FOR FIELD TESTING

HOW TO INTEGRATE CLIMATE CHANGE ADAPTATION INTO NATIONAL-LEVEL POLICY AND PLANNING IN THE WATER SECTOR

A practical guide for developing country governments

tearfund

How to integrate climate change adaptation into national-level policy and planning in the water sector: a practical guide for developing country governments

For field testing:

The guide is to be refined and improved through being tested in partnership with a small number of developing country governments

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Glossary

Adaptation: the process by which individuals, communities and countries seek to cope with the impacts and consequences of climate change and variability.

Autonomous adaptation: adaptation that does not constitute a conscious response to climatic stimuli, but rather adaptation that is triggered by ecological changes in natural systems and by market or welfare changes in human/social systems. Also referred to as spontaneous adaptation.

Climate change: any long-term significant change in the climate, caused by nature or human activities.

Climate-justified: a term describing a contribution designed to address infrequent or long-term events (such as low-probability extreme events) which will create constraints for monitoring and evaluating the success of an adaptation measure.

Climate variability: deviations in the regular fluctuations of the climate, as opposed to long-term climate change trends.

Disaster risk reduction: the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.

Ecosystem: generally an area within the natural environment in which physical factors of the environment, such as rocks and soil, function together along with interdependent organisms, such as plants and animals, within the same habitat.

Hyogo Framework for Action 2005–2015: a global blueprint for disaster risk reduction efforts. Its goal is to reduce disaster losses substantially by 2015 – in terms of lives and the social, economic and environmental assets of communities and countries (see http://www.unisdr.org/eng/hfa/hfa.htm)

Low regrets actions: actions where moderate levels of investment increase the capacity to cope with future climate risks.

Maladaptation: an adaptation that is (or has become) more harmful than helpful, increasing vulnerability to climate change-related hazards.

No regrets actions: actions that generate benefits under all future scenarios of climate change, including the 'no change' scenario.

Executive summary

Climate change is having a significant impact on water availability, quality, accessibility and demand in many contexts. These impacts are, in turn, affecting many other sectors such as agriculture, energy and health, seriously undermining development. The poorest people, who often live in the most fragile environments and are especially reliant on water- and climate-sensitive sectors, are highly vulnerable to climatic impacts. It is the poor who are being hit first and hardest.

Across the world, individuals, communities, the private sector and governments need to adapt to the impacts of climate change, not least the impact on water resources. While the process of adaptation to changes in climate is not new, the *pace of change* and the *scale of impacts*, including through extreme events, are unprecedented.

Tearfund believes that climate risk-based approaches, which address climate variability and climate change, need to be integrated within water policy frameworks. Therefore, this document aims to provide guidance on how resilience and adaptation can be integrated into national-level policy and programmatic planning in the water sector.

The guide has been produced for use by developing country governments. We suggest that water ministry officials take the lead in this process, working with a range of other stakeholders. The guide aims to be practical and pragmatic and is based on existing conditions in terms of areas such as knowledge, skills, capacity and observed climate change impacts and risks. It also draws on other tools, approaches and experiences, so as to complement existing work while also filling gaps.

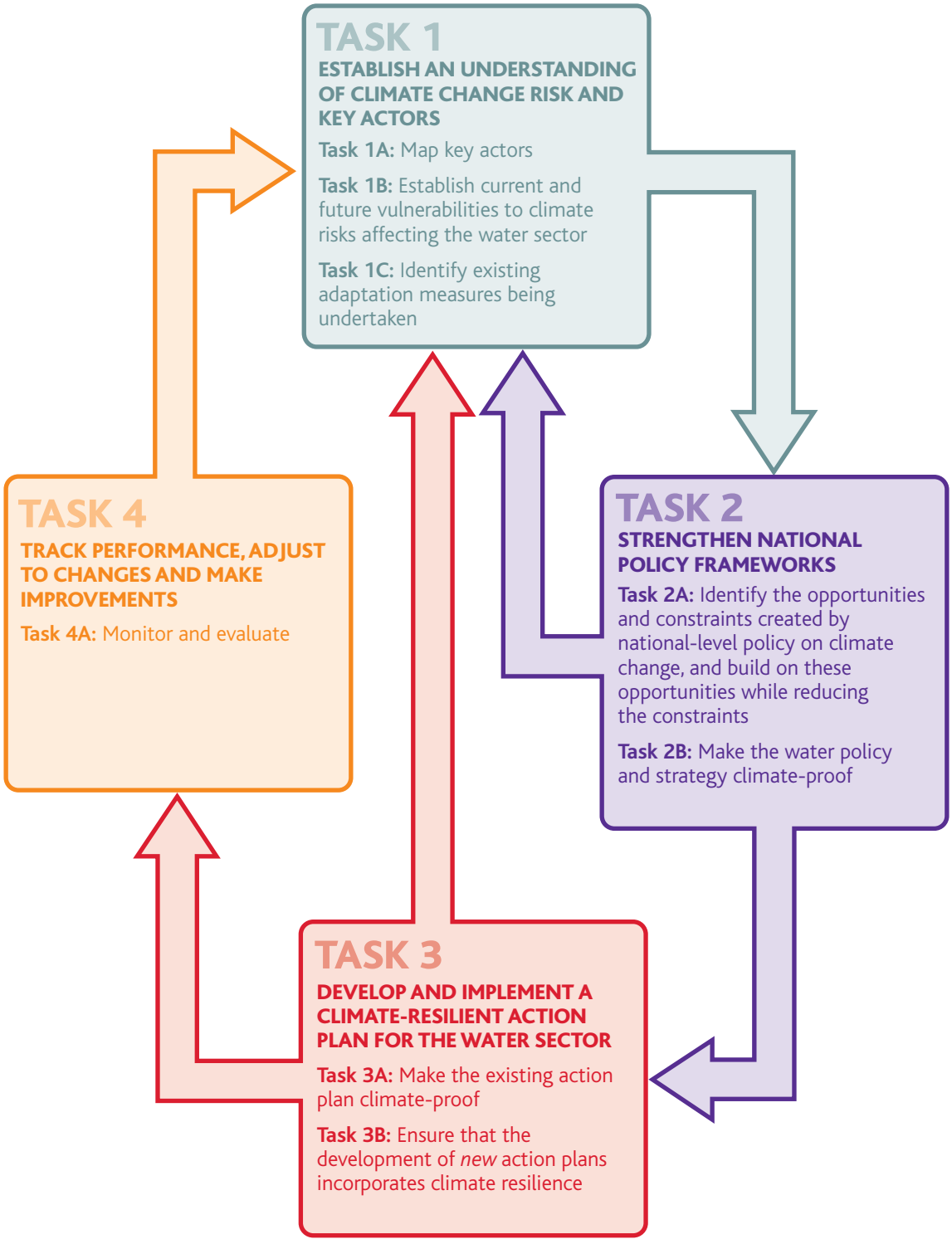
This is a guidance document rather than a prescriptive tool. Deliberate effort has been made to obtain a balance in order that (i) the guide is not overly directive or specific, to ensure that it can be applied in a number of different country contexts, but also (ii) it is still relatively pragmatic and easily applicable for the intended readership.

This guide is also for donor institutions wishing to support the integration of adaptation through development cooperation, as well as for civil society organisations as they contribute to national policy processes and ensure that the voices of the poorest and most vulnerable people impact decision-making.

The guide is divided into four tasks, each with a set of sub-tasks. This is shown in the diagram overleaf. The guide also includes a sequence of steps and suggested approaches to break down activities further. It is intended that these will help the user accomplish each sub-task.

The next phase of work intends to test the guide in partnership with a small number of developing country governments, as a basis for its refinement and improvement.

Executive summary continued



1. Introduction

'Water and its availability and quality will be the main pressures on... societies and the environment under climate change.' [1]

1.1 The problem

Climate change is having a significant impact on water availability in many contexts by changing rainfall patterns, river flows, lake levels and groundwater recharge. In some places, water sources are becoming more depleted; other areas are being hit by floods. The uncertainty regarding where and how climate change will impact water hampers effective water management. Globally, river basins and wetlands are becoming damaged and are less able to provide the conditions and processes that result in a water supply of adequate quality and quantity to ensure sustainable development and maintain vital ecosystems. Fisheries are becoming depleted and degraded and food security is eroded as climate change and climate variability, combined with other pressures,[2] make it increasingly difficult to yield good harvests.[3]

A fifth of the world's population, more than 1.2 billion people, live in areas of physical water scarcity, areas lacking enough water to meet everyone's needs.[4] The causal factors of water scarcity are many and varied, but the situation will only be exacerbated in the future as the climate continues to change at an alarming rate. Political leaders are thus facing mounting pressure to limit global temperature increases to below two degrees Centigrade so as to minimise the scale of climate change impacts on water and other areas.

Adaptation is a process by which individuals, communities and countries seek to cope with these and other consequences of climate change and variability. The process of adaptation is not new. Throughout history, people have been adapting to changing conditions, including natural long-term changes in the climate. However, the *pace of change* and the *scale of impacts*, including through extreme events, are unprecedented. Furthermore, adaptation now requires that *future* as well as current climate risk is incorporated into policy-making, planning and implementation. This is also set against the backdrop of social and economic trends (such as population growth and increasing demands upon natural resources by both rich and poor people) that are already exerting mounting pressures, undermining the attainment of sustainable development goals.

1.2 The poorest are hit first and hardest

The impacts of climate risks are already being felt by developing countries, particularly Least Developed Countries (LDCs) and Small Island Developing States (SIDS), which are also likely to suffer disproportionately from future climate changes and variability. They often face greater threats from extreme events. (Ninety-five per cent of all deaths caused by disasters occur in developing countries, and losses from natural disasters are 20 times greater as a percentage of GDP in developing countries than in developed ones.[5]) Also, in economic terms, they rely heavily on climate- and water-sensitive sectors, such as agriculture. The poorest people within these countries, who often live in more fragile, less productive environments and have a heavy reliance on natural resources for their survival, are often the most vulnerable to climate change impacts.

[1] Intergovernmental Panel on Climate Change, in Bates *et al* (2008) page 7
[2] For example, poor water management at a local level, global drivers on cropping (such as a shift to favour biofuel production over food), and global trade.
[3] Simms *et al* (2004) page 8
[4] Comprehensive Assessment of Water Management in Agriculture (2007) page 10
[5] UNFCCC (2008a)

1. Introduction continued

Furthermore, many developing countries already face huge gaps in infrastructure development, human resources and technological capacity, which constrain their integration into the global economy and render them vulnerable to both socio-economic and climate-linked stresses.

Further to pressures caused by population trends and existing economic water scarcity, climate change and variability have the potential to impose *additional pressures* on water availability, water accessibility and water demand around the world. According to some assessments, the population at risk of increased water stress in Africa is projected to be 75–250 million people by the 2020s and 350–600 million by the 2050s.[6] So, as stated by the Inter-Governmental Panel on Climate Change (IPCC), for many in Africa, adaptation is not an option but a necessity.[7]

This is also true for people in many other contexts, particularly among the poorest communities. For example, in Asia there are 11 'mega deltas'.[8] These are highly susceptible to sea-level rise and extreme events, and the most marginalised inhabit the highest-risk areas in huge numbers. The situation is further complicated by transboundary water resource management issues, which require cooperation between nations. SIDS are highly vulnerable because of their exposure to sea level rise and vulnerability to tropical storms and cyclones. For SIDS, water resources are projected to be compromised severely, to the point where they become insufficient to meet demand during low rainfall periods.[9]

At the household level, constraints on water supply mostly affect poor women and children disproportionately, as they have to travel further to gather water for household use, thus compromising education and livelihood opportunities.

All these trends tend to reinforce one another and prevent the poorest people from escaping their status as the most vulnerable and hardest hit.

1.3 Climate change links between the water sector and other sectors

As stakeholders in the water sector act to manage water resources to achieve their own objectives, these actions have consequences on other sectors, for example agriculture, health and energy. Through its impacts upon water resources, then, climate change also affects related sectors. Due to the connections between sectors, stakeholders' response to climate change impacts on the water sector will have consequences for development more generally, even if the response is that no action should be taken.

The table opposite summarises just some of the implications of the impacts of climate change on water in different sectors.[10]

[6] Arnell (2004) in Boko *et al* (2007) page 444
[7] Boko *et al* (2007)
[8] Mega delta is a generic term given to the very large Asian river deltas.
[9] UNFCCC (2008a) page 4
[10] Based on Bates (2008) page 127, with supplementary information from WHO (2009) and the author of this guide.

Table 1: Impacts of climate change on water in various sectors

WATER RESOURCES MANAGEMENT AND WATER SUPPLY & SANITATION
Catchments that are dominated by seasonal snow cover are in many cases expected to experience earlier peak flows.
In many mountain areas, runoff during warm and dry seasons is enhanced while glaciers are shrinking, but will drop dramatically after they have disappeared.
Drought-affected areas are likely to increase and extreme precipitation events, which are very likely to increase in frequency and intensity, will increase flood risk.[11]
Higher water temperatures, increased precipitation intensity and longer periods of low flows exacerbate many forms of water pollution, with impacts on ecosystems, human health, and water system reliability and operating costs.
Climate change reduces the predictability of water availability and increases the likelihood of damage and disruption to drinking water and sanitation infrastructure.[12]
Current water management practices are very likely to be inadequate to reduce the negative impacts of climate change on water supply reliability, flood risk, health, energy and aquatic ecosystems.
With less runoff and water for sewage treatment, the effectiveness of sewage treatment may be reduced. Where appropriate, in many parts of the world it will be necessary to move to dry systems.
AGRICULTURE
An increased frequency of droughts and floods negatively affects crop yields and livestock.
Impacts of climate change on irrigation water requirements may be great, with the potential for higher water needs.
Sea-level rise, reduced recharge rates and higher evaporation rates will extend areas of salinisation of groundwater and estuaries, resulting in a decrease in freshwater availability. This will affect crop yields and ultimately the type of crops cultivated (as a shift to more drought-resistant varieties may be necessary). Added to this, water sources used for irrigation are likely to become more saline, and this will increase salt concentrations of groundwater.
INDUSTRY
Infrastructure, such as urban drinking water supply and sanitation, is vulnerable to sea-level rise and reduced regional precipitation, especially in coastal areas.
Projected increases in extreme precipitation events have important implications for infrastructure: design of storm drainage, road culverts and bridges, levees and flood control works, including the sizing of flood control detention reservoirs.
HEALTH
In some populations, climate change is expected to exacerbate problems of access to (safe) water at the household level, thus increasing the negative health impacts of drinking unsafe water. An increase in food-insecurity due to the impact of climate change on crop yields will also have negative health impacts.
Flooded sanitation facilities can result in the distribution of human excreta across neighbourhoods and communities, with clear health impacts.
Habitats may change, which consequently alters the spread of vector-borne diseases such as dengue fever and malaria, as mosquitoes spread to new areas.
EDUCATION
Greater distances walked to collect water due to a lack of availability and quality more locally mean children have less time at school, particularly girls who are most commonly required to undertake this task.
ENERGY
There will be impacts on existing and planned hydropower due to changes in areas such as water availability and flow, damage to infrastructure due to flooding, and reduced potential from increased siltation.

[11] The IPCC Technical Paper (Bates, 2008) expresses the assessed probability of occurrence as ranges: *virtually certain* >99%; *extremely likely* >95%; *very likely* >90%; *likely* >66%; *more likely than not* >50%; *about as likely as not* 33% to 66%; *unlikely* <33%; *very unlikely* <10%; *extremely unlikely* <5%; *exceptionally unlikely* <1%.
[12] WHO (2009) page 5

1. Introduction continued

The table on the previous page provides a clear indication of the interconnectedness between climate change, water and a wide range of different sectors. Developing an adaptation strategy in the water sector, without considering agriculture, health or energy sectors, for instance, is not really feasible or valid due to the relationship between them all. For example, increased irrigation for agriculture to counteract water shortages in one area may result in increased pressures on water availability in growing urban centres further downstream in the short and medium term. Further, if we imagine a scenario, such as in the Andes, where agricultural production is dependent on glacial meltwater, then it can be seen how in the longer term agriculture in this region is likely to be unsustainable. Therefore, due to climate change, work undertaken now on upgrading irrigation would have a short life span.

At a local level, competition for water, for example to support a community's drinking water needs plus agricultural and industrial requirements, is as old as the history of civilisation. However, climate change is an additional threat to any existing water tensions, even at a local level. Therefore, without appropriate assistance, an increase in conflict in such areas is likely. For example, in Niger, changes in the climate were cited as the reason for increased tensions and conflict between farmers and transitory herders as competition over water resources intensifies.[13] There are also current conflicts between nomadic pastoralists in East Africa as a result of drought. Water catchments often extend beyond district, province and country borders. For instance, almost all of the 50 river basins in Africa are transboundary. Therefore, it is important to recognise that unilateral measures to address water shortages due to climate change can lead to a future of greater competition for water resources. International and regional approaches are required in order to develop joint solutions.

[13] Tearfund (2008)

2. Rationale

Increasing amounts of funding will be available for climate change adaptation over the coming years, and it is vital that this money is well spent and benefits those who are most vulnerable. Key messages stemming from Tearfund's previous research relating to water and adaptation, *Separate Streams? – Adapting water resources management to climate change*,[14] include the following:

- The water sector must be a priority for adaptation support and funding – water resources are increasingly threatened as a result of climate change, directly undermining all other development sectors.
- Climate risk-based approaches which address climate variability and climate change must be integrated within water policy frameworks.

This report builds on these recommendations and, in further developing the second point in particular, it aims to provide guidance as to how adaptation might be integrated into water sector policy and planning at a national level (see Sections 2.1 and 3 below for more detail).

This guide draws on, although is distinct from, existing materials that have been produced by Tearfund at the policy and programmatic level relating to the integration of disaster risk reduction (DRR), climate change and environmental degradation into development planning.[15]

2.1 The need for a practical 'how to' guide to integration

Although there is growing understanding of climate change and its potential impacts, the availability of practical guidance on adaptation to climate change has not kept pace. Over recent months and years, there have been many calls for practical tools and guidelines, especially in UNFCCC negotiations and meetings.[16] Some tools have been developed for assessing climate risk and adaptation at a local level (eg CRiSTAL[17]), for climate-proofing an organisation's portfolio of development projects (eg ORCHID[18] and CEDRA[19]) and at a very high level (eg OECD's *Policy Guidance on Integrating Climate Change Adaptation into Development Cooperation*[20]). Yet, research suggests that there is still little guidance on the integration of climate risk into policy and planning at a national level for specific sectors.

Donors have commonly encouraged developing country governments over the past decade to 'mainstream' into development planning a whole host of issues, such as environmental impact, gender equity, HIV programming and disaster risk reduction. They now have an additional requirement to integrate climate change adaptation into their policy and programming, but they are frequently left with a 'capacity gap' in terms of knowing *how* this could be done. Climate change adaptation may be recognised as another priority but, because it is based on uncertain future conditions, it may not seem as relevant or pressing as current poverty-related crises and challenges. Without practical guidance for water ministry officials and other key stakeholders, there is a limit to the extent to which adaptation will be integrated into policy, planning, implementation, and monitoring and evaluation on a continual basis.

This guide seeks to draw on the high-level integration guidance that has already been developed, including by UNDP (2004), UNFCCC (2007) and OECD (2009), mentioned earlier. However, it focuses guidance on a very practical basis, targeted at the water sector at the national level. To borrow a phrase used by the South Africa representative at a workshop on integrating adaptation and disaster risk reduction into national-level policy and programming,[21] it is intended that it will 'simplify not complexify'.

Taking this sentiment into account, a guiding principle of any integration guide or tool of this nature is that, as well as being practical, it should be *pragmatic* and based on *existing conditions* in terms of areas such as knowledge, skills, capacity and observed climate change impacts and risks.

[14] Tearfund (2008)
[15] Tearfund (2005) and Tearfund (2009)
[16] UNFCCC NWP *Calls for Action 5 and 8*, UNFCCC (2008b)
[17] Community-based Risk Screening Tool – Adaptation and Livelihoods. Available at: http://www.cristaltool.org
[18] Opportunities and Risks for Climate Change and Disasters. Available at: http://www.ids.ac.uk/climatechange/orchid
[19] Climate change and Environmental Degradation Risk and Adaptation assessment. Available at: http://tilz.tearfund.org/Topics/Environmental+Sustainability/CEDRA.htm
[20] OECD (2009)
[21] UNFCCC Technical workshop on 'Integrating practices, tools and systems for climate risk assessment and management and disaster risk reduction strategies into national policies and programmes', Havana, March 2009

3. Explaining the guide

This guide is for the use of water ministry officials at the national level in developing countries particularly vulnerable to the adverse effects of climate change. It is particularly for use in Least Developed Countries (LDCs), Small Island Developing States (SIDS) and countries in Africa affected by drought, desertification and floods.

This guide is also intended for use by donor institutions wishing to support the integration of adaptation through development cooperation.

It is also intended to be useful for civil society organisations, including Tearfund partners. The role of civil society is emphasised throughout the document and we hope that it will help to facilitate dialogue between governments and civil society, and enable the participation of civil society in government policy and planning.

Despite attempts to ensure that the guide is practical and user-friendly, some level of capacity, understanding and awareness of climate change and adaptation is necessary to accomplish the tasks. **The intention is that government officials with only very limited experience in the issues can lead the process as laid out in the guide**. However, undoubtedly, additional capacity and resources will be necessary at various stages, depending upon the context. The different stakeholders involved throughout will all play their part by bringing their experience to the process, but donor assistance is likely to be needed to help draw in further technical and financial capacity, as required.

It is also important to emphasise that **this is a guidance document, as opposed to a prescriptive tool**. Deliberate effort has been made to obtain a balance in order that (i) the guide is not directive or too specific, to ensure that it can be applied in a number of different country contexts, but also (ii) it is still relatively pragmatic and easily applicable for the intended readership.

This guide is intended as a first step to aid the process of building climate-resilience and/or integrating climate change adaptation into the water sector. **The next phase of work will be to test its use in partnership with a small number of developing country governments**, with the aim of refining and improving the guide.

It is also intended that this guide could, with modifications, form the basis of other tools for application in different sectors, and possibly at sub-national and local levels of government.

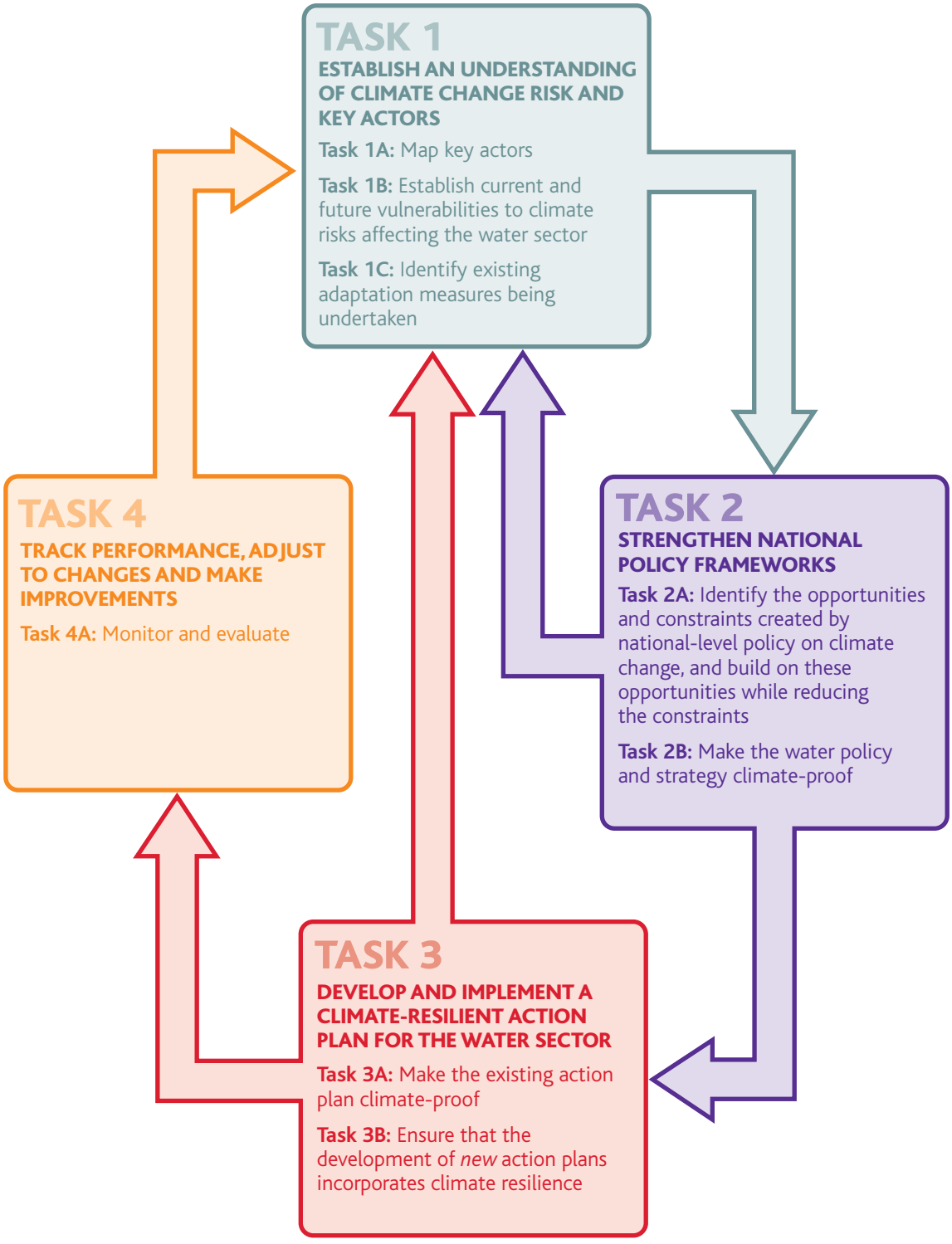
3.1 The layout

The guide is divided into four tasks, each with a set of sub-tasks. A sequence of steps is also included to break down activities further, to help the user accomplish each sub-task. Inevitably, in practice some of these tasks and steps may merge together.

As this guide has been developed for application in a broad range of contexts, in some countries it will be relevant to apply all tasks at a national level, whereas in others some of the tasks or sub-tasks may be most appropriate at sub-national levels. Similarly, different countries will be at different stages in their approach to dealing with climate change impacts on the water sector. So, in some instances it will be appropriate to focus attention initially on the first task and proceed from here through the other tasks in the guide. In other countries, it may be more effective to focus attention first and foremost on a different part of the guide as an entry point to this process.

Diagram 1: How the tasks relate to each other

The tasks operate in a loop, and each task – from 2 through to 4 – also loops back to the first task. This highlights the significance of assessing climate change impacts and incorporating improvements in scientific knowledge.



3. Explaining the guide continued

Each task follows the same format by considering:

- **Why is this important to the water sector?**
- **How should this task be approached?**
  - Broken down into '**steps**' with a recommended '**approach**' to accomplish them
- **Key considerations** (where relevant)
- **Crucial stakeholders to be involved**

Furthermore, the **potential role of donors** in supporting the integration of adaptation is included. This is so that donors can consider how they could support the water ministry in the tasks at hand and likewise as an indication for the water ministry to appreciate the prospective role donors could play. Dialogue and partnership on the issue will be better facilitated if such awareness exists.

Examples and **case studies** are also used throughout.

3.2 The principles of effective adaptation to climate change

The tasks in the guide are designed to encourage the user to apply a number of general principles for effective adaptation.[22] These include:

Effective adaptation relies on the efforts of many different stakeholders, not just national government. The process of developing adaptation activities can be as important as the outputs themselves, particularly where stakeholder participation is encouraged and improved awareness is generated. In particular, the involvement of *local communities* and civil society organisations in the design and implementation of activities helps to ensure that they are well tailored to the actual vulnerabilities and needs of specific local contexts. Where government officials are encouraging and supporting genuine participatory approaches (ie those with real influence over decision-making), they can more effectively capitalise on existing local coping mechanisms and be more successful in strengthening community knowledge and capacities. Such approaches are usually more sensitive to gender and to cultural and other context-specific issues that can undermine particular groups and individuals or empower them to take locally based action (see box 1 opposite).

A pro-poor approach is necessary as this deals with the most significant social impacts of climate change and furthermore is most equitable and just in acknowledging that poor people are hit first and hardest.

Adaptation to existing climate variability and extreme events serves as a starting point for reducing vulnerability to longer-term climate change. As such, *disaster risk reduction experience* and progress should be built upon wherever relevant. For example, experience has demonstrated that risk is not tackled very effectively if actors only plan for certain specific hazardous events: for example, public awareness, early warning systems and contingency planning for cyclones – but not tsunami.

Adaptation must be integrated in development activities across all sectors and levels, as described in the introduction. This guide focuses upon the water sector. However, it has been highlighted that effective adaptation to climate change is a 'whole-of-government' issue. So adaptation cannot be addressed by individual sectors acting in isolation from one another, nor can it be adequately addressed in isolation at separate levels: for example, local projects that are not supported by national policies.

The resilience of a system to a significant disturbance or shock associated with climate change should be an important consideration in development policy and planning. Building in climate-resilience in terms of water management practices and technologies should be a key consideration in policy and planning. For example, in a recent study, a number of drinking water supply and sanitation technologies (such as community-level tube wells in the absence of utility-managed supply) were found to be potentially more resilient in some contexts than in others.[23]

[22] Adapted from UNDP (2004) and UNFCCC (2008b)
[23] Based on WHO (2009)

BOX 1: Participation in water user commissions in Brazil

Informal user commissions have been regarded as a groundbreaking step in Brazil. However, they have no institutional power, users' compliance with decisions is voluntary, and there have also been tensions with the state government. At the local level, there is growing evidence that, despite progress in terms of increased participation, many smallholders still feel excluded from water management processes. While the commission represents a good cross-section of users and officials, equitable participation does not necessarily mean effective participation.[24] Effective and genuine participation involves ensuring that the avenues are open for two-way communication between the state and local-level stakeholders.

3.3 Who should be involved?

Throughout all tasks, a designated water ministry official(s) should be responsible for overall progress and should take an active and sustained lead.

However, Diagram 2, page 15, illustrates how there are many different potential stakeholders within the water sector. Furthermore, the stakeholders who need to be involved in order to integrate adaptation to climate change within the sector are more varied still, given the need for a multi-sectoral approach. Therefore, the responsible water ministry officials(s) will need to coordinate and draw upon inputs from many different people from a wide range of institutions. These will be operating at the local, sub-national and international levels, as well as the national level.

Table 2 below gives a general indication of the stakeholders who will need to be engaged in the process of integrating adaptation to climate change within the water sector. However, this will be very context-specific, and will need to be determined within each individual country.

Some stakeholders will play more pivotal roles than others at certain points. Therefore, each of the separate tasks within the guide highlights the most crucial actors who should be involved at that particular point.

Table 2: General indication of the stakeholders involved

STAKEHOLDER	EXAMPLES OF REASONS FOR INVOLVEMENT
National government As well as the water ministry/department, other key stakeholders are likely to include:	
Agriculture	Water abstraction, irrigation efficiency, water conservation in crop production, and competing priorities with drinking water
Infrastructure	Implications regarding climate change trends affecting water availability and quality
Environment	Impacts on water quality, sanitation and environmental sustainability
Health	Changes in water patterns affecting water-borne diseases and vector-borne diseases such as malaria
Energy	Implications for the availability of water for hydropower schemes
Finance	National budget and prioritisation
Planning	The role of water and climate change within general development vision and plans (see Box 2, opposite)
Prime minister's/ president's office	High-level authority
Disaster Management Office	Overlaps with climate risk and experience in related systems, mechanisms, processes and implementation

[24] Tearfund (2008) page 47

3. Explaining the guide continued

STAKEHOLDER	EXAMPLES OF REASONS FOR INVOLVEMENT
Other	
Meteorological services and institutes	Climate trend predictions
Universities/ research organisations	Scientific expertise and best practice
UN agencies	Technical support particularly based on adaptation programming experience. For example: UNEP – United Nations Environment Programme[25] UNDP – United Nations Development Programme[26] GEF – Global Environment Facility[27]
Donor agencies	Cooperation in the form of adaptation funding and capacity development
Development NGOs/civil society organisations working in the fields of climate change, disaster management/ relief and environmental sustainability	Local-level expertise and representation of the most vulnerable people
Private sector institutions	Often water is provided by private sector or public/private partnerships, as well as industrial and business use of water
Media	Role in the portrayal of issues such as climate change, risks and disaster, public awareness-raising and early warning dissemination
A Regional or Country Water Partnership	Water and climate change expertise and best practice

BOX 2: Introduction to key national-level policy documents

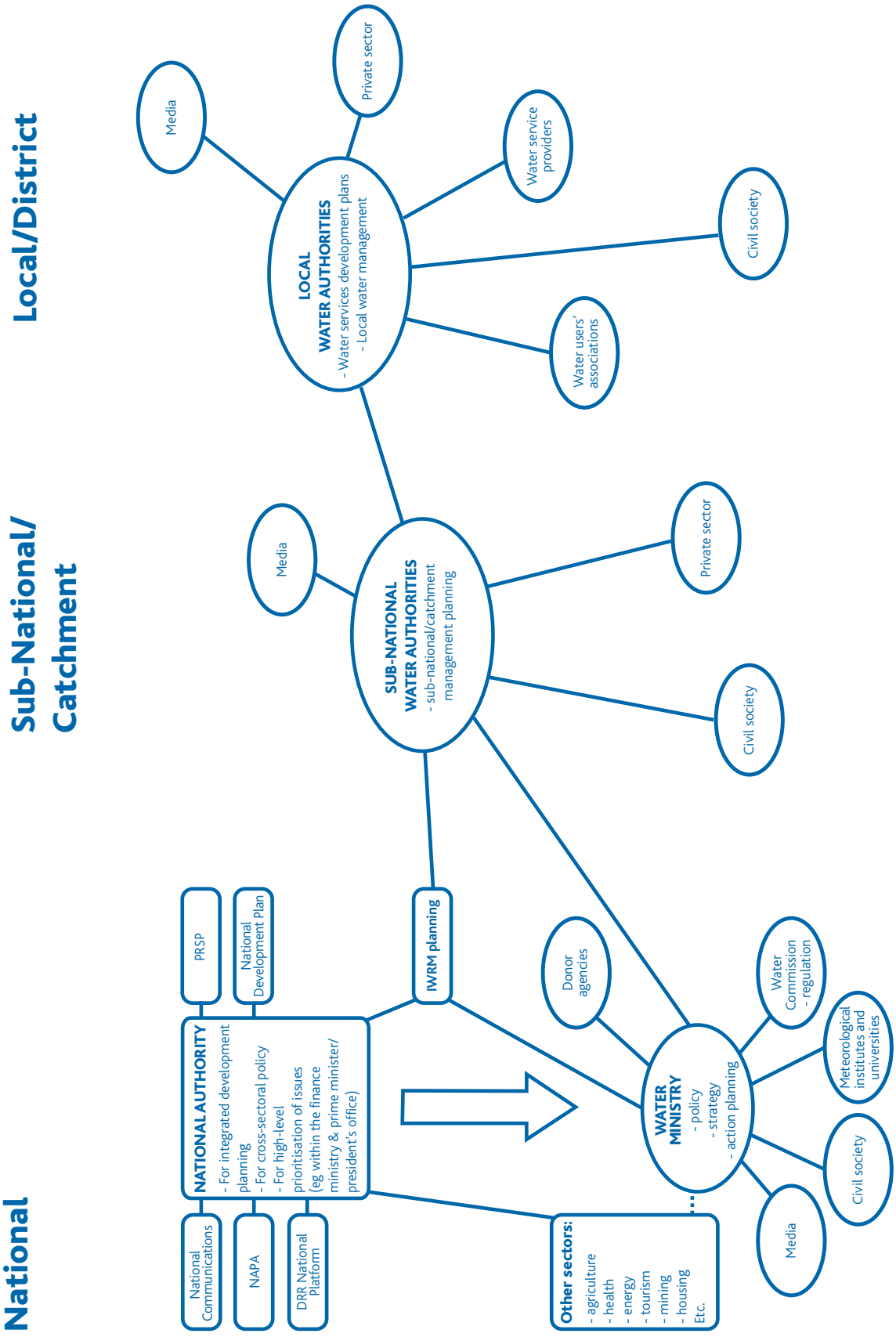
National Adaptation Programmes of Action (NAPAs) provide a process for Least Developed Countries (LDCs) to identify priority activities that respond to their urgent and immediate needs to adapt to climate change – those for which further delay would increase vulnerability and/or costs at a later stage.[28]

National Communications usually contain information on national circumstances, vulnerability assessments, financial resources and transfer of technology, and education, training and public awareness in relation to climate change.[29]

Poverty Reduction Strategy Papers (PRSPs) describe the macroeconomic, structural and social policies and programmes that a country will pursue over several years to promote growth and reduce poverty, as well as external financing needs and the associated sources of financing. They are prepared by governments in low-income countries through a participatory process involving domestic stakeholders and external development partners.[30]

[25] Adaptation information available at: http://www.unep.org/climatechange/UNEPsWork/Adaptation/tabid/241/language/en-US/Default.aspx
[26] Adaptation information available at: http://www.undp.org/climatechange/pillar_adaptation.shtml
[27] Information available at: http://www.undp.org/gef
[28] For more information, see: http://unfccc.int/national_reports/napa/items/2719.php
[29] For more information, see: http://unfccc.int/national_reports/items/1408.php
[30] For more information, see: http://www.imf.org/external/np/exr/facts/prsp.htm

Diagram 2: Main links between water ministry and other stakeholders



ESTABLISH AN UNDERSTANDING OF CLIMATE CHANGE RISK AND KEY ACTORS

TASK 1
Establish an understanding of climate change risk and key actors

TASK 2
Strengthen national policy frameworks

TASK 3
Develop and implement a climate-resilient action plan for the water sector

TASK 4
Track performance, adjust to changes and make improvements

Why is this important to the water sector?

Without understanding what the various climate change risks are and the different actors who influence them and how, it will be very unlikely that water sector policy and programming will result in actions that are able to cope with, reduce or prevent climate change impacts effectively.

Task 1A: Map key actors

Why is this important to the water sector?

Developing an adaptation policy and action plan in the water sector requires an understanding of, and engagement with, the full range of actors from different sectors, including the water sector, to ensure a multi-sectoral approach.

How should this task be approached?

STEP		APPROACH
1	Identify the key actors within the water sector and those actors influencing the sector, and the links between them.	Carry out a desk-based study to identify relevant actors and organisations and produce a diagram illustrating the interconnections between different government ministries and departments and these organisations. The diagram in the introduction 'Main links between water ministry and other stakeholders' can be used to help initiate this process.
2	Begin considering which relationships appear most important for developing a water sector positioned to manage the impacts of climate change. **Note**: A greater understanding of the relationships between different actors and how they support or hinder progress regarding the integration of adaptation within the water sector will emerge as later tasks are undertaken, particularly when these other actors are engaged in the tasks themselves. However, an initial consideration here as part of a desk-based study can be built on later.	*Key questions to consider are:* • Who is responsible for national-level direction in response to climate change? • Who is ensuring water is factored into national policy, such as in the national development plan or poverty reduction strategy? • How is the water ministry responding to bottom-up knowledge from civil society organisations and local communities on climate-related vulnerabilities and impacts, and who are the main voices heard on this issue?
3	Identify existing forums where climate change impacts are regularly discussed (or, in their absence, forums or groups that could be expanded to incorporate climate change). **Note**: It will be important to make sure that the water sector is actively engaged in these forums.	*Key questions to consider are:* • Is there a national working group on climate change? If so, is there a sub-group focusing on water and climate change? • What regional partnerships exist to deal with transboundary risks, especially regarding water resources? • Is there a lead donor organisation responsible for coordinating the donor community's response to climate change risks?

Crucial stakeholders to be involved

This initial scoping exercise should be undertaken by the water ministry official(s) and is likely to be predominantly a desk-based task. The next tasks build multi-stakeholder engagement.

Task 1B: Establish current and future vulnerabilities to climate risks affecting the water sector

Why is this important to the water sector?

An understanding of current and future vulnerabilities to climate risk is necessary to minimise the chance of developing policy and programming that is unsustainable and to avoid maladaptation practices (see Box 4: Examples of current and future impacts of climate change on the water sector, page 21).

Supporting argument

It is better to be vaguely right instead of precisely wrong.[31] Climate information is based on uncertainties (as science does not give exact forecasts of the future climate). However, it is very clear that changes in the climate are occurring and will continue to do so. Furthermore, these changes appear to be happening at an increasing pace. Therefore, decision-making needs to be based on the evidence available; it is not wise to base most development planning on a wait-and-see approach. A closer look at the evidence highlights that the uncertainties relate more to the extent of climate change rather than to trends in climatic changes.[32] In other words, the impacts on the water and other related sectors (as indicated in Box 4) are real problems that must be addressed today.

How should this task be approached?

STEP		APPROACH
1	If one does not already exist, set up a 'water and climate change working group', preferably as a sub-group of any existing climate change or relevant group.	*Key questions to consider are:* • Is there an existing group or should one be set up? • Is there a national platform or network for multiple stakeholder engagement? Perhaps a Disaster Risk Reduction National Platform?[33] • Which key actors should be part of this group (which should have a very wide representation)? (See 'Crucial stakeholders to be involved' opposite). *It will be necessary to:* • Establish regular meetings (monthly/ bi-monthly). • Ensure regular attendance of key government representatives at group meetings, such as those from agriculture and health ministries and national authorities.

[31] Karl Popper, quoted in Kropp and Scholze (2009)
[32] Observation made at Climate Proofing Workshop (GTZ 2009b)
[33] For more information, see: http://www.unisdr.org/eng/country-inform/ci-national-platform.html

STEP		APPROACH
2	With working group partners, identify gaps in knowledge and ways to improve understanding of climate risks.	The starting point in adapting to climate change is knowledge and experience in dealing with current conditions. *So key questions to consider are:* • Which groups have already been addressing droughts, floods, extreme events and variability in the climate (for example, disaster management organisations)? • What information on climate risks already exists? How does this affect the water sector? • What modelling of climate change impacts has been undertaken (see Box 3: PRECIS, overleaf)? Other trends besides climate change will affect future risk (see 'Key considerations' overleaf). *So key questions to consider are:* • What are the social, economic and environmental trends (eg land degradation etc) for the coming years? For example, will more people be living and working in urban areas, in areas exposed to greater risk in low-lying areas? Which groups are likely to be most vulnerable? • Who can help analyse how the climate predictions relate to these other trends? For example, is there a meteorological office or donor who can offer assistance?
3	Dedicate a budget to implement a specific work plan for modelling climate risks in greater detail, especially with respect to water.	• What funds may be available from within existing government budgets? • What international funds may be available?
4	Compile information on current and future vulnerabilities to climate risks affecting the water sector in a report.	Ensure findings on climate risks are documented (eg through reports, brochures, websites) and widely disseminated (eg through conferences, media etc).

Crucial stakeholders to be involved

Relevant ministries and government agencies

To help identify who are likely to be the right people to approach, investigate:

- Whether a NAPA or a National Communication has been written (see Box 2, page 14). If so, who was involved?
- Who is the government official acting as the UNFCCC focal point?[34]
- Who is listed under the country's expert roster on climate change?[35]

Meteorological services and institutes

- To provide weather and historical climate data. Some may provide climate projection data. (NAPAs or National Communications normally contain summaries of such information)

Universities

- Have studies been undertaken on vulnerability and impact assessment? Scientific experts are probably based within departments specialising in the environment or related fields

[34] For contact information, see: http://maindb.unfccc.int/public/nfp.pl#beg
[35] See: http://maindb.unfccc.int/public/roe

Development NGOs/civil society organisations (working in the fields of climate change, disaster management/relief and environmental sustainability)

- Particularly helpful in identifying how climate change impacts are affecting and are likely to affect local communities in the future. National NGOs and CBOs working on these issues should participate. Also, various international NGOs will have relevant insights, for example, the Red Cross/Red Crescent's 'climate change focal points'

BOX 3: Climate change information by Providing REgional Climates for Impacts Studies (PRECIS)

PRECIS was developed to help generate high-resolution climate change information for as many regions of the world as possible. The intention is to make PRECIS freely available to groups of developing countries so that they may develop climate change scenarios at national centres of excellence, simultaneously building capacity and drawing on local climate expertise. These scenarios can be used in impact, vulnerability and adaptation studies, and to aid in the preparation of National Communications.

Institutions that have run or are running PRECIS include:

AFRICA

African Centre for Meteorological Application to Development (Niger); University of Cape Town (CSAG/ENGEO); IGAD Climate Prediction Centre (ICPAC, Nairobi)

ASIA

Indian Institute of Tropical Meteorology; Malaysian Meteorological Department; Chinese Academy of Agricultural Science

CARIBBEAN AND CENTRAL AMERICA

Caribbean Community Climate Change Centre (CCCCC) (Belize); Cuban Institute of Meteorology (INSMET)

SOUTH AMERICA

Centro de Previsão de Tempo e Estudos Climáticos (Brazil); Comisión Interdisciplinaria de Medio Ambiente (CIMA) (Argentina)

MIDDLE EAST

Presidency of Meteorology and Environment (PME) (Saudi Arabia)

Many other countries have institutions trained in using PRECIS.
More information is available at: http://precis.metoffice.com/index.html

Key considerations

Focus: Stakeholders may want to consider narrowing the focus of this task by linking their activities to water-related development objectives according to the national development plan (or similar national-level policy document). However, if this course of action is preferred, it is important to consider the areas of overlap between the water sector and other sectors within the context of climate risks.

Socio-economic trends: It is important to recognise that changes in water use will be driven by the combined effects of a number of different conditions, not only climate change. These will need to be considered alongside climate predictions. For example, demand for water for industry and agriculture is likely to be changing on account of land use, population pressures, environmental degradation and so on. Changes in water management practices, for example reservoirs and groundwater extraction, will also influence future conditions.[36]

[36] Bates *et al* (2008) page 63

So the assessment of future climate risks involves examining intersections between trends. This applies not just to trends relating to the climate but also to trends regarding:

- natural resources and the environment (eg is the future one of greater or lesser environmental degradation?)
- social and economic conditions (eg what is the population growth rate? What will people be doing and where will people be living?)

Such considerations underline the importance of multi-stakeholder participation to help ensure that a process focused upon water and climate change does not miss or ignore other important issues that affect development decision-making. Step 2 above provides ideas regarding seeking advice and assistance on this issue.

When considering future risks it should be remembered that vulnerabilities could be reduced through capacity development and adaptation. Predicting the likely success or failure of adaptation uptake over the coming years will therefore help gauge future risk levels. The greater the commitment to adaptation now, the lower the future risk will be.

BOX 4: Examples of current and future impacts of climate change on the water sector[37]

Worsening access to fresh water – general

- Availability and quality of water affected by cyclones (hurricanes/typhoons) and flooding causing damage to pumps and pipes and submerging wells, and affecting other water infrastructure;
- Increased workload and vulnerability, especially for women and children who are often responsible for collecting water, due to dwindling resources and rising competition for them;
- Increased illness and mortality, especially for the most vulnerable, eg people living with HIV and AIDS, due to reduced access to safe drinking water.

Decreasing fresh water availability

- Increased water demands/water shortages, eg as a result of temperature rises and drought/melting glaciers/sea-level rises/disasters such as floods;
- Shortage of water for use in agriculture and industry.

Degraded fresh water quality

- Surface or groundwater quality affected by lower water flows and concentrating pollutants, or floodwater contaminating groundwater supply;
- Salinisation of fresh water systems, soils, wetlands and estuaries due to flooding, tidal surge, erosion and sea-level rise, affecting drinking water, agriculture, flora and fauna.

Potential role of donors

- Support efforts to better monitor and store data on climate and assess future climatic changes and impacts.
- Ensure that climate risk information, where it is already available, is made accessible at all levels.
- Become active members of the climate change and water working group at the national level.
- Provide support to help identify linkages between climate, socio-economic and other trends.

[37] Based on Tearfund (2009) page 54

Task 1C: Identify existing adaptation measures being undertaken

Why is this important to the water sector?

Best practice and lessons learned, from years of experience among communities and nations adapting to water stress, will enable the 'fast tracking' of adaptation to climate change. This will help avoid the need to 're-invent the wheel', through duplication and wasting time and resources (see Box 5: Examples of climate-friendly local livelihood and development practice, page 24).

How should this task be approached?

STEP		APPROACH
1	Develop an understanding and awareness of who is working on adaptation to climate change at a *national level*, and what progress has been made.	a) Review adaptation activities. *Key questions to consider are:* • Are there any existing mechanisms for documenting best practice adaptation, including autonomous adaptation? • Are there any existing policy measures in place for promoting adaptation? • Is there a national mechanism tasked with coordinating adaptation across sectors and ministries? • What adaptation measures are being promoted within national development plans, NAPAs, PRSPs, other relevant policies (see Box 2, page 14)? • What information exists on historic climate variability and change and how have any extreme events (such as floods) and chronic disaster situations (such as persistent droughts and famine) been addressed?[38] b) Document the nature of the adaptation activities by establishing and capturing information on: • What is being done? • Who is involved? • Where is this happening? • What timeframes does this involve? • Have any lessons been learned or best practices been determined? • Are practices based on current or future conditions?
2	Develop an understanding and awareness of who is working on adaptation to climate change at a *local level,* and what progress has been made.	*Key questions to consider are:* • What are individuals, communities, CBOs, NGOs and local government already doing at the local level to cope with water stress? • What vulnerability assessments have been undertaken? What are their key findings in relation to who is most affected and vulnerable?

[38] Kropp and Scholze (2009) page 40

Crucial stakeholders to be involved

National-level coordination networks

- For example, Disaster Risk Reduction National Platforms

NGOs and other civil society organisations

- Particularly for their experience working on adaptation, disaster risk reduction, environmental sustainability and water (or related fields) among the most vulnerable communities

Research institutes

- For their historical databases on relevant practices and awareness of other sources of information

Local government

- For its context-specific application of adaptation across sectors, reflecting the reality of local challenges, such as capacity and financial constraints

Donors

- For transfer of knowledge from experience elsewhere

Key considerations

Limitations of NAPAs: Due to their focus on dealing with urgent and priority needs, NAPAs have been project-based to date, rather than integral to development planning. Tearfund suggests that this may be one reason behind the lack of progress regarding their funding and implementation. Integrating adaptation within water policy requires careful consideration of the links between climate change impacts, the sector as a whole and the wider development context.

Relevance of non-climate change branded activities: At both the national and local levels, important actions that build adaptive capacity may not be branded in this way. In fact, if they have been occurring for more than a couple of years, it is highly unlikely that the word 'adaptation' or 'climate change' has been used or considered relevant. However, actions to cope with issues such as environmental sustainability, water stress due to lack of access or deteriorating water quality, droughts, floods and other extreme events could all be relevant adaptation experiences, even if not labelled as such. For example, in South Africa, adaptation strategies identified as promising measures for climate change challenges in the water sector were found to be complementary to some existing activities.[39] Ensuring that these experiences are analysed in relation to climate risks over different timescales and then using them as a basis to build upon is likely to have several advantages over introducing 'new' parallel approaches.

Importance of local-level experience: Special emphasis should be given to identifying and building on existing local adaptations and relevant experiences. There are two reasons for this. Firstly, top-down schemes, imported from the outside, are far less likely to succeed than adaptation initiatives that are inspired, developed and implemented at the local level. Secondly, top-down planning may be constrained by capacity, resources shortfalls and varying levels of political will, and yet still needs to have influence at sub-national and local levels.

Furthermore, many adaptation practices are developed by local communities. Such adaptations need to be considered, not only because these measures have been tested in the field, but also because they are more likely to be accepted by the communities themselves.[40]

[39] Wilk and Wittgren (2009) page 10
[40] See Tearfund (2008). Also, UNDP (2004) Appendix 8, page 191

BOX 5: Examples of climate-friendly local livelihood and development practice[41]

PRODUCTIVITY

The IPCC states: 'Practices that increase the productivity of irrigation water use may provide significant adaptation potential for all land production systems under future climate change.'[42] Examples include:

- Adoption of water-efficient technologies to 'harvest' water, conserve soil moisture (eg crop residue retention), re-use water and reduce siltation and saltwater intrusion
- Improved water management to prevent water-logging, erosion and leaching
- Modification of crop calendars, ie timing or location of cropping activities
- Modification of the types of crops grown to account for the impact of climate changes on water
- Modification of irrigation techniques, including amount, timing or technology (as long as this is based on 'big picture' considerations, to avoid over-extraction, for example).

FORECASTING AND AWARENESS

Implementation of seasonal climate forecasting and early warning.

Monitoring of groundwater salinity and abstraction.

LIVELIHOODS

Diversification of livelihood activities to have less direct dependence on a livelihood that is at risk from climate change impacts. (However, thought should be given to help prevent livelihood diversification towards new income streams negatively impacting the environment or into extremely low-income activities, perhaps as a result of migration from rural to urban areas. Examples include northern Kenya and southern Ethiopia where some pastoralists are moving into charcoal production. These shifts simply replace one form of vulnerability with another.)

HEALTH

Public health/hygiene campaigns on water collection, conservation, non-contamination and coping with drought and flood.

Protection from pollution of water sources and communal water points.

INFRASTRUCTURE

Installation of hand pumps on raised platforms above anticipated flood levels (as long as groundwater extraction is viable in the longer term).

Installation of site pumping stations on higher ground, away from low-lying coastal areas that may be affected by sea-level rise and increased exposure to storm surge.

[41] Adapted from Bates *et al* (2008) pages 63–64, Simms *et al* (2004) page 9, and Tearfund (2009) page 54
[42] Boko *et al* (2007)

STRENGTHEN NATIONAL POLICY FRAMEWORKS

Why is this important to the water sector?

The overall national approach to dealing with climate change across sectors and the water sector policy itself provide the context and the platform from which actors make their implementation decisions. Informed by Task 1, strong national policy frameworks in relation to climate change will better enable strong and climate-resilient water sector programming. Conversely, weak national policy that is not influenced by an understanding of climate risks undermines water sector resilience.

TASK 1
Establish an understanding of climate change risk and key actors

TASK 2
Strengthen national policy frameworks

TASK 3
Develop and implement a climate-resilient action plan for the water sector

TASK 4
Track performance, adjust to changes and make improvements

Task 2A: Identify the opportunities and constraints created by national-level policy on climate change, and build on these opportunities while reducing the constraints

Why is this important to the water sector?

Progress on adaptation in the water sector will require an understanding of why and how national-level authorities and policy may not be conducive to integrating adaptation within the water sector. Similarly, identifying and capitalising upon existing opportunities will pave the way forward.

How should this task be approached?

STEP		APPROACH
1	Identify barriers and opportunities in relation to a good enabling environment for the integration of adaptation into the water sector.	*Key questions to consider are:* Are there any legislative constraints or gaps that could inhibit implementation of effective adaptation? For example: • Is there legal provision for increasing *equity in water laws* and their implementation? (Otherwise, any efforts to improve the management of water in response to climate change are likely to ensure that the share going to the most powerful groups does not change.[43]) Is there legislation regarding the management of transboundary water resources? • How may private sector, land ownership, national land use planning and natural resource management regulations impact opportunities for adaptation? • Is there availability of and access to data on climate risks? • What opportunities exist to enable local government and civil society to contribute to national decision-making processes? • How are cross-cutting themes, such as HIV or disaster risk reduction, coordinated across sectors? • How strong are partnerships with the international community, including donors? For example, what long-term agreements exist, and how has the water sector benefited from external aid? • Is climate change, and how it impacts on the water sector, reflected within national policy documents (eg national long-term visions, PRSP, national development plan, NAPA etc)? • Do policies in different sectors clash with the water policy? For example, are policies within the agricultural sector water-intensive and therefore possibly not conducive to facilitating adaptation in the water sector (see Table 1, page 7)? Develop a matrix (see example in Figure 3 on page 27) to gauge an overall sense of the type of environment in which integration of adaptation within the water sector needs to occur.

[43] Starke (2009) page 50

TASK 2 continued

STEP		APPROACH
2	Undertake a 'Strengths, Weaknesses, Opportunities, Threats' (SWOT) analysis (or similar) of the overall findings from Step 1, with the aim of identifying ways to overcome problems and capitalise on strengths and opportunities.	In the matrix (opposite), it could be decided that levels 1 and 2 indicate areas of weakness and levels 3 and 4 indicate areas of strength. In which case, through dialogue, the SWOT analysis would form the basis of an attempt to seek ways of using the strengths to improve or overcome the weaknesses. As well as analysing specific documents, plans and events, it is important to note that *processes are also conducive to integration*. For example, preparing National Communications and NAPAs, which involve the engagement of multiple stakeholders, particularly those at the national level, has been a good step forward for the integration agenda, despite the fact that NAPAs themselves are, arguably, currently too segregated from existing development planning.
3	Identify any catalysts that could aid the creation of supportive or stronger enabling environments, as expressed in national policy.	*Key questions to consider are:* • Are there any lessons to be learned from the disaster management community's experience in raising the priority of risk reduction following disaster events? • What is public/the media's opinion on climate change impacts affecting the country? For example: how regularly is climate change mentioned in the press? Do NGOs or CBOs working among communities report an awareness or concern regarding climate risks? • Is there any recent or new scientific evidence or are there observable impacts of climate change for the region (eg new patterns of migration indicating increased water stress) (see Task 1B, Step 2)? • How and why were the priorities expressed in a NAPA or National Communication decided upon?
4	Facilitate awareness-raising among national authorities regarding the links between climate risks and present-day conditions.	*Awareness-raising can include activities such as:* • National media campaigns on climate impacts. • Internal government awareness-raising on the linkages between climate change, water and other sectors. • No regrets and low regrets approaches (which as well as supporting adaptation are effective in achieving development objectives regardless of climate change – see Task 3B, Key considerations).
5	a) Identify political champions to help overcome any barriers (such as lack of political will for adaptation, and lack of budgetary support) and to create and maintain high-profile momentum amid changing priorities. b) Develop regular contact with such key individuals as part of the ongoing multi-stakeholder dialogue on adaptation within the water sector. For example, key individuals could be asked to chair such meetings. c) Seek to influence national authorities and donors, drawing upon 'champions' for assistance to counteract and address clashes between sectors.	*Key questions to consider are:* • Is there anyone who can help strengthen the link on adaptation **between the water ministry and national authorities** (such as the finance and planning ministries or prime minister/ president's office) to help secure political support and financing for capacity development and implementation, and aid coordination across sectors? • For example, who was instrumental in the NAPA process or in the writing of National Communications to UNFCCC? • Who is best placed to strengthen the links **between the water ministry and the likely priority sub-national and local levels?**

Figure 3: Matrix for assessing how conducive the enabling environment is for integrating adaptation

Key: Level 1 = Very poor, Level 2 = Poor, Level 3 = Good, Level 4 = Very good

Topic	Level			
	1	2	3	4
Political will for tackling climate change	No interest and no policy relating to climate change	Interest in addressing the impacts of climate change (eg NAPA has been written), but little evidence of integration in development policy and practice	Legal framework for climate change Establishment of mechanisms to aid the coordination of issues across sectors	Climate change is a major theme of national development plan
Budgetary support for adaptation within the water sector	Serious lack of budget generally in the sector	Donor-driven adaptation funding	Finance and planning ministries have a budget for adaptation	Experience of delivering climate-proofed development based on a full range of budgetary alternatives (within existing water sector development budgets, new adaptation budgets, donor-funded etc)
Participation of multiple stakeholders, including civil society organisations, water users and poor people, in policy design	Little or no participation besides high-level government officials	Only selected/ favoured groups regularly engage in policy and planning processes	Openness and experience in integrating top-down and bottom-up approaches	Decentralised decision-making, with budgetary support for participation and appropriate mechanisms established
Climate change capacity	Adaptation initiatives are dependent upon external, donor-funded expert intervention	Capacity exists among key individuals at a national level of government	Government at the national level is strongly linked with national, regional and international best practice through partnership with key institutions	Capacity at the national level has linked through a decentralisation process with capacity at the local level Monitoring and evaluation of adaptation initiatives is feeding into an ever-improving system
Etc.				

TASK 2 continued

Key considerations

Focus: The focus of this task is on the national level. However, in certain contexts where the water sector has undergone decentralisation, it may be appropriate to focus some of these steps at sub-national levels.

Seek to establish and reinforce the common ground between actions that facilitate adaptation to climate change and existing development policy processes aimed towards poverty reduction and sustainable development.

Disasters are often catalysts for change at both a political level and among affected communities. For rapid onset disasters (such as floods, storms and earthquakes), a short window of time commonly opens when numerous parties, sometimes buoyed by an injection of aid funding, seek to reduce vulnerability to risks as well as respond to immediate needs. Similarly, loss of life and livelihoods and dependence on aid, such as in the context of drought and famine, can lead to new development strategies that seek to break the cycle of poverty and vulnerability. Progress made by specific countries towards implementing the Hyogo Framework for Action (HFA) will provide useful information (see Box 6: Hyogo Framework).

BOX 6: The Hyogo Framework for Action

Existing work towards implementing the Hyogo Framework for Action (HFA), presented by countries at the Global Platform in Geneva in June 2009, will contain insights relevant to many aspects of adaptation. This is particularly the case if progress has been achieved under Priority 1: 'Ensure that disaster risk reduction is a national and local priority with a strong institutional basis for implementation.' Bangladesh, for example, which has suffered a succession of cyclones, storms and floods, has developed a national action plan uniting the areas of agriculture, health, livelihoods, disaster management, environment and development – including 50 sub-sectors of those areas. A trust fund has also been established to receive and allocate funding between sectors.[44]

Effective awareness-raising could initially focus on least-cost *options*, rather than longer-term concerns over, for instance, the state of the nation's water infrastructure. For example, at the very least raising awareness of the merits of building adaptive capacity (which can then lead the sector forwards in dynamic ways not yet envisioned) could be a pragmatic short-term strategy. *Established mechanisms* for information-sharing can provide opportunities for awareness-raising on adaptation. For example, Integrated Water Resources Management (IWRM) is likely to present an appropriate forum for high-level dialogue.

Crucial stakeholders to be involved

Relevant central government bodies

- Prime minister/president's office, ministries of finance, planning and development. (It is acknowledged that in many contexts it may be hard to secure the important engagement of such bodies – but this task suggests approaches to help overcome this barrier)

Members of parliament

- For regulation and standards

[44] Starke (2009) page 28

Disaster Risk Reduction National Platform contact person[45]

Donor agency country offices

Development NGOs and civil society organisations

- Especially for perspectives and insights regarding the influence of national policy frameworks at a local level

TASK 1
Establish an understanding of climate change risk and key actors

TASK 2
Strengthen national policy frameworks

TASK 3
Develop and implement a climate-resilient action plan for the water sector

TASK 4
Track performance, adjust to changes and make improvements

CASE STUDY: Constraints to adaptation in Costa Rica

In the water resources sector, seven main barriers have been identified that limit the implementation of adaptation measures to climate change. Specifically, these barriers are: 1) little political interest and prioritisation; 2) insufficient knowledge of the climate change problem; 3) little diffusion and internalisation of the information in policies, plans and programmes; 4) confusing conceptual judicial framework; 5) lack of inter- and intra-institutional coordination; 6) inadequate resource allocation policies; and 7) high cost of adaptation measures and lack of resources.[46]

CASE STUDY: Bolivia's National Mechanism for adaptation

Bolivia has developed a National Mechanism for climate change adaptation, covering five sectoral programmes (water resources, food security, health, human settlement and risk management, and ecosystems). This mechanism is based on preliminary vulnerability assessments with different climate change scenarios, participatory consultation, and evaluation of adaptation needs. It is incorporated into the 2006–2010 National Development Plan. Cross-cutting themes that are also included are scientific knowledge, capacity building/awareness-raising and indigenous knowledge.[47]

CASE STUDY: Transitioning from short-term to long-term strategy in Tunisia

After four years of severe droughts (1999–2002), Tunisia gathered national and regional climate data, studied the potential effects of climate change on the nation, reoriented away from short-term crisis management to a long-term adaptation strategy, and established an inter-sectoral climate council that brought together the ministries of agriculture, environment and cooperation. It is setting up an information system on agriculture, water, environment, tourism and health.[48]

Potential role of donors

- Support cross-sectoral dialogue and enhancement of institutional governance

[45] For contact information, see: http://www.unisdr.org/eng/country-inform/ci-national-platform.html
[46] UNFCCC (2009)
[47] Starke (2009) page 28
[48] *Ibid*

Task 2B: Make the water policy and strategy climate-proof

Why is this important to the water sector?

Existing or new policies may promote activities that are not sustainable under a changing climate, and hence they may waste government resources. Furthermore, they could actually lead to an increase in climate risk resulting in deteriorating conditions and a future with tougher demands than today.

How should this task be approached?

STEP		APPROACH
1	Apply a 'climate lens' to the water policy to identify the extent of any risks.	*Key questions to consider are:* • Which areas of current policy are unsustainable under a changing climate (eg what activities are being implemented in low-lying coastal areas or other geographical areas at high risk from climate change impacts)? • Who is most vulnerable to climate change risks and how is this alleviated within the water policy? • What is the capability of the institutional and policy frameworks to respond to uncertain or unexpected risks? • What are the incentives/disincentives of the various stakeholders to integrate adaptation within programming? • What funding exists within national budgets for adaptation? Issues can be categorised as high-, medium- or low-risk under climate change. One method to apply a 'climate lens' is through the existing framework provided by Strategic Environmental Assessment (SEA) (see next page).
2	Identify ways to remedy aspects of the existing policy that are at risk from climate change.	*Focus on addressing identified high-risk components. Key questions to consider are:* • Are there 'associated' or 'bolt-on' activities that donors might help fund to improve sustainability of existing policy under climate change? • Can the water ministry work more effectively with other relevant departments/ministries (eg agriculture) to ensure existing high-risk activities are sustainable?
3	Develop new climate-resilient water policy.	*Through multi-stakeholder dialogue, key questions to consider are:* • What national-level directives are there on climate change affecting the water sector? • Given the known climate risks, what broad objectives should be pursued over different timespans (eg is the development of irrigated agriculture in a given area sustainable)? • Which climate-resilient approaches are to be deployed (eg water pricing as agreed on through the full participation of all users; new infrastructure development/repair of old infrastructure)? • How does the water policy deal with climate risks in both an urban and rural context?

Strategic Environmental Assessment (SEA)

In areas facing increasing water stress, SEA can help to assess different strategies to identify which is most sustainable under different climate change scenarios. This is accomplished on a multi-sectoral basis. In addition, SEA can help to analyse whether a sectoral policy/strategy might lead to increased vulnerability of the sector to climate change, and thus prevent maladaptation.[49]

Benefits of SEA include:

- the ability to alert decision-makers to problems at a very early stage
- a broad consultation process
- the unveiling of capacity gaps and highlighting of capacity development priorities
- a strong mechanism for linkage between sectors[50]

Crucial stakeholders to be involved

Climate risk technical advisers

- For advice and experience regarding climate screening (as appropriate), new technologies etc

Development NGOs and civil society organisations

- Especially for perspectives and insights regarding climate change impacts among vulnerable groups and how water policy can help alleviate this

Potential role of donors

- Strengthen the coordination among the international donor community to prevent adaptation in the water sector being undermined by the influence of work undertaken in a related sector (eg increased irrigation for agriculture that may be contrary to water sector objectives)
- Enable access to new adaptation technologies
- Channel new resources for adaptation
- Utilise country assistance strategies (CAS) and joint assistance strategies (JAS) to develop climate change adaptation within the water sector, and ensure strategies are aligned with national plans
- Where assistance is provided, be flexible regarding the measuring of project impact to accommodate appropriate timescales and long-term trends, and also be flexible about the corresponding lack of evidence of effectiveness of some adaptation measures

[49] OECD (2009) page 95
[50] For further information and guidance, see: OECD (2009) Annex B: *How to integrate climate change considerations into sectoral policies, plans and programmes through strategic environmental assessment.*

DEVELOP AND IMPLEMENT A CLIMATE-RESILIENT ACTION PLAN FOR THE WATER SECTOR

TASK 1
Establish an understanding of climate change risk and key actors

TASK 2
Strengthen national policy frameworks

TASK 3
Develop and implement a climate-resilient action plan for the water sector

TASK 4
Track performance, adjust to changes and make improvements

Why is this important to the water sector?

Programming within the water sector that ignores or undervalues climate risks will result in failed and weak actions that create or exacerbate water stress. Ultimately, this could have very significant negative consequences for huge populations and therefore for development in general. Task 3 is therefore crucial, and yet heavily dependent upon Tasks 1 and 2.

Task 3A: Make the existing action plan climate-proof

Why is this important to the water sector?

A systematic process of 'climate-screening' water sector development programmes will determine the extent to which their objectives and activities might be affected by future climate-related impacts and will help identify adaptation options.[51] Indeed, existing projects may not be sustainable at all under climate change, and may require radical shifts in emphasis. Furthermore, existing projects may indirectly increase vulnerability in other sectors.

How should this task be approached?

STEP		APPROACH
1	Undertake a programmatic review of the existing action plan and seek to identify areas where it could be strengthened.	*Key questions to consider are:* • Are there 'associated' or 'bolt-on' activities that could help improve the climate-resilience of projects underway (eg through donor funding)? • For example, can capacity building and awareness-raising on climate change be introduced or strengthened to help make adjustments in project implementation? • Is it feasible to limit or shorten high-risk projects? • Is it possible to identify flaws in the project selection criteria that can be rectified in future decision-making forums? • Can consultation or negotiation take place with other sector stakeholders who may currently be better positioned to adjust their policy and planning, with benefits to the water sector and current project activities as well as to their own activities?

[51] Based on Tanner *et al* (2008) page 4

TASK 3 continued

STEP		APPROACH
2	Systematically review each project or activity underway to identify projects that may be vulnerable to the impacts of climate change.[52]	*Key questions to consider are:* • What current climate hazards affect the project (eg drought, flooding, low flows, water quality) and how will climate change affect this? • What components of the project are most sensitive to climate risks? For example, consider: - What infrastructure could be affected (eg flood defences, reservoirs, water treatment)? - What management systems could be affected (eg flood forecasting, reservoir releases, irrigation scheduling)? - What supporting practices could be affected (eg water quotas, irrigation technologies, drought monitoring systems, flood warning systems)? *Seeking answers to these questions will create a basis for considering:* • How much of a threat does climate change pose to the project's objectives, and what is the current ability to cope with these changes? • Where is adaptation likely to be required, and what options are there? There are several methods available for climate-screening development portfolios (see 'Key considerations', page 36)
3	Assess different adaptation options.	*A process of multi-criteria analysis (MCA) should be used with the engagement of a wide cross-section of stakeholders. Key questions to consider are:* • What criteria should be used (see 'Possible criteria...' opposite)? • How should these criteria be evaluated (eg should they all be given the same weight of importance or not)? Developing a matrix/framework may be helpful (see Figure 4 opposite). Note: Cost-effectiveness will be part of the criteria used to choose between options.
4	Select adaptation activities to be carried out and establish responsibilities and budget to ensure that the integration of adaptation within existing projects is implemented.	*Reach agreement, based on widespread consensus, regarding:* • What has to happen? • When does this occur? • Who has responsibility for it?
5	Feed key findings into the development of new action plans in the future (see Task 3B).	*In seeking to apply lessons learned in future programmatic planning, key questions to consider are:* • Has programmatic screening highlighted areas of special concern, such as serious conflicts of interest between sectors that increase vulnerability to climate risks, or investment in areas of very high risk? • Conversely, has programmatic screening highlighted strengths in approach (eg management systems) that are proving capable of forming the basis for further adaptation work? • Have any insights been gleaned into relationships between adaptation and existing vulnerability reduction through disaster risk reduction methods?

[52] This step draws on the application of ORCHID (Tanner *et al*, 2008)

Possible criteria that may help in the selection of appropriate adaptation options:[53] These criteria are just suggestions compiled from various experiences. They are not listed in any specific order of priority or importance. Establishing what the criteria ought to be and how important each criterion is will be the decision of the stakeholders involved in the process.

The type of criteria that could be considered includes:

A. political feasibility
B. cost-effectiveness based on cost-benefit analysis (CBA) (see Box 7: Cost-benefit analysis, overleaf)
C. timeframe
D. practicality of the option – is it achievable (technical and financial resources, organisational capacity)?
E. effectiveness in building capacity of vulnerable people
F. chance of negative unintended consequences
G. number of people helped
H. environmental sustainability in both the long and short term
I. extent to which it helps prevent population displacement
J. compatibility with national adaptation objectives
K. cultural and social acceptability at a local level
L. co-benefits (eg extent to which it can have ongoing influence over policies, practices and attitudes, or its contribution towards achieving other development objectives such as environmental protection)
M. likelihood of success regardless of climate change (eg no regrets/low regrets characteristics)
N. expert judgment

Each of the different criteria could be given equal significance or some could have greater weighting. A process of multi-stakeholder analysis will be necessary to determine the adaptation options, the criteria (as above) for choosing between them, the weighting (if any) that is given to certain criteria, and then ultimately the scores allocated.

Below is a table that could be modified to help capture an analysis of criteria to identify preferred adaptation options for specific projects. In this table, criteria are given scores of between 1 and 5, where 1 is 'poor' and 5 is 'excellent', in terms of the adaptation's characteristics measured against the specific criteria. The adaptation option with the highest score would be the most favourable.

Figure 4: Example of a table for evaluating the importance of the criteria used to decide between three adaptation options

ADAPTATION OPTION	CRITERIA SCORE (1–5)									TOTAL	COMMENTS
	A	B	C	D	E	F	G	H	etc		
1 Eg Installation of tube wells on individual plots	2	4	1	1	4	2	2	2		29	
2 Eg Rainwater harvesting with provision of domestic water tanks	1	1	2	2	1	3	3	1		21	
3 Eg Shift to dry systems of sanitation due to lack of water	2	2	1	2	4	1	4	4		35	

[53] Based on Tearfund (2009) page 33, GTZ (2009a) and USAID (2007)

BOX 7: Cost-benefit analysis

Cost-benefit analysis (CBA) is an economic tool used to compare the benefits against the costs of a given project or activity. CBA aims to value the economic benefits of a project (rather than simply the financial impacts), and therefore takes account of any changes in human wellbeing arising from a given project or activity. It can be used before an investment is made, to choose between project options ('forward-looking'), or after an activity has already been undertaken, to demonstrate the economic value of that activity ('backward-looking').

As an example of a recent CBA within the context of climate change, the Maldives (a chain of low-lying islands in the Indian Ocean) undertook a CBA relating to its climate-resilient islands approach that is intended to limit hazard impacts due to sea-level rise and other changes.[54]

Key considerations

Whenever possible, use criteria and tools that already exist and are applied to screen proposals to incorporate a climate change consideration. However, there are also some methods for climate-screening development portfolios that have been specially designed for this purpose. They include:

- ORCHID by DFID[55]
- Climate Check by GTZ,[56] which also helps analyse emission savings
- Adapting to climate variability and change: a guidance manual for development planning by USAID[57]
- ADAPT by the World Bank[58]
- CRiSTAL (Community-based Risk Screening Tool – Adaptation and Livelihoods)[59]
- CEDRA (Climate Change and Environmental Degradation Risk and Adaptation Assessment) by Tearfund (emphasising links with environmental degradation and the local level)[60]

Ensure that the process prioritises projects where there is both a high likelihood of climate change impact (eg sea-level rise affecting very low-lying areas) and a high vulnerability to such impacts (eg already inadequate sanitation in coastal communities).

Ensure that the process also considers how projects may increase the vulnerability in other sectors.

Consider what the costs of *not* adapting could be (see case study opposite).

Establish what social-economic changes could also affect the project (eg increased population, reduced agricultural area, increased development of flood plains).

Ensure that adaptation options account for the different risks experienced by women and men and address any gender imbalance in this regard.

[54] Unpublished research in 2009 for UNDP and Government of Maldives, by Courtenay and Paul Venton
[55] Available at: http://www.ids.ac.uk/climatechange/orchid
[56] Available at: http://www.gtz.de/climate-check
[57] USAID (2007)
[58] Available at: http://go.worldbank.org/AWJKT60300
[59] Available at: http://www.cristaltool.org
[60] Tearfund (2009)

Crucial stakeholders to be involved

Technical advisers

- For example, advisers on integrating adaptation, cost-benefit analysis, environmental sustainability

Water managers

- For input regarding the feasibility and design of proposals and delivery of selected options

Universities/research institutions

- For information on socio-economic and environmental trends affecting the country (and regions within it)

Meteorological institutions

- For the most up-to-date climate impact scenarios for the country

Development NGOs and civil society organisations

- To ensure that climate-proofing takes account of the perspectives and insights of vulnerable groups on climate change impacts

CASE STUDY: The high costs of *not* adapting to climate change in South Africa

Very little information exists regarding the cost of impacts of, and adaptation to, climate change for water resources in Africa. However, an initial assessment in South Africa of adaptation costs in the Berg River Basin shows that the costs of not adapting to climate change can be much greater than those that may arise if flexible and efficient approaches are included in management options.[61]

Potential role of donors

- Identify where technical assistance or other complementary actions (eg capacity building) will be beneficial and how this would be funded and managed
- Provide support to re-align programming to accommodate medium- and longer-term climate risks
- Fund any additional costs occurring through the introduction of a climate-screening component to project selection criteria

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TASK 3
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TASK 4
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[61] Stern (2007) *The economics of climate change: the Stern Review,* Cambridge University Press, in Bates *et al* (2008) page 85

Task 3B: Ensure that the development of *new* action plans incorporates climate-resilience

Why is this important to the water sector?

When the time comes to develop a *new* action plan, it will be imperative that it provides a link between policies and practice, such that climate-resilient water-related policies result in an actual reduction of vulnerability to climate change risk on the ground.

Supporting argument

Even without climate-sensitive water policies and a strong enabling environment, some progress in developing a climate-resilient action plan can be made. For example, incorporating adaptation costs within existing development budgets, accessing new adaptation budgets and developing 'no regrets' or 'low regrets' options will create win-win scenarios.

How should this task be approached?

STEP		APPROACH
1	Establish priorities for what has to be done through a multi-stakeholder consultative process.	*Convene a series of multi-stakeholder planning meetings to determine the programme of activities. Key questions to consider are:* • What are the current and future vulnerabilities to climate risks affecting the water sector (see Task 1B, Step 2)? • What timeframe do these cover, and how may this link with different development activities (see 'Timeframes' opposite)? *In light of the above, the following questions should be considered:* • How can existing guidelines and criteria used to assess plans be amended to establish proactive adaptation considerations within the project design, implementation, monitoring and evaluation process? • What capacity constraints exist to integrate adaptation throughout the project cycle, and how could these be addressed? • As well as the more general integration of adaptation within development planning, how can plans be introduced that are specifically aimed at enabling adaptation? • What existing practices on adaptation are embedded and having success at a local level? • Consider limitations – but at this stage do not be constrained by them. What funding (including new opportunities) exists for adaptation-related programming (see 'Key considerations', page 40)? • How can the water sector portfolio better serve the most vulnerable people (eg those suffering most from water stress)?
2	Screen proposed activities for climate-resilience.	Use existing tools and practices to screen proposals, but with an adaptation consideration factored into them (eg environmental impact assessment – see Box 8 opposite). For short-listed activities, carry out a full climate risk assessment, as per Task 3A, Step 2. Sort projects into categories of comprehensive risk (not just climate-related), but analyse and note the level of climate risk (high/medium/low) and whether any adaptation component can be considered 'no regrets'/'low regrets'/climate-justified (see 'Key considerations', page 40).

STEP		APPROACH
3	Select and phase development activities.	In order to be sustainable in the context of climate change, agree the set of activities to be undertaken. Allocate the activities according to whether they are: • High-, medium- or low-priority • Immediate, short- or long-term
4	Prepare an implementation plan.	Establish who has responsibility and ensure they have the necessary resources and capacity to carry out functions. *Key questions to consider are:* • What are the next steps? • Who are the responsible staff and organisations? • What is the timeline? • What are the resource needs?
5	Identify the budget for development activities and integrate adaptation funding within it (including monitoring and evaluation costs).	*Key questions to consider are:* • Are there any dedicated budgets for adaptation? • Can any resources be claimed from a horizontal or cross-sectoral fund made available due to climate change impacts? • If not, are there ways in which projects incorporating adaptation can be absorbed into existing development budgets?

BOX 8: Environmental impact assessment (EIA)

EIA of investment proposals is mandatory in most countries, even if weakly implemented, and may therefore provide a framework for establishing routine climate change considerations at the project level.[62] However, EIAs are designed to measure the impact of a project on the environment, not the impact of environmental changes upon a project. Therefore, while EIA has strong potential as an existing tool, it does require modification and the careful application of a *full suite* of climate change-related considerations. For example, a leading question that should support an EIA would be: 'Are any aspects of the project sensitive to climate change?' Otherwise, it is probable that elements of specific projects could 'pass the EIA test' but still be vulnerable to climate change themselves or contribute to an increase in vulnerability in another sector.

For further information, as an example, the Adaptation to Climate Change in the Caribbean (ACCC) project developed a guide to assist practitioners in integrating climate change in the EIA process.[63]

Timeframes for action[64]

TIMEFRAME	TYPE OF ADAPTATION	EXAMPLE
Short	Contingency adaptation for extreme events	Drought management Flood forecasting - Links with disaster management experience
Mid	Tactical adaptations regarding climate variability	Flood proofing Water conservation - Links with disaster risk reduction experience
Long	Adaptations necessary to respond to a predicted different climate	River basin planning Institutional changes for water allocation Education Research
All timeframes	Analytical adaptation to determine climate effects	Water management modelling

[62] OECD (2009) page 123
[63] UNFCCC (2009) Technical workshop on integration (submissions by Parties and organisations for deliberation in October 2009)
[64] Based on UNDP (2004) Appendix 8, page 191

TASK 3 continued

Planning for long-term changes in the climate needs to happen now and not when the longer-term impacts are being felt in 20 or more years' time. Waiting for better information or responding to impacts at a later date will seriously compromise the effectiveness and ability of delayed actions to meet the challenges faced. This is a significant problem as political timeframes are generally much shorter than, say, the impacts of sea-level rise. Therefore, from a political perspective, coping with existing and short-term impacts may be considered more favourable. Planning associated with infrastructure is likely to bridge the gap between current and future climate change vulnerabilities. Ensuring that infrastructure projects have been screened for climate change will be a significant step forward.

The expected lifetime of a project determines whether climate change concerns are likely to become relevant. For instance, a recent assessment of DFID's existing overall portfolio in Kenya, through a process related to ORCHID and referred to as Climate Risk Impacts on Sectors and Programmes (CRISP), found that the portfolio had a low risk to climate change. One of the reasons for this was that most DFID programmes are due to end within ten years (as they are not infrastructure-based), and are therefore considered not to be impacted significantly within this timeframe beyond existing climate variability.[65]

Key considerations

Type of activity: Consider the type of activities that can contribute to adaptation. Where there is just a low level of uncertainty, more tangible actions may be effective. When facing greater uncertainty, try to increase adaptive capacities (eg the promotion of higher-efficiency water usage during the threat of a possible drought).[66] Similarly, recognise that soft technologies and management measures (eg water pricing and water conservation) can be equally as important as hard engineering (eg raised tube wells above likely flood levels) in tackling climate change.[67]

No regrets, low regrets or climate-justified contributions to development: In terms of attaining the overall project objectives, analyse whether the adaptation component can be considered a:

- No regrets contribution to development objectives – actions that generate benefits under all future scenarios of climate change, including no change. In practice, though, it will need to be recognised that without full public awareness and support of proposals, sound adaptation planning could still have negative political consequences, limiting its uptake
- Low regrets contribution to development objectives – as above, but with the scale of benefits altering depending on uncertain factors
- Climate-justified contribution – designed to address infrequent or long-term events (such as low-probability extreme events), which will create constraints when trying to monitor and evaluate the success of the adaptation measure

Be mindful of unsustainable 'solutions': Because several adaptation options are often simply not viable (due to cost), unsustainable practices may sometimes be adopted instead. For example, these could include increasing groundwater over-exploitation in areas becoming drier or reusing a greater amount of untreated wastewater. These 'solutions' are attractive because they can easily be implemented at an individual level, but they only alleviate the problem temporarily and could lead to much greater vulnerability in the future.

[65] AEA (2008)
[66] Kropp and Scholze (2009) page 42
[67] Tanner *et al* (2008) page 17

To be realistic, a budget will need to be a consideration throughout, but the ultimate goal is to:

1. identify what needs to happen for new plans to be climate-resilient, and then
2. seek funds to complement limited government budgets to make it happen

Crucial stakeholders to be involved

Government departments

- For cross-sectoral cooperation in pursuit of sustainable development under a changing climate

Technical advisers

- For example, on integrating adaptation, cost-benefit analysis, environmental sustainability

Universities/research institutions

- For information on socio-economic and environmental trends affecting the country (and regions within it)

Meteorological institutions

- For the most up-to-date climate impact scenarios for the country

Development NGOs and civil society organisations

- For on-the-ground experience and insight regarding people's vulnerability, coping mechanisms, and lessons learned

CASE STUDY: High-level awareness of climate change reflected in sector-specific water plans in Bangladesh

Bangladesh has been identified as one of the countries most vulnerable to climate change. It should not be surprising, then, that the Bangladesh Poverty Reduction Strategy raises climate change as a concern (although within environmental sections of the strategy only) and calls broadly for integration. Yet, it then fails to take that extra step and integrate its consideration within poverty reduction planning in key climate-sensitive sectors.[68] Despite this, and in contrast to most other sectors, the 2001 National Water Management Plan and subsequent planning efforts do consider climate change.

Potential role of donors

- Co-finance projects/activities under the action plan
- In light of the unprecedented challenges regarding climate change impacts, consider funding pilot projects. However, it is imperative that results feed directly back into the programming process and that projects do not end up as 'stand alone' and disengaged from the national policy and planning cycle

[68] Based on Tanner *et al* (2007b) page 17

TRACK PERFORMANCE, ADJUST TO CHANGES AND MAKE IMPROVEMENTS

TASK 1
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TASK 2
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Develop and implement a climate-resilient action plan for the water sector

TASK 4
Track performance, adjust to changes and make improvements

Why is this important to the water sector?

The pressures on the water sector due to climate change and numerous other trends, such as population growth, mean that the risks facing the sector are always changing. Therefore, policy and practice must keep abreast of the challenges. New information on climate and other risks, and the methods deployed to tackle them, need to be understood to form the basis of progress.

Task 4A: Monitor and evaluate

Why is this important to the water sector?

All activities undertaken should be monitored and evaluated to ensure that lessons learned (both successes and failures) are used to inform activities going forward and ensure maximum impact.

How should this task be approached?

STEP		APPROACH
1	Find early investment to support monitoring and evaluation of programme projects or activities so that baselines can be established and functions carried out thoroughly.	*Key question to consider:* • What monitoring and evaluation budgets, within ministries of planning or economic development, have been earmarked for the water sector?
2	Develop indicators to track performance.	*Key questions to consider are:* • What indicators are already used for the water sector? • What climate- and disaster-related indicators are relevant for adaptation activities (eg what indicators towards implementing the Hyogo Framework for Action have been used)? *Develop a list of key indicators as appropriate. These can be:* • Output/outcome indicators • Process and input indicators • Proxy indicators (see page 45) The criteria used to determine which adaptation options to select (Task 3A) could be revisited to monitor progress (see 'Measuring progress' overleaf).
3	Monitor progress.	• Conduct regular monitoring through surveys and consultation. • Record progress against key indicators. • Produce regular reports (eg quarterly/annually) on achievement of key indicators. • Identify areas of weakness and develop activities to improve progress.

TASK 4 continued

STEP		APPROACH
4	Evaluate the overall approach intended to reduce vulnerability to climate risk, to capture and share learning and so improve practice, both nationally and internationally.	*Key questions to consider are:* • Are/were the project objectives appropriate within the context of existing and predicted climate change impacts? (Make sure the most up-to-date climate data is used.) • Have the adaptation options had any adverse or positive impacts on other sectors or regions? • Have the costs of adaptation exceeded those anticipated? Also, has the benefit-to-cost ratio been achieved or exceeded?

Measuring progress against original adaptation option selection criteria: Measurement of progress against the criteria used to weigh up and select potential adaptation options would be one method of measuring progress. Figure 4 in Task 3A ('Example of a table for evaluating the importance of the criteria used to decide between three adaptation options') could be the basis for this analysis. Assuming that adaptation option 3 was implemented (because it had the highest overall score), a comparison could be made against the predicted scores for individual criteria and the views of stakeholders based on practice.

Below is an example of how this could look:

ADAPTATION OPTION	CRITERIA SCORE (1–5)									TOTAL	COMMENTS
	A	B	C	D	E	F	G	H	etc		
3 *Eg* Shift to dry systems of sanitation due to lack of water	2	2	1	2	4	1	4	4		35	Original data reflecting the reason why this option was selected
Results of monitoring **phase 1**	2	2	1	1	2	1	4	2			Significantly slower than expected progress against criteria E and H
Results of monitoring **phase 2**	2	2	1	2	2	1	4	4			Remedial action taken to address problems has improved progress against H, but E still needs attention during phase 3
Results of monitoring **phase 3**	etc										

Key considerations

To measure progress relating to adaptation-related activities, input and process indicators will be necessary as a complement to output or outcome indicators. This is especially the case for 'climate-justified' adaptations, because these are based on adapting to longer-term changes in the climate and are therefore not necessarily experienced within a project's lifetime. Key questions to consider could be:

- What new dialogue on disaster management has occurred?[69]
- Who has been trained on climate change adaptation, disaster risk reduction and environmental sustainability?
- How many risk-reducing 'units' have been installed or retro-fitted to account for climate risks (eg how many wells have been flood-proofed)?

Consider the development of proxy and alternative indicators when it's going to be hard to measure the direct impact of the project. For instance, in a project aimed at strengthening the drought-resilience of poor households, fluctuations in livestock sales or school enrolment will be easier and cheaper to monitor than improvements in household income.[70]

Crucial stakeholders to be involved

Development NGOs/CBOs and vulnerable groups

- For representation of those people closest to the intended impacts or benefits of the project, as it is here that the relevance and helpfulness of the initiative (or otherwise) will be most apparent

Project managers

- Those tasked with implementing projects need to be a part of the monitoring and evaluation process, as much as those responsible for developing policies and plans in the first instance

Independent commissions/experts

- An unbiased perspective on progress and failings

BOX 9: Adaptation Learning Mechanism by UNDP

The Adaptation Learning Mechanism (ALM) supports learning on climate change adaptation through good practice and experience by promoting knowledge exchange and collaboration between practitioners. The ALM is an inter-agency knowledge platform facilitated by the United Nations Development Programmes (UNDP), in partnership with the World Bank, United Nations Environment Programmes (UNEP) and the United Nations Framework Convention on Climate Change (UNFCCC).

The ALM's primary objective is to help stakeholders integrate adaptation to climate change into development planning. Drawing from experiences on the ground, the ALM provides good practice and operational guidance for adaptation and is designed to accelerate the process of learning. Among its many features, the ALM platform highlights adaptation experiences, country profiles and regional pages.[71]

[69] As an example of a process indicator, rather than an adaptation output, the piloting of ORCHID for DFID Bangladesh recommended supporting 'dialogue on disaster management in key sectors'. Tanner *et al* (2007a) page 6
[70] OECD (2009)
[71] For more information, see: http://www.adaptationlearning.net

TASK 4 continued

Potential role of donors

- Provide early investment towards the selection of appropriate criteria and indicators for effective monitoring of trends and evaluation
- Strengthen the research and development community to enable the capturing of lessons learned and the nurturing of best practice

FEEDBACK INTO FIRST TASK

The limitations of climate change data to predict changes over project-relevant timescales mean that adaptation is heavily based on existing climate variability. Although good practice encourages flexibility in approach to be built into adaptation responses to cope with future conditions, it will be important to update continually the basis upon which responses are made as more climate data becomes available.

End note

It is hoped that this guide will be a useful contribution to addressing the challenges faced by the water sector in taking steps to integrate climate change adaptation into national-level policy and planning.

The next phase of work will test the guide, in partnership with a small number of developing country governments, with the intention of refining and improving it. We would also be keen to hear other feedback from its use in different contexts. If you have any comments on the guide, please contact **mari.williams@tearfund.org**

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