, and 9.2 in OECD (2009).

at the project level, the awareness of key stakeholders needs to be raised on the linkages between climate variability, climate change, vulnerability, and development. Awareness raising, which includes establishing an overview and general assessment of key linkages between the national and sectoral development priorities and climate vulnerability and change, is subsequently the first item on our generic list of mainstreaming components. International efforts – including scientific results and literature increased evidence on climate change at the national and sub-national levels, which combined with the day-to-day practical experiences at the country and project levels of climate change. Evidence and experience necessitate the recognition of climatic linkage in the many stages of policy cycles, at all levels.

Stephen Shaver/Bloomberg News (China)

The next adaptation action included in Figure 1 is to apply a climate lens. According to OECD (2009, p.75), applying a climate lens involves examining policies, strategies, plans or programmes to determine:

- The vulnerability to climate risks;
- The extent to which climate change risks have been taken into consideration in the formulation stage;
- Whether the policy, strategy, regulation or plan could lead to increased vulnerability, i.e. maladaptation, or miss important opportunities arising from climate change; and
- What amendments might be warranted for pre-existing policies, strategies, regulations or plans in order to address climate risks and/or opportunities.

It should be noted that a quick application of the climate lens should make it possible to at once decide whether a policy, plan or programme is at risk from climate change. If this is not the case, no further work needs to be done. However, if the policy, plan or programme is assessed to be at risk, further work is required to identify the extent of the risk, assess climate change impacts and adaptation responses in more detail, and identify possible recommendations/actions.

In other words, the application of a climate lens entails a pre-screening or assessment of climate risks and vulnerability. Furthermore, if the result of the pre-screening is that a policy, plan or programme is at risk from climate variability or change, a detailed climate risk assessment should be carried out. Looking at the project cycle stages depicted in Figure 1, the pre-screening corresponds to the assessment of potential climate risks and effects on vulnerability at the project identification stage, which is followed by the in-depth climate risk assessment. Although we are considering different levels, the generic mainstreaming components are thus largely the same – with, say, the mainstreaming entry points of policy formulation at the national level corresponding to the mainstreaming entry points of identification at the project level. Pre-screening/assessment of climate risks and vulnerability is the second item on the generic list of mainstreaming components, followed third by detailed climate risk assessment.

The detailed climate risk assessment leads to the identification of adaptation options (fourth item on our generic list) and prioritization and selection of adaptation options (fifth item). At the national and sectoral level, this corresponds to the inclusion of adaptation-specific programmes and projects as well as the inclusion of cross-sectoral and sectoral top-down adaptation activities.

The implementation of the selected, prioritized adaptation options depends on budget allocations (sixth item). At the sectoral and national level, budget allocations for adaptation will depend critically on the cases or arguments for action that result from the detailed assessments. In addition, results and experience from adaptation activities at the project level can provide valuable arguments for allocating scarce resources to climate change adaptation.

The final (seventh) item on our generic list of mainstreaming components is the monitoring and evaluation of the adaptation measures that have been selected for implementation. This is equally important at the sectoral and national level. Lessons learnt will facilitate revising policies, plans, programmes and projects in the future.

A number of additional elements will influence the extent of detail and quality of advice resulting from the analyses carried out under the various mainstreaming components listed above. More specifically, the following elements are central[11]:

- Availability and quality of climate information: Involves improving the coverage and quality of climate monitoring data, commissioning assessments of climate change impact, vulnerability and adaptation if they are not already available, and using multi-model ensembles with a clear articulation of associated uncertainties;
- Availability of socio-economic analyses of key linkages between climate change, vulnerability, adaptation and development, and the quality of such analyses;
- Availability and quality of assessments of costs and benefits of climate change adaptation activities;
- The level of engagement of a broad range of stakeholders at all levels;
- Availability of resources and commitment to support continuous capacity building and institutional strengthening;
- Existence of and possibility for technical support;
- Availability of resources and technical capacity – to support cost analysis of relevant response options for integrating climate change adaptation into development; and
- A combination of 'Top-down' and 'Bottom-up' approaches.

The discussion above has indicated that pre-screening of climate risks and vulnerabilities and detailed climate risk assessments are central to mainstreaming efforts. As we will see in Sections 4 and 5, numerous climate pre-screening and risk assessment efforts have been undertaken at different levels, and many of these address other mainstreaming components in addition to the actual screening/risk assessment.

Mainstreaming is not a new concept. It has been advocated and used in a number of different contexts over the years, notably with respect to the environment, disaster risk reduction, gender issues, poverty-environment, and HIV/AIDS. Important lessons regarding appropriate approaches for integrating climate change into development planning and policy-making processes may thus be obtained from previous mainstreaming efforts and experiences in other areas. It is beyond the scope of this report to go into detail with these other fields, nevertheless, lessons from disaster risk reduction and environmental assessments can provide useful insights, and the UNDP-UNEP[12] Poverty-Environment Initiative similarly has a number of publications and activities that are highly relevant with respect to climate change adaptation mainstreaming.

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[3] See e.g. USAID 2007.

[4] See e.g. Intergovernmental Panel on Climate Change (IPCC) 2007a and 2007b.

[5] There is an equal need to mainstream climate change mitigation into development planning and decision-making processes. However, this report deals exclusively with adaptation.

[6] See e.g. the Fourth Assessment Report by the IPCC (IPCC 2007) and the Stern Review (Stern 2006) for documentation on a) and b).

[7] We return to mal-adaptation in section 3.3.

[8] Thus representing 'no-regrets' opportunities. No-regrets are defined and discussed in section 3.3.

[9] Definitions of 'vulnerability' and 'adaptive capacity' are provided in the next section.

[10] OECD (2009) additionally considers the local level, but for simplicity this level is left out in the current section.

[11] Based on inter alia OECD (2009) and IPCC (2007a, 2007b).

[12] United Nations Environment Programme (UNEP).

3. KEY CLIMATE CHANGE ADAPTATION AND MAINSTREAMING CONCEPTS: DEFINITIONS, USES AND LINKAGES TO DEVELOPMENT

As noted in the beginning of this report, the lack of consensus on definitions and uses of key climate change adaptation concepts presents challenges for research as well as practical efforts on mainstreaming and climate change adaptation. The previous section illustrated that the mainstreaming process is further challenged by the multitude of levels at which it should take place, which has implications for entry points and key components. There is thus a need to relate key adaptation and mainstreaming concepts to the relevant levels. Finally, the intrinsic inter-linkages between development and the various adaptation concepts should be taken into consideration. In this section we go through key adaptation concepts, provide examples on how they are defined and used in literature as well as in practice, and outline how they are linked to each other as well as development.

3.1. Basic Climate Change and Climate Change Adaptation Concepts

'Climate change adaptation' is a means of responding to the impacts of climate change while also managing the risks and opportunities. In other words, successful adaptation increases the ability of people, societies, and/or natural systems to cope with the consequences of the impacts of climate variability and change, including increases in extreme weather occurrences (Jones and Preston 2006, and Wilbanks et al. 2007).

Definitions of climate change adaptation are numerous (see Box 2). As noted by Schipper (2007) in a study of the linkages between climate change adaptation and development, the variations in definitions indicate that even within the specialized climate change adaptation discourse, there are many possible approaches for understanding and using adaptation.

The different uses have implications for the practical application of the concept of adaptation, and for the comparison and interpretation of the results from studies on adaptation that have used different definitions of this concept.

The potential for adaptation is assessed in terms of 'adaptive capacity', defined as the ability or potential of a human or natural system to respond successfully to climate variability and change (Adger et al. 2007). The concepts of climate change and climate variability are discussed in Box 3.

Box 2: Definitions of Climate Change Adaptation

- An adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. (Parry et al., 2007, p.27, in the *Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (IPCC)).
- Changing existing policies and practices and adopting new policies and practices so as to secure Millennium Development Goals in the face of climate change and its associated impacts. (UNDP 2009).
- All changes in a system, compared to a reference case that reduces the adverse effects of climate change. (Füssel and Klein 2003).
- Refers to adjustments in individual, group and institutional behaviour in order to reduce society's vulnerabilities to climate. (Pielke 1998).
- Refers to all those responses to climate change that may be used to reduce vulnerability. (Burton et al. 1998).
- Adaptation is synonymous with "downstream coping". (Downing et al. 1997).
- Involves adjustments to enhance the viability of social and economic activities and to reduce their vulnerability to climate, including its current variability and extreme events as well as longer term climate change. (Smit 1993).
- Means any adjustment, whether passive, reactive or anticipatory, that is proposed as a means for ameliorating the anticipated adverse consequences associated with climate change. (Stakhiv 1993).

'Climate change vulnerability', by contrast, refers to the degree to which a system is susceptible to, and unable to cope with, the adverse effects of climate change, including climate variability and extremes (IPCC 2007b, p.21). In this way, vulnerability is a function not only of the character, variation, magnitude and rate of climate change to which a system is exposed, and of pre-existing

Box 3: Definitions of Climate Change and Climate Variability

"Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use." (IPCC 2007a, Appendix II, p.78).

Climate change is "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods". (United Nations Framework Convention on Climate Change (UNFCCC) Article 1).

"Climate variability refers to variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate on all spatial and temporal scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability)." (IPCC 2007a, Appendix II, p.79).

stresses, but also of its sensitivity and its adaptive capacity. Important indicators for determining both vulnerability and adaptive capacity include education, health status, knowledge, technology, social and governing institutions, and income level (see e.g. Adger et al. 2007; Turner et al. 2003; Smit & Wandel 2006; and Yohe & Tol 2002). These indicators are at the same time key development indicators, underlining the linkages between development and the scope for climate change adaptation, or adaptive capacity. For example, the consequences of extreme rainfall will be less severe for a population in a society or community where building construction is of a high standard; roads, railways, etc., have sufficient drainage; water supply and quality are assured; and only a small percentage of the population relies directly on the natural resource base for sustaining their livelihoods.

Although adaptive capacity and subsequently development, as illustrated above, generally will be inversely related to vulnerability (i.e. the greater the adaptive capacity or the development status, the lower the vulnerability, and vice versa), this may not always be the case. For some types of climate-related impacts, notably those associated with extreme weather and abrupt climate changes, the consequences may be severe even if the adaptive capacity of the system is high. Floods in Northern and Southern Europe and the impacts of Hurricane Katrina in 2005 on the southern coast of the United States are often cited examples of this. Equally, a high adaptive capacity does not necessarily translate into actions that reduce vulnerability (Adger et al. 2007). For instance, residents in European cities continue to experience high levels of mortality during heat waves despite a high capacity to adapt to extreme temperatures at a relatively low cost. These examples illustrate that mainstreaming is needed to reduce vulnerability in all societies, regardless of level of development and adaptive capacity.

3.2. Risk and Climate Change Adaptation Concepts Relating Specifically to Risk

3.2.1 Risk, Hazards and Events

The notion of (climate) 'risk' is central to most concepts introduced in this section. According to IPCC (2007a, p.64), risk "is generally understood to be the product of the likelihood of an event and its consequences". This definition provides guidance on how an indicator of risk can be constructed and what its elements are. Other definitions abound, of which many are less stringent and subsequently more difficult to operationalize. The Asian Development Bank (ADB) (2009, p.61), for instance, notes that "Risk is often expressed as the product of the consequences flowing from an event and the frequency of the event", exchanging likelihood in the IPCC definition with frequency. UNDP (2005) defines risk as "the probability of a climate hazard combined with the system's current vulnerability". In relation to disaster risk reduction, risk is defined as "The probability of harmful consequences, or expected losses

(deaths, injuries, property loss, loss of livelihood, disrupted economic activity, environmental damage) resulting from interactions between natural or human-induced hazards and vulnerable conditions" (United Nations International Strategy for Disaster Reduction (UNISDR) 2004, p. 16).

Although the definitions of risks above all specify that risks are determined by a combination of the probability or likelihood of an event or hazard, vulnerability, and consequences, they illustrate a central point: That definitions may introduce at least as many questions as they answer. We touched upon this earlier in relation to the diversity of definitions and uses of the concept of adaptation. In the specific case of risk, questions include the following: Should we use 'probability' or 'likelihood', or are they the same?[13] What is an 'event' compared to a 'hazard' (see Box 4 for a sample of definitions)? How do we combine the probability/likelihood of an event/hazard with its consequences in order to establish information about risk? Which definition has been applied in the specific guidance document or case study under examination? And how do we compare studies using different definitions for the same concept? The implications are even more apparent after addressing the concept of climate change screening and then turn to the concepts of climate proofing and climate risk assessment/management.

Box 4: Definitions of Climate Hazards and Events

The term 'climate hazard' is frequently used by development planners and practitioners and often in relation to Disaster Risk Reduction and Management.

At the general level, UNISDR (2004, p.16) defines 'hazard' as "A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation."

UNDP (2005) defines 'climate hazards' in the following way: "A climate hazard is a physically defined climate event with the potential to cause harm, such as heavy rainfall, drought, storm, or long-term change in climatic variables such as temperature and precipitation" and goes on to specifying that "A hazard maybe a transient, recurrent event with an identifiable onset and termination such as a storm, flood or drought, or a more permanent change such as a trend or transition from one climatic state to another. Hazards may be characterized in terms of climatic variables, and coping range may be defined in terms of the same variables for the various systems on which human populations depend".

The UNDP definition links the concept of hazards to the concept of 'events' that is the terminology used in the scientific literature as illustrated in the reports by the IPCC. Hazards can thus be described as the subgroup of events that are potentially damaging.

3.2.2 Climate Change Screening, Climate Risk Screening and Risk Analysis and Assessment

Although the concept of 'climate change screening' is frequently used in the relevant literature, it is difficult to find concrete definitions of the concept. One available definition is: "Climate change screening is a systematic process of examining activities, outputs and programmes in order to identify their vulnerability to climate change, including assessment of the extent to which vulnerability is being or could be addressed" (Danida 2009).

More generally, there is consensus in the literature that climate change screening (often simply termed climate screening) is a way of establishing information on the impacts of climate change on development activities, and of how these linkages are or can be taken into account in development activities as well as in the national planning and decision-making processes. 'Climate risk screening' is by contrast defined by ADB (2009, p.67) as involving "analyzing project concepts, with a view to identifying:

- whether climate risks have been taken into consideration,
- whether [concepts are] vulnerable to climate change,
- whether plans could lead to increased vulnerability, and
- what steps taken in project design are needed to reduce risks and associated costs."

Box 5: Definitions of Risk Analysis and Assessment

Risk analysis: "The systematic use of information to identify hazards and to estimate the chance for, and severity of, injury or loss to individuals or populations, property, the environment, or other things of value". (ADB 2009, p.66).

Risk assessment: "A methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that could pose a potential threat or harm to people, property, livelihoods and the environment on which they depend". (UNISDR 2004, p.16).

This definition mirrors the observations by Klein et al. (2007) that the purposes of portfolio screening exercises conducted by development agencies generally have been to ascertain the extent to which existing development projects already consider climate risks or address vulnerability to climate variability and change, and to identify opportunities for incorporating climate change explicitly into future projects. It should be noted, that although these two definitions focus on the project (portfolio) level, it is equally relevant to conduct climate risk screening at strategic national and sectoral levels – although the risk screening approaches may be different at these levels than they are at project (portfolio) level. Of note, the climate change screening and climate risk screening definitions above are quite broad and give limited guidance on how to conduct screenings in practice. However, analysis and assessment of risks (see Box 5 below) would be an integral part of climate risk screenings.

A pragmatic interpretation of the difference between climate change screening and climate risk screening would be that the former provides a systematic approach to establishing information on climate change impacts and adaptation options, without specific inclusion of risks. It would be expected that so-called 'pre-screenings' or 'rapid screenings/ assessments' entail establishing an initial, quick overview of key linkages between development and climate change and identifying core vulnerabilities and so would fall under the climate change screening classification. At the practical level, however, it is almost impossible to distinguish between the approaches to climate change screening and the approaches to climate risk screening, and the two terms seem to be used synonymously. To illustrate, Danish International Development Agency (Danida) has chosen to use the term climate change screening for the screening exercises conducted in all their programme countries in the period from 2005 to 2008[14]. Even so, risk aspects generally figure just as prominently in the Danida screenings as they do in screenings termed climate risk screening – such as the ones carried out using the Opportunities and Risks of Climate Change and Disaster (ORCHID) climate risk screening tool (see e.g. Tanner et al. 2007). The term 'risk' may have been left out of some climate change screening efforts to avoid confusing the non-technical use of the term with its mathematical definition and statistical properties. Similarly, it is possible to find examples of one-sheet questionnaires termed 'climate risk screening' and 'climate risk screening tools'.

In the remainder of this report, the term climate risk screening will subsequently be used to cover both efforts termed 'climate change screening' and 'climate risk screening' in the relevant literature if they go beyond pre-screening, noting that the risk concept adopted is largely non-technical. The term 'climate pre-screening' will be used to cover rapid assessments and pre-screenings of climate change issues.

Methodologies and tools for climate risk screening have to a large extend been developed and applied independently by various institutions and agencies. In Sections 3 and 4 we will see that although climate risk screening approaches are systematic individually, they tend to differ in terms of objectives and approach, scope, and target audience and level (project, portfolio, sector, programme, national) at which the screening is conducted. This largely reflects the broadness of the definition as mentioned above, which gives rise to a diversity of approaches. Diversity is an advantage from several perspectives, but also makes it more difficult to establish an overview and compare the emerging results of the climate risk screening exercises.

3.2.3 Climate Proofing and Climate Risk Management

Michel Matera/UNDP (Haiti)

Climate proofing involves ensuring that climate risks are "reduced to acceptable levels through long-lasting and environmentally sound, economically viable, and socially acceptable changes implemented at one or more of the following stages in the project cycle: planning, design, construction, operation, and decommissioning" (ADB 2005, p.xii). ADB also provides another definition of climate proofing (2009, p.61), whereby "climate-proofing refers to enhancing resilience to, and reducing the risks posed by, climate change; for example, improving the ability of infrastructure to withstand floods and cyclones". Climate proofing thus requires detailed assessments of risks, and by referring to reduction of risks to 'acceptable levels' implicitly involves considering trade-offs between the socio-economic costs and benefits[15] of implementing measures to reduce the risks imposed by climate change. Such cost and benefit considerations should distinguish between: climate change damages, and associated damage costs; the adaptation benefits – i.e. the climate change damages avoided by adaptation actions, and any other direct or indirect development (or socio-economic) benefits arising from the activity; and, finally, the adaptation costs – i.e. the cost of the real resources used to avoid climate change damages. It is subsequently also implicit in the term that it may not always be feasible or desirable from a socio-economic perspective to climate proof activities absolutely, at 100 percent. A detailed risk screening, risk analysis or risk assessment is required in order to move to climate proofing activities.

Most academic and practical efforts on climate proofing tend to focus on the project level, analyzing specific activities and investments in, for example, infrastructure (ADB 2005). There is, however, a tendency in associated literature and debate to use the concepts of climate proofing and mainstreaming interchangeably.

One of the features distinguishing the concept of climate proofing from the concept of mainstreaming is that in climate proofing the primary focus is on aspects of climate change and risks, whereas the focus of mainstreaming is on the integration of climate concerns and adaptation responses into relevant policies, plans, programs, and projects at the national, sub-national, and local scales. In a similar vein, there is a higher emphasis in mainstreaming on processes and frameworks than there is in climate proofing. Climate proofing as a concept is highly focused on implementation aspects, i.e. action on the ground, with lesser emphasis and guidance on policies and processes.

Climate proofing, climate risk screening, risk analysis and risk assessment can all be seen as components of a 'climate risk management' process, as well as of the mainstreaming process. The conceptual challenges related to definitions and distinctions have their clear parallels in the disaster risk reduction and disaster risk management frameworks as illustrated in Box 6 below.

How can we distinguish between climate risk management and mainstreaming, as defined in the first paragraph of this document? Climate risk management is a generic term used to refer to an approach to promote sustainable development by reducing the vulnerability associated with climate risk (ADB 2009). According to the IPCC (2007a, p.64), "responding to climate change involves an iterative risk management process that includes both mitigation and adaptation, taking into account actual and avoided climate change damages, co-benefits, sustainability, equity and attitudes to risk. Risk management techniques can explicitly accommodate sectoral, regional and temporal diversity, but their application requires information about not only impacts resulting from the most likely climate scenarios, but also impacts arising from lower-probability but higher-consequence events and the consequences of proposed policies and measures". Again the most prominent distinguishing feature seems to be the extent to which the driver of the approach is development or climate change.

Box 6: Disaster Risk Reduction and Disaster Risk Management

A Relevant Lesson From the Mainstreaming of Disaster Risk Reduction:

"There is no universally agreed definition of 'disaster risk reduction' and this presents a problem for the formulation of a framework. Some commentators call for 'disaster risk reduction' to be conceptualised before embarking on any framework project, while others suggest that the process of developing a framework will lead to the necessary clarification." (Mitchell 2003, p.4).

In most Least Developed Countries (LDCs), mechanisms for disaster risk reduction are already in place and many climate variability and change impacts materialise in the form of climate related disasters. Improving the coordination of climate change adaptation activities with existing mechanisms for disaster risk reduction is therefore critically important.

Disaster Risk Reduction:

Disaster risk reduction refers to a wide sector of work on disaster management including: mitigation, prevention, risk reduction, preparedness, and vulnerabilities. As noted above, there is no universally agreed definition of the term. It is defined by (ADB 2009, p.62) as: "A systematic approach to reduce human, social, economic, and environmental vulnerability to natural hazards."

UNISDR (2004, p.17) provides the following more detailed characterization of disaster risk reduction:

"The conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development.

The disaster risk reduction framework is composed of the following fields of action:

- Risk awareness and assessment including hazard analysis and vulnerability/capacity analysis;
- Knowledge development including education, training, research and information;
- Public commitment and institutional frameworks, including organisational, policy, legislation and community action;
- Application of measures including environmental management, land-use and urban planning, protection of critical facilities, application of science and technology, partnership and networking, and financial instruments;
- Early warning systems including forecasting, dissemination of warnings, preparedness measures and reaction capacities."

Disaster Risk Management:

"The systematic process of using administrative decisions, organization, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This comprises all forms of activities, including structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards..." (UNISDR 2004, p.17).

3.3. Maladaptation, No-Regrets Opportunities and the Continuum of Adaptation Activities from Development to Climate Change

'Maladaptation' was mentioned in the beginning of this report as one of the concerns motivating a push for mainstreaming. It is defined by OECD (2009) as "business-as-usual development which, by overlooking climate change impacts, inadvertently increases exposure and/or vulnerability to climate change. Maladaptation could also include actions undertaken to adapt to climate impacts that do not succeed in reducing vulnerability but increase it instead". UNDP (2009) defines maladaptation as "An action or process that increases vulnerability to climate change-related hazards. Maladaptive actions and processes often include planned development policies and measures that deliver short-term gains or economic benefits but lead to exacerbated vulnerability in the medium to long-term". A third definition is provided by Scheraga and Grambsch (1998, p.92), as "an adaptive response, made without consideration for interdependent systems [which] may, inadvertently, increase risks to

other systems that are sensitive to climate change (and for social well-being)." The above definitions illustrate that maladaptation is an unintended outcome of development and/or climate change adaptation activities with negative implications for vulnerability to climate change. The concept is particularly relevant in drawing attention to the intrinsic and complex linkages between development and climate change. In addition, the UNDP definition is interesting, since it points to the potential trade-offs between the short and longer-term considerations, and costs and benefits.

One of the factors that may give rise to maladaptation is uncertainty (see Box 7). More generally, uncertainty is an underlying premise for mainstreaming and related climate change adaptation strategies and activities. While scientific and socio-economic knowledge on climate change and its inter-linkages with socio-economic development is constantly improving, uncertainties will remain.

Box 7: Uncertainty

Crafting adaptation strategies is complicated by uncertainty: "It is still not possible to quantify with any precision the likely future impacts on any particular system at any particular location. This is because climate change projections at the regional level are uncertain, current understanding of natural and socio-economic processes is often limited, and most systems are subject to many different interacting stresses." UNEP and UNFCCC (2002, sheet 9.2).

Areas of uncertainty involve:

- Estimating the future growth (negative or positive) in greenhouse gas emissions, as well as the relationship between the rate of greenhouse emissions and the concentrations of these gases in the atmosphere;
- Specifying the extent of the warming that results from any specified change in concentrations and taking regional climatic responses into account; and
- Assessing impacts on various human and natural systems.

At the level of individual adaptation activities, the informational requirements of planners and decision-makers become more local, specific and detailed, and, as a result, uncertainty rises.

The uncertainties related to assessing climate impacts and consequences at the local, national and regional level stress the importance of implementing development activities that reduce the underlying vulnerability of a system in general, and enhancing the adaptive capacity as a strategy for integrating climate change adaptation into development.

Fortunately, numerous climate change adaptation measures and development activities that foster climate change adaptation are associated with benefits that equal or exceed their costs to society - even without taking their climate change adaptation benefits into account. These opportunities are termed 'no-regrets' or 'net-negative costs' opportunities[16], which can and should be implemented even in the presence of uncertainty about future climatic conditions. Removing or decreasing maladaptation is one example of a no-regret opportunity. Still more development and climate change adaptation measures can be implemented at low costs without considering their climate change adaptation benefits, and are associated with net-negative costs if climate change adaptation benefits are included. These are frequently termed 'low-regrets' opportunities (OECD 2009).

Figure 2 below illustrates the earlier discussion as well as places many of the climate change adaptation concepts introduced in this section in a developmental context. The figure is based on work by McGray et al. (2007) and Bapna and McGray (2008), adapted to include other levels than the local/project level, and to relate more directly to mainstreaming concepts.

In Figure 2, adaptation activities are classified along a continuum of activities ranging from 'pure' development activities with a vulnerability focus ('Addressing drivers of vulnerability') to measures with an explicit and increasingly more exclusive focus on climate change impacts ('Confronting climate change') (McGray et al. 2007, p.18). At the same time, Figure 2 indicates the benefits that these activities are associated with in the absence of climate change.

Figure 2 illustrates that exact projections of climate change are not necessary to validate a large number of diverse adaptation efforts. General knowledge that climate is changing may be sufficient, and it will often be possible to supplement this information with more specific trends in temperature, precipitation and extreme events, that provides further rationale for specific climate change adaptation activities. Raising awareness on the linkages and overlaps between development and climate change adaptation, climate risk screening efforts and pilot adaptation projects on the ground, are essential activities to facilitate the identification of no-regrets and low-regrets opportunities, and pave the way for the scaling-up and replication of such opportunities. They are equally necessary for assessing the socio-economic costs and benefits of activities that target the impacts of climate change more directly, and thus depend on projections of climate change in order to be justified.

Most climate change adaptation and mainstreaming activities tend to belong to the two middle categories – including climate risk screening – that are the focus of the rest of this report.

Figure 2: Adaptation and Mainstreaming: A Continuum of Activities from Development to Climate Change.

Vulnerability ← Focus → Response to impacts

Addressing drivers of vulnerability.	**Building Capacity.**	**Managing Climate Risk.**	**Confronting Climate Change.**
Activities increasing human development, reducing poverty, and addressing factors that make people vulnerable. Activities do not consider climate change and its impacts, but can buffer households, communities and societies from the impacts of climate change by reducing vulnerability to nearly all stresses.	Activities laying the foundation for more targeted actions. Tend to involve institution-building and technological approaches adapted from development approaches/ tools/methods. Activities in this category tend to occur in sectors directly affected or sensitive to climate change.	Successful climate risk management and reduction activities that may lead to strong development benefits, but are distinguished from typical development efforts through the use of climate information.	Activities focusing almost exclusively on addressing climate change impacts. Tend to target climate risks that are clearly outside of historic climate variability and stem from climate change.
Examples: Economic development policies, education and health policies, gender initiatives, livelihood diversification efforts and literacy promotion, etc.	Examples: Awareness raising on climate-development linkages at national, sectoral, local and project level, participatory reforestation efforts to combat flood-induced landslides, natural resource management practices and weather monitoring.	Examples: Integration of climate change in national, sectoral, and local planning and strategies, climate risk screening, climate risk assessment, climate proofing, disaster response planning activities and technological approaches, such as drought resistant crops.	Examples: Relocation of communities in response to sea-level rise and glacial melting. Radical or costly policies and technological approaches that explicitly address unprecedented levels of climate risk including infrastructure, e.g. dikes, harnessing harbors, etc.

100 ← Benefits in the absence of climate change → 0

Source: Based on McGray et al. (2007) and Bapna & McGray (2008).

[13] In non-technical terminology, "likelihood" is usually a synonym for "probability", but in statistical usage there is a clear distinction: whereas "probability" allows us to predict unknown outcomes based on known parameters, "likelihood" allows us to estimate unknown parameters based on known outcomes. Source: Wikipedia, http://en.wikipedia.org/wiki/Likelihood_function

[14] The Danida climate change screening reports are available at http://www.danidadevforum.um.dk/en/menu/Topics/ ClimateChange/ ClimateAndDevelopment/ToolsAndReferences/DanidaEntryPoints/ClimateChangeScreeningReports

[15] Not necessarily valued in monetary terms.

[16] IPCC defines no-regrets opportunities in the following way: "Net negative costs (no regrets opportunities) are defined as those options whose benefits such as reduced energy costs and reduced emissions of local/regional pollutants equal or exceed their costs to society, excluding the benefits of avoided climate change" IPCC (2007a).

4. CLIMATE RISK SCREENING IN THE MAINSTREAMING PROCESS

In the previous sections, we have explored the rationale for mainstreaming, outlined the main components necessary to operationalize mainstreaming, and indicated the various relevant levels and associated entry points to consider in the mainstreaming process. We have also illustrated and discussed how key climate change adaptation and mainstreaming concepts are defined and used in relevant literature – as well as in practice – and how they relate to development. These sections have addressed what climate risk screening is about, and where it fits into the mainstreaming process. Until now, mainstreaming has been our point of departure, but in the remaining part of this report, climate risk screening tools and methods are the primary focus.

Let us review the different categories of climate risk screening efforts and how they fit into the mainstreaming process. Figure 1 illustrated the potential entry points for mainstreaming at, respectively, the national, sectoral and project level, and indicated that assessment (or screening) of climate risks and their potential consequences for vulnerability is required at all three levels – albeit the focus and degree of detail of the assessments will depend on the level being considered. Consequently, many efforts conducted under the broader heading of 'mainstreaming guidance' include specific sub-components on climate risk screening. These are relevant to consider as part of climate risk screening efforts, and in the following we will therefore often refer to 'climate risk screening tools and guidance'.

In addition, a number of the tools and approaches developed under the heading of climate risk screening address aspects of mainstreaming that go beyond an actual screening of risks – such as awareness raising, identification of adaptation responses and prioritization of such options. This was highlighted in Section 3.2.2, where we looked into the definitions and uses of the concept of climate risk screening. Finally, a number of donors have conducted climate screenings of their project portfolios using a variety of approaches.

Figure 3: Examples of Climate Risk Screening Tools, Climate Change Adaptation and Mainstreaming Guidance, and Systematic Donor Portfolio Screenings.

Screening tools	Generic guidance documents	Examples of systematic portfolio screenings
• ADAPT (WB) • CRISTAL (SDC, IISD, SEI, IUCN) • Climate-FIRST (ADB • ORCHID (DFID) • CRISP (DFID) • NAPAssess (SEI) • Adaption Wizard (UK climate Impacts Programme). • Danida Climate change screening matrix	• USAID Climate Change Adaption Guidance Manual • OECD policy guidance (2009) • Adaption Policy Framework for climate change (UNDP, GEF) • UNDP Quality Standards for Integrating Climate Change Adaptation (CCA Quality Standards (draft) • Red Cross/Red Crescent Climate guide	• GTZ • Norad • OECD • Swiss Agency for Development Assistance • World Bank • Asian Development Bank • DFID • DANIDA

Notes: Links to information on the tools and guidance referred to are provided in Table 2: Comparative Overview of Available Climate Screening Tools and Guidance.
Screening tools, generic guidance documents and examples of systematic portfolio screenings appear in random order.

Climate risk screening efforts can thus be categorized according to the following main groups: (i) specific climate risk screening tools, providing methodologies to assess particular programmes and projects using a 'climate lense'; (ii) generic guidance documents, targeting the entire mainstreaming process, but also including specific sub-components on climate risk screening; and (iii) portfolio screening exercises, conducted by some donors to systematically examine their programmes and/or projects applying climate change lenses. Figure 3 below provides examples on the main efforts conducted to date, for each of these three categories.

The risk screenings and guidance under the three categories presented in Figure 3 differ in terms of aim, approach, level of analysis and target groups. Intrinsic differences also prevail between the approaches and methods within each of the three categories.

Portfolio screenings undertaken to date have, as an illustration, had different objectives. Some, including the Norwegian Agency for Development Co-operation (Norad), have focused on reviewing policies and strategies to assess the implications of climate change on the donor's main activities; while others, notably Danida, GTZ, and the Swiss Development Cooperation (SDC), have conducted in-depth examinations of climate vulnerability and climate change implications for existing programmes and projects (see also Gigli and Agrawala 2007). Portfolio screenings by the World Bank and OECD have, by contrast, been conducted at the national level, and have assessed donor investment exposure to climate risks in specific countries based on country-by-country case studies.

Table 1: Climate Risk Screening Tools and Guidance in the Mainstreaming Process .

Mainstreaming component / Tool/Guidance	Awareness raising	Climate change pre-screening (1)	Climate risk assessment	Identification of adaptive options	Prioritization & selection	Implementation	M&E
Screening tools (level)							
ADAPT (project)	——	——	——	——	——		
Adaptation Wizard (organizational/institutional)	——	——	—— (2)		——		
CRISP (programming and sector)	——	——	——	——	—— (3)		
CRiSTAL (project)	——	——	——	——	——	——	——
Danida matrix (sector and programming)		——					
NAPAssess (various)	——		——	——	——		
ORCHID (project)	——	——	——	——	—— (3)		
Generic Guidance (level)							
OECD guidance (all)	——	——	——	——	—— (4)	——	——
Red Cross guide (project)	——	——	——	——	——	——	
UNDP APF (project and programming)	——	——	——	——	——	——	——
UNDP CCA QS (project and programming)	——	——	——	——	——	——	——
UNEP manual on CC A&M in the Tourism Sector (sector)	——	——	——	——	——	——	——
USAID Manual (project)	——	——	——	——	——	——	——

Notes:
(1) Also referred to as 'rapid screening'. Involves establishing an initial overview of key linkages between development and climate change and identifying core vulnerabilities. See also the discussion in Section 3.2.2.
(2) Guide to relevant resources
(3) Cost-benefit analysis
(4) Cost-benefit analysis, Multi-criteria analysis, Cost-effectiveness Analysis

As noted above, several climate risk screening tools and guidance target more than one component of mainstreaming. Table 1 below gives an overview of the components of the mainstreaming process that are taken into account in some of the key climate risk screening tools and guidance available, and also indicates the level (project, programming, sector, etc.) that the risk screening tools target. The classification of mainstreaming components refers to the generic list developed in Section 2, and the tools and guidance are listed in alphabetical order.

Table 1 illustrates that the mainstreaming components considered vary across tools and guidance and that, apart from the Danida Matrix, all cover several components of mainstreaming. Not surprisingly, the generic guidance documents target all the components of mainstreaming included in the table – the only exception being that the Red Cross/Red Crescent guide does not include monitoring and evaluation.

At the same time, the table indicates that many risk screening tools take a broad range of mainstreaming aspects into account at the level at which they operate, although it should be noted that the table does not indicate how detailed the assessment of each mainstreaming aspect is. The results and experiences from the risk screening tools may therefore provide valuable information, as well as represent vehicles to support the wider process of mainstreaming across various levels and go beyond simply climate risk screening.

Jorgen Schytte/UNDP (Egypt)

5. CLIMATE RISK SCREENING TOOLS, GUIDANCE, AND PORTFOLIO SCREENINGS: A COMPARATIVE OVERVIEW AND ANALYSIS

UNDP Belarus

In this section, we take a detailed look at the climate risk screening tools and guidance available to date. More specifically, a comparative overview is provided to form the basis for assessing the scope and objectives of these tools and guidance: What do they have in common? Where and how do they differ? What are their comparative strengths? What are the key challenges and opportunities?

Before we turn to the analysis and discussion, Table 2 below summarizes the key features of currently available climate risk screening tools, guidance, and portfolio screenings, listed in alphabetical order.

5.1. General observations

Table 2 clearly illustrates that it is possible to categorize existing efforts involving climate risk screening and guidance across a multitude of dimensions. The table covers a total of thirty climate risk screening tools, guidance and project portfolio screenings. Out of these, three are so-called 'knowledge and information sharing platforms', that, strictly speaking, do not fit into the three main categories of effort. Yet they still represent vehicles for improving climate change adaptation efforts – including climate risk screening exercises – on a variety of levels. WeAdapt, for example, provides tools and guidance for risk screening, as well as transparent links to practical experiences and case studies on climate change adaptation efforts.

A quick glance at the remaining twenty-seven efforts illustrates that the tools, screenings and guidance target different levels and that a majority include consideration of more than one level. More specifically, thirteen target the project level and fourteen the programme level, whereas seven focus on sector level and seven on the national/country level. Two screening efforts, the Adaptation Wizard and Norad, target the organizational and strategic level, respectively.

Only six out of the twenty-seven efforts include costing exercises. Costing exercises, while complicated by a number of factors – including the uncertainty in assessing and costing consequences of risks/vulnerabilities, as well as of benefits and costs of climate change adaptation measures (many of these factors were addressed in Section 3) – are extremely important for the broader mainstreaming process. Concrete economic primers are arguments for mainstreaming, and facilitate getting the attention of policy makers as well as the commitment of scarce resources to climate change adaptation measures at local, sectoral, and national levels (as reflected in Section 2.2). In many cases, it is possible to construct crude cost estimates that can validate the undertaking of climate change adaptation measures. Even where socio-economic costs and benefits cannot be assessed in monetary terms, quantitative indicators can and should be developed to present the mainstreaming arguments to policy makers using a language they understand. Examples of such indicators include the contribution to the gross domestic product (GDP) of a sector affected by climate change, or the project climate change impact (percentage reduction) on agricultural outputs in a given district in the absence of adaptation strategies and measures. The need for more analytical work on methodologies for the prioritizing and costing of adaptation measures is emphasized in both scientific and policy-oriented literature (see e.g. IPCC 2007a and OECD 2009) and is additionally one of the frequent recommendations from conferences and workshops on mainstreaming and adaptation (see e.g. GTZ 2009 and the reports from the UNFCCC Regional Adaptation Workshops[17]).

Table 2: Comparative Overview of Available Climate Risk Screening Tools, Mainstreaming Guidance and Portfolio Screenings.

Title of tool/ guidance	Organization/ institution	Target Audience	Approach	Summary	Level	Costing exercise included	Practical application	Link/References
Climate screening tools								
Assessment and Design for Adaptation to climate change – A Prototype Tool (ADAPT)	World Bank (WB)	Policy makers, Development project planners and managers	Software-based approach integrating climate databases and expert assessments	Carries out risk analysis at the planning and design stage, through a five level flag classification and proposes options to minimize risks + guides project designers to appropriate resources. The focus thus far is on agriculture, irrigation and bio-diversity.	Project	No	Agriculture and Natural Resource Management in South Asia and Sub-Saharan Africa. Tool available for Africa and India	http://sdwebx.worldbank.org/climateportal/
Adaptation Wizard	UK Climate Impacts Programme (UKCIP)	Planners and managers, UK	User-friendly info- and structuring computer-based tool following a risk-based approach	5-step process to assess vulnerability to climate change, and identify options to address key climate risks. Needs to take developing country context into consideration in order to be of real use for developing countries.	Organization	Yes	UK	www.ukcip.org.uk/index.php?option=com_content&task=view&id=147&Itemid=297
Climate Framework Integrating Risk screening tool (Climate-FIRST)	Asian Development Bank (ADB)	Development project planners/ managers	Risk assessment	Climate risks screening software tool for rapid assessment of projects/programmes risk potential.	Project & programme	N/A	Tool in draft stage	Not yet available
Climate Risk Impacts on Sectors and Programmes (CRISP)	Department for International Development (DFID)	Policy makers, project/ programme managers	Sector-based climate risk assessment methodology	Structuring framework developed for the portfolio screening of DFID activities in Kenya. Assesses climate impacts at the sector level.	Programme & sector	Yes	Kenya	http://www.dewpoint.org.uk/Article.Aspx?ArticleID=901
The Community-based Risk Screening tool - Adaptation and Livelihoods (CRiSTAL)	SDC, IISD, World Conservation Unit (IUCN), Stockholm Environment Institute (SEI) and Intercooperation	Development project planners and managers	Participatory and vulnerability-based approach , step-by-step, computer-based method	User-friendly conceptual framework, aimed at raising awareness on climate change adaptation and facilitating the identification and organization of an adaptation strategy.	Project	No	Mali, Tanzania, Sri Lanka, Nicaragua	http://www.cristaltool.org/
Disaster Risk Reduction Tools	ProVention Consortium	Policy makers, project planners/	Disaster risk reduction (DRR) approach	Provides guidance on different DRR mainstreaming tools	Various	Yes, guidancenote	N/A	http://www.proventionconsortium.org/?pageid=32&projectid=1
NAPAssess	Stockholm Environment Institute (SEI)	Stakeholders to the National Adaptation Programme of Action (NAPA) process and development practitioners	Participatory, bottom-up and consensus-based approach drawing on multi-criteria analysis for the assessment and prioritizing of adaptation initiatives.	NAPAssess is an interactive decision-support tool designed to facilitate a transparent and participatory NAPA formulation process in Sudan. The use of multi-criteria analysis is also relevant in the context of climate screening	National/ sector	No	Sudan	http://www.sei-us.org/napassess/

Title of tool/ guidance	Organization/ institution	Target Audience	Approach	Summary	Level	Costing exercise included	Practical application	Link/References
Opportunities and Risks from Climate Change and Disasters (ORCHID)	Institute of Development Studies (IDS) and Department for International Development (DFID)	Development project planners / managers	Portfolio risk assessment method based on pilot studies	Basic framework including a 4-step generic approach to portfolio screening for climate risks.	Project	Yes	India, Bangladesh and China	http://www.ids.ac.uk/go/research-teams/vulnerability-team/research-themes/climate-change/projects/orchid
Screening Matrix	Danida	Development project planners/ managers	Pre-screening of activities	Simple climate change screening matrix, which establishes sector programme support sensitivity	Programme & Sector	No	Kenya, Cambodia, Bhutan, and Nepal	http://www.danidadevforum.um.dk/en/menu/Topics/ClimateChange/ClimateAndDevelopment/ToolsAndReferences/ClimateChangeScreeningNote/
Climate change mainstreaming guidance								
Adaptation Learning Mechanism (ALM)	UNDP (WB, UNEP, UNFCCC, Global Environmental Facility (GEF))	Policy makers, development practitioners	Knowledge sharing platform	Knowledge platform providing the latest news on climate adaptation initiatives and general information and resources on climate adaptation, including partners, methods, tools, experiences and country information.	Various	No	Links to various case studies around the world are provided.	http://www.adaptationlearning.net/
Adaptation Policy Framework for climate change (APF)	UNDP	UN agencies, development agencies/ practitioners, and policy-makers	Step-by-step structured generic guidance	Guidance to risks and vulnerability assessment, and to support the formulation and implementation of climate change adaptation policies and measures	Project & country programme	No	Links to various case studies around the world are provided.	http://www.undp.org/climatechange/adapt/apf.html#about
Climate Change Adaptation and Mitigation in the Tourism Sector: Frameworks, Tools and Practices	UNEP, University of Oxford, World Meteorological Organization, World Tourism Organization	Policy planners, Tourism sector professionals	Sector based broad guidance	Guidance on climate impacts for the tourism sector, implications for mitigation and adaptation. Serves as awareness-raising and is applicable for planning, implementation, evaluation of activities	Sector	No	Links to various case studies around the world are provided.	http://www.unep.fr/shared/publications/pdf/DTIx1047xPA-ClimateChange.pdf
Climate Change Adaption Guidance Manual	USAID	Development project planners and managers	User-friendly, participatory life cycle approach based on pilot studies	6 steps project life-cycle approach integrating adaptation considerations, through an adaptation assessment matrix	Project	Yes	Mali, South Africa, Honduras and Thailand	http://www.usaid.gov/our_work/environment/climate/docs/reports/cc_vamanual.pdf
NAPA platform	United Nations Institute for Training and Research (UNITAR)	Policy makers, project planners/ managers	Knowledge sharing platform	Knowledge based platform focusing on country experiences, which aims at providing support to NAPA country teams etc	Various	Include costing of CCA activities	Identification and prioritization of CCA projects in various countries	http://www.napa-pana.org/private/modules/knowledgebox/external/index.php?kbid=6
OECD Guidance on integrating climate change adaptation into development projects (draft)	OECD	Development agencies/ practitioner, policy-makers.	Comprehensive, all level-based, generic guidance based on national policies and processes	Provides general guidance on climate change adaptation considerations inherent to various levels (project, portfolio, local, sectoral, national)	Project, programme, local, sectoral, and national levels	No	Links to various case studies around the world are provided.	http://www.oecd.org/dataoecd/0/9/43652123.pdf

Title of tool/ guidance	Organization/ institution	Target Audience	Approach	Summary	Level	Costing exercise included	Practical application	Link/References
Quality Standards for Integrating Climate Change Adaptation (UNDP CCA Quality Standards) (draft)	UNDP	UN agencies, development agencies/ practitioners, policy-makers	Generic approach based on climate change adaptation quality standards.	Minimum requirements for different phases of the integration of climate change adaptation into development programs and projects	Project & Country programme	No	Cape Verde, Malawi, Colombia, El Salvador, and Nicaragua.	Document still in draft being piloted in five countries.
Red Cross/ Red Crescent climate guide	Red Cross/Red Crescent	NGO project planners / managers	Hands-on, Bottom-up and participatory approach combining Disaster Risk Reduction methods with Adaptation	Thematic modules on how to integrate adaptation in development projects coupled with real-life scenarios, focused on a few aspects climate adaptation (communication, health etc)	Project	No	Africa, Indonesia, and Nicaragua	http://www.climatecentre.org/downloads/File/reports/RCRC_climateguide.pdf
Sourcebook: Integrating Adaptation to Climate change into UNEP Programming	UNEP	Programme/ project	Generic guidance on how to integrate adaption in programming	Generic introduction to climate adaptation in general and to how to integrate climate change adaptation in programming. Not a tool as such but a guidance to initial steps and relevant resources.	Programme & project	No	No, but includes links to case studies.	http://www.unep.org/Themes/climatechange/docs/UNEPAdaptation-Sourcebook.doc.
Strategic Environmental assessment and adaptation to climate change (OECD SEA & CCA)	OECD	Development professionals	Step-by-step approach based on Strategic Environmental Assessment	Guidance on how to use strategic environmental assessment in the mainstreaming of adaptation to climate change process - in national and sectoral planning	National sector, and programme	No	Vietnam	http://www.oecd.org/dataoecd/0/43/42025733.pdf
Water Evaluation And Planning (WEAP) system	Stockholm Environment Institute's Boston center and the Tellus Institute	Water-planning specialists	Participatory integrated approach to Water Resources Planning	Sector-specific tool for planning and policy analysis	Sector	No	N/A	www.weap21.org
WeAdapt	Environnement et Développement du Tiers Monde (ENDA) Sahara and Sahel Observatory (OSS), SEI, Global change System for Analysis, research and training (START), University of Cape Town (UCT), UNEP, UNITAR	Policy makers, project planners/ managers	Platform for information-sharing on climate adaptation	Webpage providing comprehensive guidance including tools, methods, datasets, training material and experiences on adaptation decision-making. Also includes following tools : • The Climate Change Explorer, to provide analytical foundation from which to explore climate variables; • Climate Adaptation Decision Explorer, which is a decision support tool to screen adaptation options and provide guidance on appropriate actions	Various	No	Links to various case studies around the world are provided.	www.weadapt.org

Title of tool/ guidance	Organization/ institution	Target Audience	Approach	Summary	Level	Costing exercise included	Practical application	Link/References
Portfolio screenings								
Asian Development Bank		Development project planners/ managers	Risk- and case study based approach	Methodology for risk based approach to mainstreaming adaptation, including "climate proofing" case studies	Programme	Yes	Pacific islands region	http://www.adb.org/Documents/Reports/Climate-Proofing/chap8.pdf
Danida		Development project planners / managers	Case-study based approach.	Identification of key climate vulnerabilities and of steps towards climate proofing Danish development assistance.	Strategic	No	All Danida programme countries	http://www.danidadevforum.um.dk/en/menu/Topics/ClimateChange/ClimateAndDevelopment/ToolsAndReferences/DanidaEntryPoints/ClimateChangeScreeningReports/?WBCMODE=P
DFID		Development project planners/ managers	Process-based methodology	Screening of ten ongoing and future activities and assessment of options for adaptation and disaster risk reduction for integration in agency portfolio	Programme	No	Ten ongoing and future programmes Bangladesh	DFID (2004) Tanner et al. (2007)
GTZ		Development project planners / managers	Project document review and interviews	Assessment of existing projects' consideration of climate risks and future opportunities for adaptation, provide a basis for awareness-raising on climate adaptation amongst government and project staff.	National and programme	No	136 projects	Klein (2001) Kasparek (2003)
Norad		Development project planners/ policy makers	Review of policies and strategies	Identify entry points for climate adaptation at strategic and operational levels. Examination of policies and strategies.	Strategic and operational	No	N/A	Eriksen and Næss (2003)
OECD		Development project planners/ managers and policy makers	Country case studies	Identification of synergies and tradeoffs in the mainstreaming of climate change into development assistance: address key priorities for adaptation, analysis of donor portfolio in terms of climate risks, and study of key resources potentially affected by climate change.	National, programme, project.	No	Bangladesh, Egypt, Fiji, Nepal, Tanzania and Uruguay.	Agrawala et al. (2005)
Swiss Development Cooperation (SDC)		Development project planners/ managers	Multi level screening approach	Assessment of potential effects on project and programmes by vulnerability to climate variability and change. Focus on national preparedness, impacts and vulnerability at the local level, and on the main barriers to implementation of adaptation and mitigation measures.	National, local and project	No	14 programmes and projects in 9 countries in Africa, Asia, Latin America and Europe	Robledo et al. (2006)
World Bank		Development project planners / managers	Country case studies	Assessment of WB project vulnerability to climate change, impacts of projects on vulnerability and implications of institutional roles within the UNFCCC and GEF for the World Bank activities	National, programme and project	No	Bangladesh, Guyana, India, Papua New Guinea, Ecuador and Samoa.	Burton and Van Aalst (1999, 2004[a], 2004b)

5.2. Target Level and Stakeholder Involvement

The predominance of tools, screenings and guidance focusing on the programme and project levels may reflect several aspects. One aspect is that the project level is perceived as the most tangible for undertaking detailed climate risk screenings, and that since the consequences of climate variability and change are felt most immediately, efforts have emphasized the project level from the onset. The recognition at higher levels of the need for engaging in climate risk screening and other climate change adaptation/mainstreaming efforts has evolved more slowly. Consequently, the development of tools and guidance for these levels (sector and national) lag behind the two main levels of focus, and are only now beginning to catch up in terms of volume. Another important aspect is that most of the tools and guidance are developed for, or by, international donor agencies and NGOs, geared towards adaptation, risk screening and management processes.

Consequently, they are tailored specifically for decision-making processes at various levels relevant to the donor organization. In addition to the portfolio screening exercises, this is the case, for example, for UNDP, ORCHID, USAID, and Red Cross/Crescent. The relevant levels are typically the programme/project levels, and the screenings, tools and guidance characteristically rely on qualitative information, facilitate stakeholder information, and, in most cases, require additional technical input from those who are not direct users of the tools. Computer-based tools such as CRiSTAL, ADAPT, and Adaptation Wizard primarily build on detailed project or program specific inputs to guide the user towards an identification of climate related risks and potential adaptation options. A need for more tools and approaches that a) target the national and sectoral levels from a country perspective rather than a donor perspective, and b) are readily operational, has been highlighted in various forums (see e.g. GTZ 2009 and IISD 2007).

An additional characteristic which distinguishes risk screening tools and guidance from one another is the level of stakeholder involvement. Certain tools are based on a bottom-up approach, where stakeholders are involved in the identification of hazards, coping strategies, formulation of adaptation needs, evaluation, etc. (NAPAssess, Red Cross climate guide, CRiSTAL, USAID Manual). Although few tools include stakeholder consultations in all processes (NAPAssess is an exception), a number include stakeholder involvement in specific phases, such as vulnerability assessment, case studies, etc.

5.3. Application and Case Studies

It is worth noting that in addition to the portfolio screening efforts that target activities in specific countries, at least nine of the tools and guidance included in Table 2 have been, or are currently being, piloted in various parts of the world – including CRiSTAL, ADAPT, ORCHID, CRISP, Adaptation Wizard, NAPAssess, Danida screening matrix, OECD SEA & CCA, UNDP CCA Quality Standards (draft), and USAID.

Practical application of the various approaches to climate risk screening presents a wealth of information to guide future climate change adaptation and mainstreaming. Currently, however, it is difficult to access and compile the findings from the practical applications of the variety of tools and guidance, which would form the basis for a comparison. Most of the available literature where piloting of climate risk screening tools and guidance is mentioned, include a summary of a few individual case studies carried out using some of the tools and guidance included in Table 2 (see e.g. OECD 2009).

Comparisons of the findings from pilot cases would in addition be greatly facilitated, as discussed in Section 3, if efforts are put in place to:

- Establish a common terminology – avoiding different uses of the same key terms and concepts;
- Create a clear overview of the types of analysis conducted under each of the climate risk screening tools, and the indicators used. This would contribute to reconciling the diverse attempts at climate risk assessment; and
- Test climate screening tools more systematically.

In-depth analysis of the practical application results for the various climate risk screening tools and guidance presented in Table 2 is beyond the scope of this report. However, an initial examination of the documents reveals that much of the value added from applying different tools and methods appears to be presenting a way of building the capacity of the users of the tools, enabling them to systematically organize relevant climate change adaptation information. In this way, one of the key contributions of the practical application of climate screening tools and guidance so far is the impact on awareness-raising and capacity-building of non-experts on climate change adaptation.

Guidance on the specific climate risk screening tools that are particularly useful to accommodate different risk screening purposes would also be useful for stakeholders who are about to conduct climate risk screening exercises. Table 3 below illustrates the different emphasis in the purposes and focuses of the available climate risk screening tools and guidance, which additionally may serve as guidance for choosing a screening tool or guidance.

Table 3: Applicable screening tools and guidance for different purposes.

Purpose	Focus	Applicable tools and guidance
Reactive screening: Focus is on ensuring that the risks posed by existing and future climate to existing projects are reduced by the extent possible[1]	Pre-screening exercise	ADAPT; CRiSTAL; Adaptation Wizard, Danida screening matrix.
	Assess vulnerability to climate change	Adaptation Wizard; ADAPT; CRiSTAL; UNDP APF; UNDP CCA QS (draft); USAID Manual and Red Cross guide.
	Step-by-step approach	UNDP CCA QS (draft); UNDP APF; CRiSTAL; Adaptation Wizard; ORCHID; USAID manual.
	Participatory screening tool to assess existing/future adaptation needs to project/ programme	CRiSTAL; USAID manual; Red Cross climate guide.
	Link relevant climate data to project specific activities	ADAPT
	Software-based structuring tool for the organization of information and ideas to address climate specific issues	CRiSTAL; ADAPT; Adaptation Wizard
Proactive screening: Adaptation is actively integrated from the start to ensure that future development priorities and programs/ projects are designed to anticipate and address climate risks and vulnerability	Design new development project/ programme taking CCA into consideration	UNDP CCA QS (draft); UNDP APF; CRiSTAL; OECD guidance; USAID Manual and Red Cross guide
	Access sector level information relevant for adaptation activities	CRISP; OECD guidance; WEAP
Prioritization	Prioritize and select adaptation options based on diverse criteria	OECD guidance; UNDP APF; UNDP CCA QS (draft); USAID manual; ORCHID; CRISP; CRiSTAL.
	Participatory prioritization of adaptation activities	NAPAssess
Awareness and knowledge development	Create awareness on climate change and development	OECD guidance; Red Cross climate guide, USAID manual; CRiSTAL;
	Guide to appropriate in-depth resources	UNDP APF; ADAPT; ALM; OECD guidance; WeAdapt;
	Knowledge-sharing and resource platforms on climate adaptation	WeAdapt; ALM
	Promote understanding of the linkages between climate change and vulnerability	CRiSTAL
	Consult case studies to learn about potential adaptation options	NAPA platform; Red Cross Climate guide; USAID manual; WeAdapt
	Access sector level information relevant for adaptation activities	CRISP; OECD guidance; WEAP

[1]It should be noted that although reactive screening is listed as an objective, this does not imply that the tools and guidance listed do not have proactive screening as an additional objective.

5.4. Context: Adaptation versus Development

The approaches of the various climate screening tools and guidance differ in terms of whether mainstreaming is the point of departure (examples include OECD, USAID Manual, and the draft UNDP CCA Quality Standards) or whether there is an emphasis on formulation and implementation of new adaptation activities (Red Cross climate guide).

In addition, certain tools and exercises – notably the UNDP APF and CRiSTAL – are firmly rooted in a climate change adaptation context and have a predominant focus on developing relevant adaptation options, measures and policies, without starting from the premise of ongoing or planned development activities. By contrast, others (e.g. Danida and ADB) focus primarily on providing an overview of key vulnerabilities and climate adaptation needs in different sectors and communities within a given country, and aim at outlining necessary adjustments to existing and future programs and projects.

Liba Taylor/UNDP (Bolivia)

5.5. Level of Climate Change Adaptation Expertise, Detail of Analyses and Operational Aspects

The specific knowledge level of climate change and climate change adaptation required to use a given climate risk screening tool – or to apply climate risk screening guidance – varies considerably. Tools and guidance such as the Adaptation Wizard, the Red Cross/Red Crescent climate guide, the OECD Policy Guidance, and the USAID Manual emphasize an informative, educational and awareness-raising role, broadly targeting project planners/managers and policy makers. Other tools, including ADAPT and CRiSTAL, include less background information on climate change adaptation and focus more directly on the actual screening exercise, which requires that users have a higher level of context and climate-specific knowledge. A number of the climate risk screening tools incorporate climate data from Global Circulation Models (GCMs) and/or sector and context specific socio-economic and vulnerability data(particularly ADAPT, ORCHID, and CRISP), while others provide a framework to organize the collecting of external knowledge and information (CRiSTAL, UKCIP, OECD, and USAID Manual) and guide the user to relevant sources for further analysis.

Another way to differentiate between existing climate risk screening tools and guidance is the extent to which they are readily operational in practice. At one end of the continuum, certain tools – notably the computer-based tools – are very easy to apply. Examples include CRiSTAL, Adaptation Wizard, ADAPT, and NAPAssess, where concrete inputs from the user are incorporated through the entire process of analyzing risks and defining adaptation needs and options. Guidance such as the USAID adaptation manual, UNDP APF, UNDP CCA Quality Standards (draft), and the Red Cross climate guide, also propose modus operandi for framing climate adaptation, but do not provide an actual platform for project/context specific input and the 'how to' operational guidance is less tangible. Consequently, their application typically takes longer than the application of computer-based tools. Guidance which

Evan Schneider/UNDP (Senegal)

intends to cover all aspects of mainstreaming at all levels are, by definition, placed at the other end of the continuum (OECD guidance), and aim at establishing a framework for mainstreaming intended to support and guide policy and planning processes.

Not surprisingly, the observations above suggest that often there may be a trade-off between the degree to which a climate risk screening tool or guidance is readily operational (and therefore useful to the project planners and policy makers the tools and guidance typically target), and the level of detail and/or quality of the recommendations regarding climate change adaptation resulting from the practical use of the tool or guidance.

Put differently, climate risk screening tools need to be simple, in order to be useful to project planners, policy makers and others who are not experts on climate and development. But simple tools may not provide the information needed for informed decision-making on climate change adaptation to support mainstreaming. The recommendations based on simple tools may indeed lead to maladaptation if the analysis of the intrinsic linkages between climate change, vulnerability, and development is too superficial or, alternatively, if the user of the tool has insufficient climate change and adaptation specific knowledge to carry out a climate risk screening.

To avoid maladaptation resulting from the above, more clarity on the technical requirements and level of detail are needed, as well as on the quality of the underlying climate change. The socio-economic data for appropriate use of various climate risk screening tools would also be useful. In addition, a helpful rule-of-thumb seems to be that with the available knowledge on key linkages between climate change, vulnerability and development, simple tools can be applied by non-experts on climate change adaptation at all the climate change pre-screening levels (i.e. national, sectoral, programme, local, and project levels), whereas the detailed assessments of risks and identification of potential climate change adaptation options are best left to be guided by experts.

The diversity of approaches used in climate screening exercises has been pointed out by some to be a positive factor contributing to awareness-raising, cross-referencing and collaboration (see IISD 2007). Others have emphasized the need for a more harmonized approach to climate change risk screening to support comparison and assessment of the usefulness of various tools, and the broader experiences from the piloting of these tools (see e.g. Gigli and Agrawala 2007, OECD 2006, OECD 2009, and GTZ 2009).

Development of methodologies in new areas should indeed be characterized by a learning process – which would involve the testing of multiple approaches. However, the comparative overview of available climate risk screening tools and guidance provided in this section indicates that given the sheer volume of climate risk screening tools and guidance currently available, and the growing number of practical experiences from the application of these tools and guidance, it is now time to take stock. The findings from this comparative overview reiterate that a common approach to climate screening of development programs and project portfolios would not only increase the transparency and facilitate cross-cutting comparisons of climate risk screening efforts, it would furthermore facilitate the expansion of the generic mainstreaming processes to involve all relevant stakeholders at the national level. The recently published OECD Policy Guidance (OECD 2009) is a step forward in this process. However, as discussed above, in order for practical implementation it is necessary to simplify much of the generic guidance – to the extent possible – yet still not compromise the quality of advice on climate change adaptation options.

[17] Available at http://unfccc.int/adaptation/implementing_adaptation/items/3582.php.

Adam Rogers/UNCDF (Benin)

This stocktaking report set out to provide a comparative overview and analysis of key climate screening tools and guidance efforts to date, and to illustrate how climate risk screening supports the process of mainstreaming. We have additionally explored the concept of mainstreaming, and analyzed how key climate change adaptation and mainstreaming concepts are used and defined in relevant literature, while clarifying how they relate to development.

This report clearly illustrates the considerable progress that has been made over the past 5-10 years in terms of constructing a conceptual framework for mainstreaming, and on developing/ testing climate risk screening tools and guidance to support mainstreaming. In addition, this report has outlined how further progress can be achieved.

One of the essential aspects is to further develop a common understanding of what climate change mainstreaming is about, how it can be operationalized, and the role that the various levels (at which mainstreaming should take place) play in the types of climate risk assessments and analysis to be conducted. Establishing a common language – including clear definitions of key climate change adaptation and mainstreaming concepts, and transparent indicators for assessing climate change adaptation activities – should be a priority.

A final observation is that climate risk screening efforts are immensely useful to support a number of mainstreaming components, and that their relevance is not confined to the project level, but, in fact, different approaches are required at different mainstreaming levels. In order to make full use of the wealth of information provided through the development and piloting of climate risk screening tools and methods – and to secure consistency – there is a need to harmonize approaches to assessment and integration of climate risks in development activities. A detailed comparative analysis of the methodologies of the climate risk screening tools and a comparison of the results from their piloting is recommended as an interesting first step towards harmonization.

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ANNEX 1. SUMMARY OF MAJOR CLIMATE SCREENING TOOLS AND GUIDELINES

This section provides brief summaries of the climate screening tools and guidelines discussed in the previous parts of the report. The tools and guidelines are grouped into process-oriented tools and guidelines and computer-based tools, respectively.

Tina Coelho/UNDP (Brazil)

PROCESS-ORIENTED TOOLS/GUIDELINES

(1) OECD Guidance on Integrating Climate Change Adaptation into Development Co-Operation.

The OECD guidance on integrating adaptation into development co-operation is developed to reinforce the integration of adaptation considerations within national level partners and donor processes. In line with the Paris Declaration, OECD's approach is based on the incorporation of adaptation into partner country processes and institutions. The document takes an integrated approach, where climate adaptation needs and priorities are associated to decision-making and policy processes at the national, sectoral and local levels, while the project level also is taken into account. The core target audience is development co-operation agencies, while policy-makers and practitioners in developing countries are also considered, to find the guidance useful in their work.

The main objectives of the document are:

1. To promote the understanding of the implications of climate change on development practice, and on the need to mainstream climate adaptation;
2. To identify appropriate approaches for integrating climate adaptation into development policies at national, sectoral and project levels; and
3. To identify practical ways for donors to support developing country partners in efforts to reduce their vulnerability to climate change.

The OECD guidance is the most comprehensive of its kind, and gives an overview of the mainstreaming process, where pragmatic methods, resources and tools are proposed at each level of analysis. The guidance provides a generic framework for incorporating adaptation into development co-operation and does not include sector-specific information, per se. Rather, it is a reference document that provides a conceptual foundation for more targeted and practical tools for mainstreaming climate change.

(2) Adaptation Policy Frameworks for Climate Change: Developing Policies, Strategies and Measures.

The Adaptation Policy Frameworks for climate change (APF) developed by UNDP on behalf of the Global Environment Facility, is a roadmap for program/project planners and policy makers, to support them in formulating and implementing adaptation activities, policies and strategies, as well as enabling the inclusion of adaptation considerations in existing programmes and projects.

It takes the user through five distinct stages:

1. Scoping and designing an adaptation project
2. Assessing current vulnerability of development objectives to climate
3. Assessing future climate change risks to the development objective
4. Formulating an adaptation strategy
5. Continuing the adaptation process through monitoring and evaluation

Objectives, actions and guiding questions are presented for each of the stages, followed by in-depth technical papers. The idea is that the APF components and papers can be used concomitantly or independently. The technical papers are rather comprehensive (up to 200 pages each). A user's guidebook summarizing all technical papers is also available.

By being simultaneously broad in scope and specialized through the inclusion of technical papers, the target audience of the framework is both expert personnel and non-specialized project planners/managers. The brief version of the framework may primarily serve as awareness-raising for project managers on the mainstreaming process, and guide their actions within climate adaptation. The APF seeks to be practical, and proposes concrete methods to follow for a constructive integration of climate aspects in project planning – as it is, for example, the case with methods to prioritize and select adaptation options. Although occasionally drawing on specific sectors, the APF is not intended to provide sector specific information.

(3) UNDP Quality Standards for the Integration of Adaptation to Climate Change into Development Programming (UNDP CCA Quality Standards) - DRAFT

UNDP is developing a guidance to apply a set of quality standards to ensure that climate change risks are addressed adequately in the development of plans, programs and projects. The UNDP CCA Quality Standards presents a generic framework for best practices, which can be useful to facilitate a successful incorporation of climate change and adaptation concerns in development programs and projects. The intention is not to provide new knowledge, but to facilitate a more effective use of existing information and data. Project/program planners and implementers are guided in the assessment of four 'quality standards' or principles:

I. Identification of climate change risks to programmes and projects

II. Identification of risks that a programme or project may result in maladaptation

III. Identification of adaptation opportunities

IV. Identification and assessment of potential adaptation measures

Each of these is supported with a list of question to guide the practitioner in undertaking a comprehensive assessment of the climate risks and opportunities that may affect a project or program. Reference is also made to relevant resources.

The guidance is presently being piloted in five countries in Latin America and Africa. Lessons learned from the project will be posted on the Adaptation Learning Mechanism (ALM), and will contribute to a revised version of the CCA Quality Standards.

(4) Red Cross/Red Crescent Climate Guide

The Red Cross/Red Crescent guide is a practical step-by step guide targeted primarily at Red Cross project personnel, which can also serve as inspiration for a broader audience of development practitioners, national governments, donors, etc. The guide proposes a hands-on, bottom-up and participatory approach to design and implement adaptation activities at the community level. It combines disaster risk reduction methods with the adaptation rationale, and is therefore a practical example of the potential for synergies between the two fields.

The guide starts with a broad presentation of the impact of climate change on development and the prospect for adaptation, followed by six thematic modules:

1. Getting started
2. Dialogues
3. Communications
4. Disaster management
5. Community-based disaster risk reduction
6. Health

The modules include case studies, "how-to" guides and concrete example of ways to implement enabling activities for climate adaptation (e.g. communication strategies, etc). The practical approach, using case studies and real-life Red Cross examples, makes the guide highly accessible and customized, and is thereby likely to increase user ownership. The guide deals with a few concrete aspects of climate adaptation (community communication and risk reduction, health and care and disaster management) in contrast to the all-embracing approach characterizing the aforementioned process-oriented instruments.

(5) USAID Climate Change Adaptation Manual

USAID's climate change adaptation manual is developed for USAID project personnel as a support to understand climate change and vulnerability and to include adaptation considerations into development thinking. Background on climate change, vulnerability and adaptation is presented, including projected impacts by sector. The manual presents a six-steps approach, in line with the project-life cycle method, only with vulnerability and adaptation as the pivotal elements.

The identified steps are:

1. Screen for vulnerability
2. Identify adaptation
3. Conduct analysis
4. Select course of action
5. Implement adaptation
6. Evaluate adaptation

Under each step practical methods and recommendations are proposed based on pilot studies from Mali, South Africa, Honduras and Thailand. Under each step, questions and answers, checklists and best practices are guiding the user through the process of integrating adaptation into development projects, which can also easily be applied outside USAID projects. The "adaptation assessment matrix" is a good example, where a number of criteria for assessing adaptation options are proposed (the selection of criteria should be finalized through a participatory process). The proposed criteria against which adaptation options should be prioritized include: effectiveness, costs, technical feasibility, social and cultural feasibility and speed.

(6) Opportunities and Risks from Climate Change and Disasters (ORCHID)

The ORCHID process and risk-based methodology was developed by the Institute of Development Studies (IDS), with the aim to enable a more systematic consideration of climate risks in development of the design and implementation of development projects and programs. The approach brings together concerns related to disaster risk reduction and adaptation to future climate change, and was developed for project portfolio screening in India and Bangladesh as well as also having been tested in China. The target audience is the donor community, project planners and managers.

The main objective of ORCHID is to raise awareness of climate risks for programme personnel, and for them to acquire an initial understanding of the program's portfolio in terms of the risks posed by climate change in the design, planning and implementation process. Each of the following steps guides the actions to be implemented by the user:

1. Strategic Overview
2. Climate change and disaster profile
3. Portfolio risk assessment
4. Multi-criteria analysis of adaptation options (including costing exercise)
5. Integration of high priority adaptation options

Raising awareness and conceptualizing adaptation as a learning process is intrinsic to the approach. The prioritization of adaptation options – which includes an economic analysis of adaptation possibilities – is also a central element.

ORCHID can be considered as a first step to portfolio climate screening, providing a framework and initial recommendations to guide this exercise and advise how programmes may enhance risk management. Consequently, ORCHID provides a basic framework to structure the screening process, which remains generic, and serves as a point of departure for more in-depth analysis.

(7) Asian Development Bank

In the preparation of six "climate proofing" case studies conducted in the pacific islands region, the Asian Development Bank (ADB) proposes a "climate change adaptation through integrated risk assessment" approach (CCAIRR), which, by definition, is a risk-based approach to adaptation. The approach constitutes of five main components:

1. Capacity assessment and strengthening: through a consultative approach it is assessed whether climate risks are taken into consideration in present development and management
2. Knowledge data and tools are reviewed, to clarify existing knowledge, data and tools available on climate risks
3. Rapid Risk Assessment: Quick assessment of the risks posed by climate variability and change and estimation of future threats
4. Mainstreaming: Facilitating the creation of an enabling environment for capacity development
5. Monitoring and evaluation: Ensuring that adaptation is a dynamic and evolving process

Each of these components introduces methods to take into consideration when addressing climate adaptation, as, for example, cost-benefit analysis for evaluating adaptation, climate-modeling tools, etc. In general, the ADB case studies propose relevant guidelines and touch upon inherent issues of sustainable development, such as, for example, the role of capacity building, partnerships, institution strengthening, etc.

COMPUTER-BASED TOOLS

(8) Adaptation Wizard

The Adaptation Wizard developed by the UK Climate Impacts Programme (UKCIP), proposes a simple and generic step-by-step tool, which informs on the need to include climate change adaptation in decision-making processes at the organization/institutional level, based on the UK context. The tool is not developed for development practitioners, but for a broader audience of organizations and institutions in the UK. The tool poses a number of questions, which the user needs to formulate an answer to, in order to develop an appropriate and effective climate change adaptation strategy – taking into consideration external climate risks, as well as existing and future activities/operations.

It gives broad-spectrum guidance on:

- How to define climate risks
- How to assess their own vulnerability
- When to respond
- Which possible scenarios exist to react to climate risks
- How to cost climate change impacts, in order to guide response measures intended to prevent climate change.

The Adaptation Wizard is an awareness-raising tool which is well-suited for beginners in the adaptation field. It remains very general, but also includes more detailed resources, e.g. a spreadsheet costing tool, database of adaptation options by region, sector or adaptation activity, etc. A broader use of these resources is however limited by their restriction to the UK context. Nonetheless, the Adaptation Wizard may be relevant in a development context as well, as it can serve as inspiration for developing similar computer-based tools and resources adjusted to a developing country setting.

(9) Community-based Risk Screening Tool

The Community-based Risk Screening Tool – Adaptation and Livelihoods (CRiSTAL) is a computer-based decision-support tool developed by IUCN, SEI-US, IISD and Intercooperation. The tool draws on the Environmental Impact Assessment model and the Sustainable Livelihoods Framework, and aims at providing a mechanism for addressing the implications of climate change for project design and implementation at the community level. Through a step-by-step approach, the objective of the tool is threefold:

1. To provide an understanding of how local livelihoods are faced with a reality increasingly compounded by the negative effects of climate variability and change;
2. To assess how a project may impact on livelihood resources essential for coping, which are vulnerable to climate risks; and
3. To modify project elements according to identified risks, in order to reinforce the project's potential impact on the livelihood resources central to adaptive capacity.

In order to reach the above objectives, the tool proposes a conceptual framework, which – through excel sheets – takes the user through the process of understanding the specific context of a given project, in terms of climate change context, current climate risks, livelihood resources, coping strategies, etc. Based on the acquired knowledge the user is then assisted to anticipate needed modifications of the project. The tool is well-adapted to a participatory process, where project stakeholders are involved in the identification of hazards, coping strategies, etc., which makes it representative of the complex reality in which projects unfold. This is evidently even more the case in regions/countries where reliable information/data is scarce and/or unreliable.

CRiSTAL provides a framework to establish a community-level baseline with regards to coping mechanisms and vulnerability. It explains the main concepts, provides examples and refers to relevant resources, but does not comprise of climate-modeling or other context-specific data, as all information is fed into the tool directly by the user. In this sense, the tool is generic, and the users need to have in-depth context- and sector-specific knowledge. The tool has been tested in Mali, Bangladesh, Tanzania, Nicaragua and Sri Lanka. By approaching climate screening of projects in a user-friendly, systematic and pragmatic manner, CRiSTAL serves both as an awareness-raising and structuring tool for project planners and managers, who do not necessarily have specialized knowledge on climate related issues, per se.

(10) ADAPT

The ADAPT screening tool developed by The World Bank is a software-based, multi-sectoral tool used to screen development projects for potential sensitive areas to climate change. The tool brings together climate databases and expert assessments on the threats and opportunities arising from climate variability/change, and focuses primarily on agriculture, biodiversity, rural infrastructure and coastal zones. The purpose of the tool is: 1) to raise awareness on the importance/relevance of adaptation to climate change in project planning; 2) to screen existing projects for potential risks related to climate change; and 3) to provide guidance as how to design alternative options which minimize risks. ADAPT takes the user through a gradual process where:

1. Project location and activities are identified
2. Project activities are screened through a project activity sensitivity matrix based on Global Circulation Modeling (GCM) data
3. A climate risk assessment is made
4. Project activities are ranked based on a simple flag classification system, which grades projects according to their level of adaptation needs
5. Results are explained, adaptation options are proposed, and expert databases and literature are referred to

The ADAPT tool has been tested in South Asia and Sub-Saharan Africa and is recently made broadly accessible.

(11) NAPAssess

The "NAPAssess" interactive analytical tool is a decision-support instrument developed by the Stockholm Environment Institute in the context of the Sudan NAPA process. Its main objective is to facilitate a stakeholder-driven and transparent NAPA formulation process, in the assessment and prioritization of adaptation initiatives. The model guides the user through a multi-criteria analysis composed of seven modules (vulnerability, stakeholder, initiatives, criteria, weighting, ranking and help/reports) where the content of each module is determined through stakeholder consultation inputs.

A participatory and consensus-based approach – where stakeholders voice their own definition and appraisal of key vulnerabilities, possible initiatives, criteria for prioritizing adaptation activities, etc. – is, although rather resource intensive, highly relevant in the context of climate screening exercises of development projects and programs.

OTHER RELEVANT TOOLS AND RESOURCES

(12) Adaptation Learning Mechanism

The Adaptation Learning Mechanism (ALM) is an interactive knowledge sharing platform implemented by UNDP in collaboration with the World Bank, UNEP, UNFCCC and GEF. The platform provides the latest news on climate adaptation initiatives and general information on climate adaptation – including partners, methods, tools and experiences.

(13) WeAdapt

WeAdapt is a practical web-based tool which disseminates existing adaptation documents from different sources. It is not a tool, per se – more a discussion platform assembling "good practice" across a range of topics related to climate change adaptation (vulnerability, risk mapping, multi-criteria assessments, etc). Its aim is to enhance the knowledge base of the climate adaptation community in a collaborative way. WeAdapt includes a number of relevant recommendations, articles, case studies, tools and links, and can therefore prove helpful when working with climate adaptation mainstreaming.

A new feature on WeAdapt is the "adaptation layer" on Google earth, where adaptation activities, partnerships, etc are accessible worldwide through Google earth.

(14) The Climate Change Explorer

The Climate Change Explorer (CCE) is a web-based tool that is part of WeAdapt. The objective is to strengthen the availability of context-specific information on present risks and trends in climate, and how they may change in the future. This provides users with an analytical foundation from which to explore the climate variables relevant to their particular adaptation decisions.

(15) NAPA Platform

The NAPA platform is aimed at providing informational support to NAPA country teams, implementing agencies and adaptation experts. Through the dissemination of documents and knowledge, the platform provides a good point of departure for adaptation mainstreaming work, where country experiences are classified according to regions, thematic areas and document types.

(16) Tools for Mainstreaming Disaster Risk Reduction

The Disaster Risk Reduction (DRR) mainstreaming process touches upon a number of issues similar to the ones inherent to climate change adaptation, in terms of how to deal with present climate variability and vulnerability, risk frameworks and the need for a cross-sectoral approach.

The Provention Consortium proposes fourteen guidance notes as a framework to support the DRR mainstreaming process. These include, among others: how to integrate DRR in project life cycle management, economic analysis, vulnerability and capacity analysis, sustainable livelihood approaches, etc.

(17) Water Evaluation And Planning (WEAP) system

This WEAP system is a sector-specific tool aimed at water-planning specialists. It is a software tool which takes an integrated perspective to water resources planning, providing a comprehensive framework for planning and policy analysis. The WEAP system operates at several levels providing the following tools:

- **Water balance database**: system for maintaining water demand and supply information.
- **Scenario generation tool**: simulates water demand, supply, runoff, stream-flow, storage, pollution-tracking, treatment and discharge and instream water quality.
- **Policy analysis tool:** evaluates a full range of water development and management options, and takes account of multiple and competing uses of water systems.

A financial analysis also provides cost-benefit comparisons for projects.

(18) Vulnerability Mapping and Impact Assessment

This tool developed for Sub-Saharan Africa by ILRI, CIAT and TERI, identifies vulnerable populations, assesses climate change impacts and adaptation options. It uses GCM outputs, GIS and vulnerability data, agriculture systems and land use data. The tool only concentrates on agricultural impacts in the Sub-Saharan region.

ANNEX 2. OVERVIEW OF DONOR AGENCY PORTFOLIO SCREENING EFFORTS

Agency (reference)	Main Goals	Activities	Scope	Main Methods	Key Findings	Recommendations on Mainstreaming
World Bank (Burton and Van Aaist 1999; 2004a,b)	Examine what climate change would mean to World Bank operations	• Projects assessed for whether and how they discussed climate risks • Countries assessed for range of climate risk criteria, sensitivity of portfolio and climate change coverage in CAS	• Six selected World Bank projects • World Bank assistant to six selected countries	Document Review	• Little or no attention to climate change at project level, even where climate risks are obvious today • Climate seen as a risk to project implementation, not long-term sustainable development • No mention of climate change in CAS	• Knowledge base for climate risk management and a routine screening tool for projects
GTZ (Klein 2001; Kasparek 2003)	• Identify current consideration of climate change, opportunities for integration in future projects and awareness raising • Identify relevant sectors and priority measures for adaptation	• Projects selected on basis of potential for no-regrets and secondary benefits • 136 projects reviewed for whether or not they considered climate change • In-depth review of 5 projects; documents and interviews with staff • Questionnaire to 330 ongoing projects	• GTZ project portfolio on natural resource management in Africa • Ongoing GTZ projects in climate-relevant sectors worldwide	• Document review • Interview with staff • Questionnaire survey to project staff	• No explicit consideration of climate change in 136 projects, also in areas with high current climate risks • Climate change not seen as important issue by project staff • Increasing interest in information on and support for adaptation and mainstreaming	• Integrate indicators to evaluate climate adaptation in current routines for project design, identifying options that give immediate benefits and increase future flexibility • Analyse the adaptive effects of current projects • Develop guidance to consider climate change in the development of projects
Norad (Eriksen and Næss 2003)	Assess current level of climate change consideration, identify links between climate and development and recommend future strategies	• Review of policy documents for development cooperation, overall and within key priority sectors	Norad policies and strategy documents	Document review	• Negligible references to climate change • Where mentioned, climate change framed as a mitigation issue • Many potential entry points	• Detailed review of tools currently in use for project development and approval in order to identify ways to achieve synergies between climate adaptation and poverty reduction

Agency (reference)	Main Goals	Activities	Scope	Main Methods	Key Findings	Recommendations on Mainstreaming
OECD (Agrawala et al. 2005)	Explore synergies and trade-offs of "mainstreaming" climate change responses into development assistance, projects and plans	• Donor portfolios in selected countries analysed for proportion affected by climate risks • Donor strategies and projects assessed for attention to climate change	Donor policies, programmes and projects in six selected countries	Document review	• Climate risks and climate change largely missing in donor project documents • Where climate change mentioned, mainly in relation to mitigation • In Bangladesh, significant attention to climate change amongst sectoral planners, but little mention in higher-level policy documents or CAS	• Adaptation should be part of core development activities rather than separately funded • Differentiated adaptation strategy with a focus on improving climate change considerations in the implementation process • Adaptation needs to move beyond current variability • Need for policy coherence and for operational tools
SDC (Robledo et al. 2006)	Assessment of potential effects of projects and programmes on vulnerability and adaptation	• Review of understanding and preparedness at the national level; impacts and vulnerability at the local level and main barriers to implement mitigation or adaptation measures	14 SDC projects and programmes in 9 countries in Latin America, Asia, Africa and Eastern Europe	Document review	• Action needed on (i) institutional development for adaptation, (ii) the role of technology transfer in adaptation, and (iii) capacity building for affected groups - need to improve climate forecasting at the local level	• Consider adaptation as a key element in development cooperation and differentiate recommendations into three levels: (i) thematic, (ii) methodological, and (iii) concerning implementation of adaptation measures
DFID (DFID, 2004; Tanner et al, 2007)	Management of climate risks and opportunities for bilateral aid portfolio	• DFID aid portfolio in Bangladesh assessed for current and future climate risks • Review of DFID country strategy in Bangladesh – Adaptation and risk options integrated into screened projects	Initial country study for DFID Bangladesh aid projects.	• Document review • Options assessment with project staff • Climate impacts assessment • Cost benefit-analysis	• Awareness is low but rising • Many areas of portfolio already contribute to reduced vulnerability • Climate change considerations are crucial for infrastructure development • Need improved vulnerability assessment at local level	• Climate risks need management as routine part of donor project cycle • Need for donors coherence on international dimensions • Greater interaction and synergies between disasters and adaptation communities

Source: Klein et al. (2007), table 1.

For further information:
Veerle Vandeweerd
Director
UNDP Environment & Energy Group
304 East 45th Street
New York, NY 10017
Email: veerle.vandeweerd@undp.org
Phone: +1 (212) 906 5020
www.undp.org/climatechange