

Identifying Priority Adaptation Actions in Pakistan: A Situation Analysis

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July 2013

International Institute for Sustainable Development

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This document is an output from a project funded by the UK Department for International Development (DFID) and the Netherlands Directorate-General for International Cooperation (DGIS) for the benefit of developing countries. However, the views expressed and information contained in it are not necessarily those of or endorsed by DFID, DGIS or the entities managing the delivery of the Climate and Development Knowledge Network*, which can accept no responsibility or liability for such views, completeness or accuracy of the information or for any reliance placed on them.

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*The Climate and Development Knowledge Network (“CDKN”) is a project funded by the UK Department for International Development (DFID) and the Netherlands Directorate-General for International Cooperation (DGIS) and is led and administered by PricewaterhouseCoopers LLP. Management of the delivery of CDKN is undertaken by PricewaterhouseCoopers LLP and an alliance of organisations including Fundación Futuro Latinoamericano, INTRAC, LEAD International, the Overseas Development Institute and SouthSouthNorth.

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Abbreviations

ADB	Asian Development Bank
ATAR	Adaptation Technical Analysis Report (Kenya)
CC:iNet	Climate Change Information Network
CDM	Clean Development Mechanism
COP	Conference of the Parties
CRiSTAL	Community-based Risk Screening Tool – Adaptation and Livelihoods
CRM TASP	Climate Risk Management Technical Assistance Support Project
CSO	civil society organisation
DFID	Department for International Development (UK)
FACC	Framework for Action on Climate Change
FAO	Food and Agriculture Organization
GCISC	Global Change Impact Studies Centre
GDP	gross domestic product
GEF	Global Environment Facility
GFDRR	Global Facility for Disaster Reduction and Recovery
GLOF	glacial lake outburst flood
GoP	Government of Pakistan
ICIMOD	International Centre for Integrated Mountain Development
IFAD	International Fund for Agricultural Development
IISD	International Institute for Sustainable Development
INDRHI	National Institute of Hydrological Resources (Dominican Republic)
IUCN	International Union for the Conservation of Nature
LDC	Least Developed Country
M&E	monitoring and evaluation
CCD	Climate Change Division (Pakistan)
MRV	measurement, reporting and verification
NAP	National Adaptation Plan
NCCP	National Climate Change Plan (Pakistan)
NCCAP	National Climate Change Action Plan (Kenya)
NIE	National Implementing Entity
SFFC	Special Climate Change Fund
TOR	terms of reference
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WWF	Worldwide Fund for Nature

1.0 Introduction

Pakistan is expected to be significantly affected by climate change. Its vulnerability stems from a combination of factors, including its geography, growing population, economic dependence on climate-sensitive activities such as agriculture, concerns regarding water scarcity and environmental degradation, and persistent levels of poverty. Its vulnerability to climate risk has been amply demonstrated in recent years by the 1999 to 2002 drought, 2007 storm surges generated by Cyclone Yemyin, and the 2010 floods that affected one-fifth of the country and an estimated 21 million people (Global Facility for Disaster Reduction and Recovery [GFDRR], 2011). In response, Pakistan's 2013 National Climate Change Plan (NCCP) identifies adaptation as "the focus of this policy" (Government of Pakistan [GOP], 2012). A Framework for Action on Climate Change to support implementation of the NCCP is under development (GOP, 2013).

This situation analysis was the initial deliverable of a project that aimed to support the Government of Pakistan's efforts to develop a nationally appropriate work programme for climate compatible development. The purpose of the project was to scope and develop terms of reference (TORs) for priority mitigation, adaptation and climate finance actions. These TORs would be the basis of a work programme for priority climate actions for the Government of Pakistan, and guide next steps and discussions with potential supporters of these actions. The International Institute for Sustainable Development (IISD) and the Energy research Centre of the Netherlands partnered to deliver the project's work related to adaptation and mitigation. Vivid Economics delivered a complementary study on needs related to enhancing absorptive capacity for climate finance. The project was supported by the Climate and Development Knowledge Network, with the Government of Pakistan providing oversight and guidance.

This situation analysis was prepared to inform discussions with the Government of Pakistan and other stakeholders regarding the options open to Pakistan as it seeks to plan for and implement strategies that respond to the adaptation priorities identified in its NCCP. The situation analysis:

- Summarises the current situation in Pakistan, focusing on issues that influence adaptation actions;
- Examines how international climate policy outcomes impact on Pakistan's options;
- Provides summary case studies of efforts in other parts of the world to develop climate change adaptation plans and measures; and
- Identifies potential options for adaptation actions in Pakistan that could help the government achieve its adaptation priorities and desired outcomes, including the preparation of a National Adaptation Plan.

This situation analysis was used as input into a workshop with key stakeholders and interviews with Pakistani experts undertaken in April 2013. Outcomes of these consultations subsequently were used to inform the preparation of TORs for undertaking key activities that would support implementation of a broader nationally appropriate work programme for climate compatible development in Pakistan.

2.0 Background

A country rich in history, culture and natural assets, the Islamic Republic of Pakistan is a highly diverse country. Geographically its 880,000 square kilometres encompasses the Himalayan Mountains in the north, the fertile plains of the Indus Plain, the western Balochistan Plateau, the Thai and Thar Deserts, and the coastal regions of the Arabian Sea and Gulf of Oman (GFDRR, 2011). The country's ecological diversity, including 10 agro-ecological zones, reflects Pakistan's rich landscape and contributes to its socio-economic variability. Each of these factors influences Pakistan's vulnerability to climate variability and climate change, and its effective capacity to adapt to these processes.

2.1 Development context

Since gaining independence in 1947, Pakistan has struggled with internal and external factors that have adversely affected its ability to obtain stable economic growth, significantly reduce the proportion of its population living in poverty, and maintain a healthy environment. Pakistan has slowly improved its overall progress towards development since 1980, but remains categorized as a county with a low level of human development, ranking 146th out of 186 countries on the 2012 Human Development Index (United Nations Development Programme [UNDP], 2013).

Economic challenges. Economic growth in Pakistan has averaged 2.6 percent since 1960 (World Bank, 2006). In recent years, the rate of growth has been highly variable, being negatively affected first by the 2008 global economic crisis and subsequently by the 2010 floods (GOP, 2010a; GOP, 2011). While annual growth of Gross Domestic Product (GDP) increased between 2008 and 2010, from 1.6 percent to 3.5 percent, it fell by 0.5 percent to 3.0 percent in 2011 (when GDP was \$210.2 billion). The rate of Pakistan's economic growth is dwarfed in comparison to its regional counterparts; between 2008 and 2011, Sri Lanka's average annual economic growth rate was 8.3 percent, India's was 6.8 percent, Bangladesh's was 6.7 percent, and Afghanistan's was 5.7 percent (World Bank, 2013). Agriculture has traditionally been the most important sector in Pakistan's economy, and currently accounts for 21 percent of country's GDP, is the source of 70 percent of export revenues, and employs more than half of the labour force (GOP, 2012; International Union for the Conservation of Nature [IUCN] Pakistan, 2009; Sattar, 2012). The services sector generates 54.4 percent (estimated for 2012) of Pakistan's annual GDP, while 25.5 percent is derived from manufacturing (Central Intelligence Agency [CIA], 2013).

A significant economic and social challenge for the country is its high population growth rate. While an estimated 33.7 million people lived in Pakistan in 1951 (Population Census Organisation, 2013), today its population is over 193 million people (CIA, 2013). It is estimated that 50 percent of the Pakistani population is presently below 20 years of age, and 68 percent are under the age of 30 (GOP, 2011: 11; Khan & Pervaiz, 2012: 14). Pakistan's population is projected to reach between 230 million and 260 million people by 2030, which would make Pakistan the fifth largest country in the world (GOP, 2007; GOP, 2012). A greater proportion of this population is expected to reside in urban areas. Although Pakistan is already the most urbanized country in South Asia, with approximately 33 percent of its population residing in urban areas, this proportion is expected to rise to 60 percent by 2030 (GOP, 2007; GOP, 2012).

This high population growth rate contributes to two significant economic challenges. One is that Pakistan's labour force of 57.2 million people (in 2010-11) is primarily comprised of 15 to 29 year olds (GOP, 2011; GOP, 2012). Every year the young cohort expands the labour force by 3 percent. Pakistan's real GDP needs to grow 7 percent annually to appropriately absorb this increase, (GOP, 2011: 11). Second, the growing population is increasing demand for already limited supplies of energy, contributing to power shortages affecting the domestic manufacturing and industry sectors (GOP, 2010a).

Social Challenges. Poverty rates remains high in Pakistan, where 32.5 percent of the population lives below the poverty line (GFDRR, 2011). It is estimated that 11 percent of the population is vulnerable to fall into poverty and 27.4 percent of the population lives in severe poverty (UNDP, 2013). Moreover, the country was not expected to meet its 2006 to 2010 Millennium Development Goals due to factors such as a rise in the number of internally displaced individuals, greater inequality, slow improvement in access to drinking water (especially for the poor), and spending cuts in social programs (GOP, 2010a). Primary education enrolment rates are high, but only 34 percent of students enter secondary school and 5.4 percent into post-secondary institutions (UNDP, 2013). An estimated 55 percent of individuals 15 years and older are literate (UNDP, 2013).

The health sector also faces significant challenges. On a positive note, under-five mortality and infant rates have declined along with maternal mortality ratio, and the number of immunized children has increased. However, mortality rates are still high and life expectancy for Pakistanis in 2012 was 65.7 years (GOP, 2010a; UNDP, 2013). Between 2006 and 2010 it is estimated that 31.3 percent of children under the age of five were underweight, and in 2010, 70 children out of 1,000 live births die before reaching the age of five. Medical attention is generally lacking in Pakistan, where there are 0.8 physicians per 1,000 people.

Environmental Challenges. Pakistan faces a number of significant environmental challenges, particularly due to the degradation of natural resources and pollution (especially in urban areas). A high rate of deforestation—estimated to be between 0.2 and 0.4 percent per year—has left the country with only 4.8 percent forest cover (Khan et al., 2011). Waterlogging is a significant problem in the low-lying areas of Sindh, and coastal mangrove systems are degraded by reduced freshwater inflows, higher sediment loads, influx of invasive species, and pollution (GFDRR, 2011). Weak enforcement of environmental regulations (Khan & Pervaiz, 2012) contributes to these concerns. Overall, it is estimated that environmental degradation costs Pakistan the equivalent of 6 percent of GDP per year (Khan & Pervaiz, 2012).

2.2 Climate risk and vulnerability profile

The geographical diversity of Pakistan is reflected in its considerable climate variability. In the north, the Himalayas and northern highlands experience cool conditions and precipitation levels can average around 1500 mm per year. In the southern low-lying plains and the coastal zone, the climate is considerably hotter and drier, with rainfall in some locations being less than 100 mm per year (GFDRR, 2011). Seasons vary from a cool, dry winter (December to February), to a hot, dry spring (March to May), the summer monsoon rains (June to September) and the retreating monsoons (October to December) (GFDRR, 2011). Inter-annual climate variability is driven by factors such as

the El Niño Southern Oscillation, which in its El Niño phase is often associated with drought years. Other climate hazards in Pakistan include flooding along the Indus River, particular in July and August due to heavy monsoon rains (GFDRR, 2011). The low-lying plains of Sindh and Baluchistan have also been affected by cyclones in the past (GFDRR, 2011; GOP, 2012; Solomon et al., 2007).

Climate change is altering these conditions. Mean annual temperatures in Pakistan increased by 0.57°C in the 20th century; and this warming trend has accelerated in recent years. Concurrently, mean annual precipitation levels increased by 25 percent between 1901 and 2000 for all of Pakistan (GOP, 2010b). However, rainfall in the southern arid plains and along the coast has decreased by 10 to 15 percent since 1960, while wetter areas in the north have received more precipitation than the national mean (GFDRR, 2011). In addition, precipitation intensity has increased in most areas over the past few decades (GFDRR, 2011). Global warming has also caused sea levels to rise by about 1.2mm per year in recent decades (GOP, 2010b).

These trends are projected to continue into the future. The Government of Pakistan projects that mean annual temperatures will increase by more than 4°C in northern Pakistan and by around 4°C for southern Pakistan by the end of the 21st century. The rate of warming is expected to be greater in the winter than in the summer (GFDRR, 2011). Projected changes in precipitation patterns are less clear due to large uncertainties in current models (GFDRR, 2011). Although average annual quantities are not expected to change, model results suggest that precipitation levels will increase in the summer and decrease in the winter. The occurrence of extreme events such as heat waves and intense rainfall are also expected to increase. Similarly, cyclones could become both more frequent and more intense across the region, though it remains unclear how climate change will affect cyclone trajectories (Cruz et al., 2007). It is conservatively estimated that global sea levels could rise by up to 40 cm by 2100 (GFDRR, 2011).

These projected changes have significant potential ramifications for Pakistan given its current vulnerability to extreme weather events and heavy reliance on climate-sensitive economic sectors like agriculture. Over the past two decades, 141 recorded climate-related extreme events have caused an average of over 500 deaths per year and average annual economic losses of more than USD 2 billion,¹ making Pakistan one of the ten most vulnerable countries to climate extremes according to the Global Climate Risk Index (Harmeling & Eckstein, 2012). Climate change projections suggest that the risk of extreme weather events will increase in the future. Along with slow onset changes like rising temperatures and sea level rise, climate change therefore has important ramifications for a range of Pakistan's economic sectors and, more generally, for its water, food and energy security.

Water security. Mainly as a result of rapid population growth, surface and ground water availability per head is low and decreasing in Pakistan. Climate change impacts on water over the coming decades will mainly be felt through increasing variability as precipitation becomes more erratic and

¹ These figures are based on the best available information and may not fully reflect the impact of climatic

the volume of water generated by glacial melt is altered.² As a result, both floods and droughts are expected to become more frequent and intense. A continued decline in surface and ground water availability in southern Pakistan will have negative consequences for agriculture production, urban water supplies, and wetland and mangrove ecosystems (GFDRR, 2011). At the same time, higher temperatures will increase demand for water for agriculture, energy production and other sectors. Further concerns are the increasing threat of glacier lake outburst floods (GLOFs) as a consequence of more rapid glacier retreat. As well, sea level rise, in combination with lower river run-off, causes the intrusion of salt water into river mouths. In the Indus Delta, salt water has been detected as far as 80 km inland (GOP, 2010b).

Food security. Agriculture production is directly affected by decreasing and more erratic water supply, salt water intrusion and rising temperatures. Impact scenarios for two main crops, wheat and rice, show that growing seasons will generally become shorter and overall yields will drop. Average projections indicate that wheat yield could decrease by 6 to 8 percent (although productivity might increase in northern mountainous areas), while yields of Basmati rice could decline by 15 to 18 percent. However, these predictions do not take into account the impacts of extreme events or the risk of an increase in insects and pests under climate change. The livestock sector also may be affected by direct impacts, such as higher temperatures resulting in lower milk and meat productivity and reduced reproduction, and by indirect impacts such as reduced fodder production (GOP, 2010b).

Energy security. Climate change is also expected to adversely affect Pakistan's energy sector, mainly through a more erratic water supply, which could affect hydropower production and the cooling facilities of thermal plants. Extreme events could increase sedimentation of reservoirs and thus reduce the capacity of hydropower dams. As well, sea level rise and increased cyclonic activity could put coastal energy infrastructure at risk. Climate change could also increase the demand for energy by, for example, increasing the need for air conditioning and water pumps (GOP, 2010b).

Additional concerns. Much of the country's population and economic assets are concentrated on the coast, which is increasingly affected by sea level rise, salt water intrusion and possibly by higher cyclonic activity. Multiple industries in this region are at risk, including energy, manufacturing, agriculture, fisheries and tourism. Forests and other ecosystems are also sensitive to climate change, as is human health, which could among other things be affected by expanding vector-borne diseases and heat stress. However, there is currently little detailed knowledge about the exact nature and possible extent of these impacts (GOP, 2010b) due to the general absence of comprehensive vulnerability assessments in Pakistan.

2.3 Policy context

Pakistan's latest national development plan, *Pakistan: Framework for Economic Growth* (GOP, 2011) seeks to overcome some of the country's challenges by reforming and strengthening institutions and fomenting entrepreneurship and innovation as well as reforming zoning laws. Through these efforts,

² Uncertainty exists regarding whether individual glaciers in Pakistan are expanding or retreating, and how they might be affected by climate change in the future. This uncertainty increases insecurity about the projected availability of downstream water resources in the coming decades.

the Framework aims to bolster domestic commerce and strengthen the role of cities in the country's economic growth. The Framework also outlines steps the Government of Pakistan has taken to improve human development in the country, including the 18th Amendment that decentralises the role of the government and strengthens provincial authority and autonomy. This major change within Pakistan now directs service delivery to come from the provinces; and cities with a population of at least one million people also are encouraged to develop their own urban development strategies. The devolution process aims to improve the delivery of services including health, education, and provision of water and electricity to the poor and marginalised populations of Pakistan (GOP, 2011).

The government places considerable emphasis on climate change and sustainable development. Important documents such as the Task Force on Climate Change's final report (GOP, 2010b), the NCCP (GOP, 2012a) and the 2012 National Sustainable Development Strategy (Khan & Pervaiz, 2012) demonstrate that the Government of Pakistan is very concerned about increasing risks to water, food and energy security; and is interested in increasing climate resilience and moving toward a low-carbon pathway.

Officially launched in February 2013, the NCCP sets out strategic guidance for mitigation and adaptation interventions in the energy, transport, agriculture and livestock, industries, forestry, water resources, biodiversity and ecosystems sectors, with crosscutting themes of disaster risk reduction, human security and gender (GOP, 2012a). The challenge is to turn this policy, which has a long list of potential policy measures and actions, into practice. The federal government has developed a draft Framework for Action on Climate Change (FACC) (GOP, 2013), and relevant ministries, agencies and provincial governments are expected to develop plans to implement the NCCP. Implementation of the NCCP is expected to take place at the provincial level, with the federal government playing a coordination role and helping the provinces get funding and support from international donors (Khan, 2013).

2.4 Institutional structure for adaptation

Recent changes to institutional arrangements for climate change reflect the importance accorded the issue in Pakistan. The official launch of the National Climate Change Policy in 2013 is a significant achievement.

Overall governance for climate change is under the Prime Minister's Committee on Climate Change, an overarching body formed in 2004 that provides policy guidance and monitors national and international climate change developments. A Core Advisory Group composed of representatives from government and civil society meets more frequently and provides input on Pakistan's positions in the international climate negotiations and technical inputs on domestic policy and programmes. The Global Change Impact Studies Centre (GCISC) was established to act as the secretariat for the Prime Minister's committee, and has since become an autonomous climate change research centre.³ GCISC and Italy's Ev-K2-CNR recently announced a partnership to undertake research on the impacts

³ The National Assembly passed a bill in March 2013 that provides the centre with official approval to undertake scientific investigation and research on climate change.

of climate change on glaciers and water resources in order to strengthen food and water security (Anon., 2013).

The 18th Amendment to the Constitution of Pakistan significantly transformed the country's governance structure by devolving responsibility for a number of areas, including the environment, to the provinces. The federal government, however, remains responsible for representing Pakistan internationally, such as engaging in the United Nations Framework Convention on Climate Change (UNFCCC) process. The Climate Change Division, under the Prime Minister's Office, leads federal climate change actions and hosts the Clean Development Mechanism cell. At the provincial level, devolution has posed institutional and capacity challenges. Meeting these challenges requires concerted efforts to enhance sub-national capacity and institutional development (World Bank, 2013). A federal climate change presence is needed at the provincial level where implementation of climate change actions will take place (Khan & Pervaiz, 2012).

The Climate Change Division leads efforts to address climate challenges in coordination with relevant federal ministries, such as Water and Power, National Food Security and Research, Science and Technology, and Planning and Development. The Planning Commission, for instance, set up the Task Force on Climate Change whose 2010 report initiated the process to develop the NCCP. The Climate Change Division also works with agencies such as the Water and Power Development Authority, Pakistan Agricultural Research Council, and National Institute of Oceanography. Civil society organizations, such as IUCN, LEAD Pakistan, Oxfam and the Worldwide Fund for Nature (WWF), assist the government in addressing climate change.

Changes to the institutional structure for climate change management are expected in the future. The NCCP calls for "Climate Change Policy Implementation Committees" to be established at the federal and provincial levels to monitor and update the policy. The National Committee will provide updates to the Prime Minister's Committee on Climate Change (GOP, 2012a).

2.5 Adaptation initiatives in Pakistan

Relative to other countries in South Asia, a moderate number of projects specifically intended to promote adaptation to climate change are being undertaken in Pakistan (Islam, Hove & Parry, 2011). As outlined in Annex 1, several of these projects focus on disaster risk reduction, agricultural production, management of resources in coastal areas, ecosystem conservation and strengthening the capacity of governments to respond to the adverse impacts of climate change. A significant number of these projects focus on understanding changes in the mass of Pakistan's glaciers. Projects are being implemented most prominently in the provinces of Balochistan, Punjab and Sindh. A few projects are led by NGOs such as IUCN, LEAD Pakistan, Oxfam and WWF. Significant on-going projects include:

- "Reducing Risks and Vulnerabilities from Glacier Lake Outburst Floods in Northern Pakistan" financed by the Adaptation Fund and implemented through the United Nations Development Programme (UNDP); and
- "Promotion of Rural Livelihoods through Adaptation Support Programme" financed by the Special Climate Change Fund (SCCF) and implemented through the International Fund for Agricultural Development

Adaptation to climate change is also being facilitated by a variety of development focused projects into which climate risk concerns are being integrated to varying degrees.

3.0 Adaptation and the International Climate Change Negotiations

Although the need to adapt to anthropogenic climate change is implicitly recognized in the objective of the UNFCCC,⁴ it is only in recent years that adaptation has formed a substantial part of negotiations under the Convention. Following initiatives such as establishment of the SCCF and the Least Developed Countries (LDC) Fund under the Marrakesh Accords in 2001, and initiation of the Nairobi Work Programme on impacts, vulnerability and adaptation to climate change in 2006, a clear commitment to supporting adaptation was contained in the Cancun Agreements of 2010. The Cancun Adaptation Framework seeks to enable enhanced action on adaptation through several key elements: establishment of an Adaptation Committee; support for the formation of National Adaptation Plans; initiation of a program of work on loss and damage; and increasing the provision of “long-term, scaled-up, predictable, new and additional finance, technology, and capacity-building” support by developed countries.⁵ Each of these elements has implications for the Government of Pakistan as it pursues efforts to enhance its capacity to cope with the impacts of climate change.

Adaptation Committee

To “promote the implementation of enhanced action on adaptation in a coherent manner under the Convention,”⁶ the Cancun Adaptation Framework calls for the establishment of an Adaptation Committee. The committee is to serve as the “overall advisory body to the Conference of the Parties on adaptation to the adverse effects of climate change.” It is to fulfil this purpose by providing technical support and guidance to Parties, enhancing knowledge sharing, delivering information and recommendations, and promoting synergies between organizations, centres and networks.⁷ Sixteen individuals (acting in their individual capacity) were named to the committee in 2012, including two representatives of the Asia/Pacific region that are currently held by Bangladesh and Iran. A three-year work program for the Adaptation Committee was confirmed during the 18th Conference of the Parties (COP) to the UNFCCC in Doha, Qatar.⁸ Outcomes of this work program could inform efforts in Pakistan to design, implement and monitor its adaptation strategies, plans and programs. The opportunity also exists for a representative from Pakistan to become directly engaged in the work of the committee.

⁴ The Convention’s objective is to achieve “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system...within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.” Implied within this objective is that the extent to which “anthropogenic interference” can be considered dangerous will depend on efforts to build resilience and adapt to climate change (Klein, Schipper & Dessai, 2005).

⁵ Decision 1/CP.16, FCCC/CP/2010/7/Add.1

⁶ Decision 1/CP.16, FCCC/CP/2010/7/Add.1

⁷ Decision 5/CP.17, FCCC/CP/2011/9/Add.1

⁸ Decision 11/CP.18, FCCC/CP/2012/8/Add.2

National Adaptation Plans

A second critical element of the Cancun Framework is its call for the formation of National Adaptation Plans (NAPs) by the LDCs. The development and implementation of NAPs is intended to enable medium- and long-term adaptation planning by LDCs, building on their experience with the formation and implementation of National Adaptation Programmes of Action. It is intended that NAPs will be developed in a “country-driven, gender sensitive, participatory and fully transparent”⁹ manner and will facilitate the integration of climate change adaptation into new and existing policies, programmes and activities at the national level. Initial guidance on the modalities for establishing NAPs by LDCs was adopted in 2011 during COP17¹⁰ (UNFCCC, 2013b) and technical guidelines for the preparation of NAPs were published by the LDC Expert Group in early 2013.¹¹

While the primary focus of the NAPs negotiations is on LDCs, the decision text of the Cancun Framework also invites other developing country Parties to employ the modalities formulated for use by LDCs in their own planning efforts.¹² While the technical guidelines prepared by the LDC Expert Group could be used by Pakistan, the Adaptation Committee also plans to develop relevant modalities to help “interested developing countries that are not least developed country Parties to plan, prioritize and implement their national adaptation planning measures.” The Adaptation Committee is to develop these modalities and guidelines by the first quarter of 2014. During COP18 it was also agreed that funding to assist non-LDC developing countries with the preparation of their NAPs will be provided through the SCCF (discussed further below) as well as other multilateral and bilateral sources.

The Government of Pakistan has prioritized the development of its NAP as part of its efforts to address climate change. However, it is unlikely that the UNFCCC process will be able to provide robust guidance tailored to the needs of non-LDCs in the near future. Pakistan therefore may choose to develop its NAP based upon the technical guidance provided to LDCs or to review best practices used by other developing countries when preparing their own adaptation strategies and plans.¹³

Loss and Damage

As a result of a sustained push from developing countries, especially by small island developing states, the Cancun Adaptation Framework launched a two-year work programme on loss and damage due to climate change in countries identified as being particularly vulnerable to climate change (Verheyen, 2012). Loss and damage looks at the impacts of climate change that cannot be avoided either through mitigation or adaptation. As such, it builds on existing knowledge and efforts in the field of climate vulnerability and adaptation, but also explicitly acknowledges the limits of these efforts. The initial program covered three thematic areas: assessing the risks of loss and damage; existing approaches to address loss and damage; and the role of the UNFCCC in enhancing the implementation of such approaches (UNFCCC, 2013a).

⁹ Decision 5/CP.17, FCCC/CP/2011/9/Add.1

¹⁰ Decision 5/CP.17, FCCC/CP/2011/9/Add.1

¹¹ The guidelines prepared by the LDC Expert Group are available for download at <http://unfccc.int/7279>

¹² Decision 1/CP.16, FCCC/CP/2010/7/Add.1

¹³ In this effort, guidance could be gained by existing documents such as the UNFCCC’s 2012 review of case studies of national adaptation planning efforts (FCCC/SBSTA/2012/INF.6).

Based on the results of this work program, negotiators at COP18 (2012) recognized the need to enhance “the knowledge and understanding of comprehensive climate risk management approaches to address loss and damage,” to foster dialogue and coordination, and to enhance “action and support, including finance, technology and capacity building.”¹⁴ The new work program encourages countries to promote risk assessments, identify risk management options and enhance the collection and dissemination of data on climate changes and their impacts. More specifically, Parties called for the establishment of institutional arrangements, such as an international mechanism, to address loss and damage associated with climate impacts in the most vulnerable developing countries. The COP18 decision on loss and damage also calls for additional work to understand key issues, such as non-economic losses and gaps in existing institutional arrangements.

While negotiation of this issue is moving forward, serious questions remain regarding what losses and damages will be covered by the proposed mechanism, how the mechanism will work and how it will be funded (Boyle, 2012). Pakistan can benefit from participating actively in the debate and negotiations. The proposed focus of the mechanism on highly vulnerable countries, as opposed to just the LDCs, opens an opportunity for Pakistan. Pakistan can bring its experience in dealing with disaster losses to the discussions and encourage that case studies be undertaken within its borders to inform planned studies. It may be anticipated that Pakistan could also be a beneficiary of the aforementioned international mechanism (should it emerge) should it support comprehensive climate risk assessments, fund climate risk management strategies or provide insurance.

Financing for Adaptation

Pakistan is able to access two established funds under the UNFCCC architecture to support its adaptation efforts: the SCCF and the Adaptation Fund. Managed by the Global Environment Facility (GEF), the SCCF is open to all vulnerable developing countries, financed by contributions from donor countries, and supports adaptation and technology transfer projects. Since its establishment in 2001, a total of USD 258.8 million has been pledged to the SCCF (of which USD 227.9 million has been received). However, the GEF reports that the current demand for financing from its Implementing Agencies is about USD 250 million *per year* (GEF, 2013). This financing shortfall existed prior to the COP’s recent request that the GEF consider how to enable preparation of NAPs by non-LDC developing countries through the SCCF.

The Adaptation Fund was established under the Kyoto Protocol to support concrete adaptation projects and programs in developing countries that are Parties to the Protocol (such as Pakistan). It originally was designed to be financed primarily through a two percent levy on the sale of certified emission reductions generated from Clean Development Mechanism (CDM) projects and secondarily by voluntary contributions. However, with the decline in the prices of certified emission reductions, the Adaptation Fund Board launched a fundraising drive in 2012 with a goal of raising USD 100 million by the end of 2013. The Adaptation Fund’s Interim Trustee, the World Bank, currently estimates that the Fund will have USD 145 to 150 million in financing available for new projects until 2020, or approximately USD 20 million per year (World Bank, 2012). Pakistan is already receiving funding from the Adaptation Fund to support implementation of the project “Reducing Risks and Vulnerabilities from Glacier Lake Outburst Floods in Northern Pakistan” through UNDP. Reflecting

¹⁴ Decision 3/CP.18, FCCC/CP/2012/8/Add.1

the Adaptation Fund Board's desire to ensure equitable distribution of its limited resources between countries (Adaptation Fund Board, n.d.), it is unlikely that Pakistan will be granted additional funding from the Adaptation Fund in the immediate future.

A potential additional source of financing is the Green Climate Fund established as part of the Cancun Agreements. This Fund is expected to play a critical role in the dispersal of climate financing until at least 2020. However, significant questions remain regarding the modalities and governance of the Fund.¹⁵

Overall, the availability of funding for adaptation under the UNFCCC remains limited at present. While donor countries have been encouraged to increase their provision of financing to the SCCF and the Adaptation Fund, uncertainty exists regarding whether these resources will materialize. Moreover, assuming significant new financing becomes available, it will take several years for a window for financing of NAPs through the SCCF to be opened. This situation suggests that Pakistan will be better able to achieve its financing objectives through its planned climate change fund or facility and through direct financing from bilateral donors and multilateral organizations.

4.0 *Lessons Learned: Kenya and the Dominican Republic*

In determining its approach to developing a national strategy for adapting to the impacts of climate change, Pakistan can look to the experience other developing countries that have pursued similar objectives. Two summary case studies are provided below that present insights on the approaches used, challenges encountered, and lessons learned from adaptation planning efforts in Kenya and the Dominican Republic. While the Kenya case study presents a national planning process, the case study from the Dominican Republic examines efforts to develop an adaptation plan at the watershed level.

4.1 **Kenya: Development of its National Adaptation Plan**

Overview: Preparation of Kenya's National Adaptation Plan began in 2011 as part of efforts to develop the adaptation component of Kenya's National Climate Change Action Plan (NCCAP). The initial work within the NCCAP process assessed current climate risks and the likelihood and consequence of future climate impacts, and synthesized existing knowledge of current, planned and recommended adaptation actions. In addition, a climate risk assessment was undertaken using the United Kingdom's Climate Impacts Programme Risk and Uncertainty Framework (Willows & Connell, 2003). This framework emphasized the need to reduce vulnerability to climate variability as well as build resilience to projected future climate risks. With information gathered through research and stakeholder consultation at the national and country levels, the framework was used to identify adaptation actions using three criteria:

- Is the action timely?
- Does the action enable climate resilient decisions to be made?

¹⁵ A full description of the status of the Green Climate Fund is provided in the document prepared by Vivid Economics as part of this project's efforts to develop a nationally appropriate work programme for climate compatible development in Pakistan.

- Does the action build adaptive capacity?

This process resulted in a long list of 340 potential adaptation actions, which proved very difficult to prioritize and narrow down. While the analysis and lists of actions were reviewed and validated by a stakeholder advisory group comprised of 18 representatives from government, private sector and civil society, the process was unable to finalize a manageable list of actions to take forward in a workable plan. As such, this information was consolidated in an Adaptation Technical Analysis Report (ATAR), which was the final result under the NCCAP process.

The recommendations and evidence set out in the ATAR were used to inform development of a draft NAP, as well as new research where required. Prepared by a group of experts from government, academia and civil society, working with a writing team and a costing team, the NAP was developed in early 2013, using a framework and structure considered appropriate for Kenya. Starting with the long list in the ATAR, adaptation actions were prioritized by the advisory group and the list subsequently narrowed through a consultative process that considered additional criteria:

- Urgency and ease of implementation in the short term.
- Compatibility with the NCCAP adaptation actions.
- Compatibility with the Medium Term Plan actions.
- Visualized to have no-regrets if implemented.

This process resulted in a manageable list of 12 crosscutting and 30 sectoral adaptation actions (using the Government of Kenya's planning sectors). Investment costs were calculated for each action for a five-year period that was aligned with the government planning period. An important element of the prioritization process was the emphasis on national development planning and implementation, along with climate risks and vulnerabilities. The NAP will be released in 2013, representing an important step forward in the implementation of Kenya's NCCAP.

Lessons Learned:

Prioritization is difficult, and requires a nationally appropriate approach. In Kenya, this meant that identification of adaptation priority actions had to go beyond a climate risk assessment to account for development needs. This approach recognized that adaptation actions need to address socio-economic development as well as climate impacts. The strength of this approach was allowing for a fuller integration with national development planning and implementation than was possible through a climate risks-based approach. This approach was in line with recent UNFCCC decisions that recommend that national adaptation planning be based on assessments of development needs and climate vulnerabilities.¹⁶ Such an approach also helped to generate buy-in with other government ministries because adaptation actions that are seen to further a ministry's goals and priorities are more likely to be integrated into sectoral programming.

¹⁶ UNFCCC Decision 5 CP 17 "National plans should be developed continuously, progressively and iteratively, and implementation should be based on nationally identified priorities."

The main lesson for Pakistan is that effective adaptation actions must support development priorities, and prioritization processes must combine climate impact and vulnerability assessment with consideration of development priorities.

Frameworks used in other countries should be assessed for their suitability. The UK framework initially applied in Kenya was effective in assessing current responses to climate variability and extremes; adaptive responses to future climate and the limits of adaptation; and engaging stakeholders. But the framework, as it was applied in Kenya, resulted in too many actions and lacked a process to prioritize these actions using national development priorities.

The processes and frameworks considered for use in the development of Pakistan’s NAP should be thoroughly investigated for applicability to the local situation. Review of the experiences of other developing countries—of the approaches, processes and tools used—could be undertaken to inform development of a process of Pakistan that is consistent with its development objectives.

Inclusive stakeholder processes are needed. The adaptation analysis team consulted with experts from research institutes, academia, private sector, civil society, and government. Formal consultations were undertaken involving people from the 47 counties. These consultations provided first-hand experiences of dealing with climatic changes, and often demonstrated how people are adapting in their day-to-day lives without official government support. The stakeholder consultations also provided insights for prioritizing actions.

Consultations at the provincial level will be needed to inform Pakistan’s NAP and ensure its effective implementation.

The more general the priorities, the more difficult they are to cost. The crosscutting actions identified in Kenya’s NAP were too general to cost; but the costing team was able to calculate investment costs for the 28 sector actions.

The more clearly an action can be defined, the greater the likelihood it can be costed with accuracy, which will increase its likelihood of implementation. When identifying priority adaptation actions, information should be provided on scope, type of action (structural vs. non-structural), and timeframe, which informs the investment costs and assists decision and policy makers.

4.2 Dominican Republic: Assessing Climate Risks at the Watershed-level

Overview: Between 2010 and 2012, the Government of the Dominican Republic participated in the Climate Risk Management Technical Assistance Support Project (CRM TASP), an initiative of the UNDP implemented by IISD. The CRM TASP’s main objective was to assess climate risks and to identify and prioritize specific adaptation options to manage and reduce these risks. The first phase of the project concentrated on synthesizing existing climate risk information and capacities in the country. Gaps identified through this overview were presented to stakeholders from various government agencies who then chose the focus of the second phase of the project—a detailed assessment on one of the largest watersheds in the country, the Yaque del Sur basin.

The risk analysis of the Yaque del Sur basin focused on agriculture, the dominant livelihood in the region, and water, due to its climate-sensitivity. The National Institute of Hydrological Resources

(INDRHI, by its Spanish acronym) was identified as the main government partner due to its responsibility for water resource policy and planning and close links with farmer committees in the watershed. A range of quantitative and qualitative methods were applied to examine different aspects of climate risk. These included application of the Water Evaluation and Planning tool to assess current and future water flows in the region; application of the Decision Support System for Agrotechnology Transfer crop model to assess how yields of key crops might change under potential future climatic conditions (such as changes in water availability); and community consultations in different parts of the watershed using the decision-support tool CRiSTAL (Climate Risk Screening Tool—Adaptation and Livelihoods) to gather community perspectives on climate hazards, impacts and coping strategies. INDRHI, national consultants and local non-governmental organizations helped choose, were trained in and participated in application of the research tools with the aim of building local capacities beyond the duration of the project.

Based on the comprehensive risk analysis, risk management options were identified and prioritized through a participatory scenario development process involving farmers, members of local communities and government representatives. Separate and joint options were elaborated and prioritized for the lower and upper parts of the watershed to reflect both their different contexts and their strong interdependence. For prioritized options, details such as cost, implementing responsibility and time horizon were identified. Some options were also tested in a water management model for their impact on reducing water shortages. Investments in increased irrigation efficiency, crop changes and small water reservoirs were expected to significantly reduce the expected gap between water supply and demand. These results now serve as a solid basis for decision-making at different levels.

Lessons Learned: The participatory and tailor-made risk assessment process developed in the Yaque del Sur basin yields some relevant lessons for climate risk management in other countries.

Align process with national development plans. National and sectoral development plans were used within the CRM TASP as a starting point for the analysis and were informed by the results of the assessment. This approach helped to promote the mainstreaming of adaptation into these plans and therefore increased the likelihood of implementation of the identified adaptation actions.

In Pakistan, the government's policies and plans in key vulnerable sectors such as water, food and energy, as well as national and regional development plans, should be the anchor for any risk assessments and determination of adaptation options.

Emphasize stakeholder engagement. The CRM TASP engaged relevant stakeholders from the beginning, including in key decisions such as the focus of the assessment and in substantial parts of the research. Although such engagement tends to make the assessment process more time-consuming and more costly, it is essential for securing the ownership of relevant institutions. Bringing all relevant actors on board also avoids duplication of efforts and exploits synergies with other research projects.

In Pakistan, government ministries responsible for vulnerable sectors, such as the Ministry of Water and Power and the Ministry of Food Security and Research, as well as the local governments, private sector and civil society, should take part in climate risk management processes.

Prioritize capacity building. In countries like the Dominican Republic, where there is a shortage of local experts, time pressure often leads implementers of research projects to conduct much of the substantial analysis outside of the country. Yet these capacity gaps should be a reason to do the opposite; that is to involve local counterparts such as government agencies and universities in the research, while external consultants provide training and backstopping. As successfully applied in the Dominican Republic, this approach secures longer-term benefits by increasing the ability of local partners to understand climate risk and conduct assessments on their own.

The Pakistani government should insist that any externally funded research projects involve local partners and foster the building of long-term capacity.

Build on what's there. A significant amount of knowledge about climate risk resides in the Dominican Republic but is not framed in climate change-specific language. It has, for example, long experience in analysing and managing climate-related disaster risks—many of which may be exacerbated by climate change. A similar situation is found in many other developing countries. Existing knowledge should be taken into account when planning new assessments and actions. In the Dominican Republic, a comprehensive synthesis report on current knowledge and capacities was conducted at the beginning of the project to capture this information.

In Pakistan, a similar stock-taking exercise could help consolidate understanding of the existing knowledge and capacity base, and thus facilitate the identification of important gaps and avoid duplication of efforts. It could also facilitate integration of different approaches, especially of disaster risk reduction and climate change adaptation, and serve as a basis for communication and awareness raising efforts.

Ensure that assessments lead to concrete action. Many stakeholders would prefer to see concrete action rather than further studies. While this is understandable, there is often a need for much better understanding of climate risks and the pros and cons of different adaptation options. To be useful, risk assessments need to be designed in a way that allows for the identification of concrete actions. In the Dominican Republic, the focus on one watershed and collaboration through participatory methods with key local actors made it possible to identify and prioritize tangible, agreed upon actions that go beyond general recommendations such as “improve watershed management.”

Pakistan should establish the conditions for continuous assessments, such as by building relevant capacities to conduct high-quality research. At the same time, future assessments could be focused on specific sectors or regions so as to produce concrete recommendations. The devolution of power to provincial governments could support this process, if the relevant authorities receive the necessary capacity building and are closely involved throughout climate risk management processes.

5.0 Options for Adaptation Actions

In the pages that following, potential options around which TORs could be prepared are presented. The objective of each of these options is to assist the Government of Pakistan with designing adaptation-focused initiatives that will support implementation of the NCCP and development of a nationally appropriate work programme for climate compatible development. Options are presented under the following categories: policy; governance; technical capacity; and capacity building.

Policy

1. Support for the preparation of the climate change action plan

Rationale: The TOR would set out a process to support on-going efforts to develop an action plan to support implementation of the approximately 120 steps identified in the NCCP. The support could include the identification of knowledge gaps or barriers that impede the completion of the FACC and summarize the key steps needed to address these challenges.

Main components: This approach will bring together many components in an integrated process with a common timeline. The components can include: i) a review of enabling policy and regulatory frameworks, ii) national adaptation planning, iii) low-carbon option analysis and prioritisation, iv) national technology action plan, v) measurement, reporting and verification (MRV) framework, vi) capacity development and training, vii) finance and viii) mainstreaming of key actions into Pakistan’s traditional planning processes such as annual, five year and sectoral plans. The TOR would build on the NCCP and FACC by examining additional components and timelines, as well as how much responsibility for planning and implementation could be devolved to the provinces.¹⁷

Potential Impact: An inclusive action plan that clearly details roles, responsibilities, timelines and necessary resources sends clear signals to line ministries. The identification of solid implementable actions that are based on an understanding of priorities and impacts can be more readily incorporated into existing planning and budgetary processes. This increases the likelihood of Pakistan’s climate policy process having a substantial impact.

Opportunities to build on: The NCCP could be used as a starting point for a more comprehensive and action focussed plan that integrates additional aspects such as finance, MRV, and technology. A related, but procedurally somewhat different, initiative has been started with the FACC. The initial draft of the FACC suggests that it would take key policy measures identified in the NCCP and break them down into sub-tasks within a high-level timeline. A more comprehensive action plan could complement the FACC by providing more detail on barriers, impacts, roles and responsibilities, and financing strategies, as well as include a process to mainstream the outputs into development planning.

¹⁷ Replicating an action planning process across provinces is a challenging task in terms of resources and capacity as illustrated in the Indonesian case study presented in the companion paper “Identifying Priority Mitigation Actions in Pakistan: A situation analysis.”

2. *National Adaptation Plan*

Rationale: Pakistan has identified preparation of a National Adaptation Plan as a priority component of its efforts to prepare for the impacts of climate change. Under the UNFCCC, the international community has pledged to support the development of country-driven NAPs to better enable developing countries to prepare for the medium- and long-term impacts of climate change. While guidance on the development of NAPs specifically for non-LDC developing countries is unlikely to emerge in the immediate future, Pakistan can draw upon the UNFCCC's guidance on the modalities for establishing NAPs by LDCs as well as the experience of other developing countries in preparing their national adaptation plans.

Main Components: Develop a NAP that builds upon the content of the NCCP and draft FACC. The action would outline the key requirements for the preparation of Pakistan's NAP, beginning by determining the process for its development. Criteria for the design of this process could include: ensuring that it is tailored to Pakistan's needs, circumstances and progress to date; following the guidance for the of NAPs by LDCs under the UNFCCC; building on lessons from other jurisdictions; and ensuring that a country-driven, participatory, gender sensitive and transparent approach is taken. The remainder of the TORs could outline requirements for preparing the NAP in accordance with the agreed upon process. These requirements could include engagement of national and provincial government officials, consultations with stakeholders, undertaking targeted research to address knowledge gaps, providing training and capacity building, and undertaking cost-benefit analysis of different adaptation options.

Potential Impact: Preparation of a NAP would create a framework for coordinated, effective and efficient implementation of adaptation action in Pakistan. It could help ensure that efforts to implement adaptation actions are coherent horizontally across government departments and vertically between different levels of government. It could also facilitate integration of climate change adaptation into new and existing policies, programmes and activities at the national and sub-national level.

Opportunities to build on: Pakistan has already completed a number of steps towards preparation of a NAP through the development of its NCCP and draft FACC. As well, it can draw upon the experiences of a range of other developing countries that have developed national level adaptation plans, such as Kenya and the Dominican Republic, as well as reviews of these experiences, such as those prepared by the UNFCCC.¹⁸ Funding to support the development of a NAP may become available through the UNFCCC process or, perhaps sooner, through bilateral sources.

3. *Mainstreaming adaptation actions into policies and plans*

Rationale: The NCCP and FACC processes have identified a variety of priority adaptation actions. A strategy is needed to integrate implementation of these actions into existing policy and planning processes at the national and, as appropriate, sectoral levels. Completion of this process will be an

¹⁸ For example, in November 2012 the UNFCCC released a compilation of case studies on national adaptation planning processes as part of the Nairobi Work Programme on impacts, vulnerability and adaptation to climate change.

important step towards achievement of the NCCP's goal of mainstreaming climate change considerations into economically and socially vulnerable economic sectors.

Main components: Develop guidance on a process for mainstreaming climate change adaptation into policy, planning and programming at the national and, as appropriate, sectoral levels, building on the content of the NCCP and the draft FACC. The action will identify entry points for integrating actions related to water, agriculture and livestock, forestry, disaster risk reduction, and vulnerable ecosystems into the policies, strategies and plans of relevant departments. It will also call for a review of existing development plans and priorities to identify potential synergies and trade-offs, and design strategies for management of these opportunities and conflicts. The TORs will outline requirements such as consultations with relevant stakeholders, a process of prioritization of desired adaptation actions based upon agreed criteria, and assessment of the additional financial resources required to support implementation of the planned adaptation actions. While the TORs could call for the development of a single strategy for integration of priority adaptation actions across all departments or sectors, it may also be appropriate to develop multiple strategies focused on individual departments or sectors.

Potential Impacts: Mainstreaming the adaptation actions identified in the NCCP and FACC into existing sectoral plans and strategies will aid in ensuring that they are implemented. It will also promote a culture in which climate change considerations become embedded in everyday decision-making, as opposed to adaptation efforts being implemented through a process that runs parallel to ongoing development efforts. This in turn can facilitate the leveraging of existing technical, human and financial resources to support adaptation actions, and therefore make adaptation more cost-effective.

Opportunities to build on: The FACC and NCCP provide a strong foundation upon which to proceed with efforts to mainstream climate change actions into national and sectoral development strategies and plans.

Governance

4. *Establish National and Provincial Implementing Entities*

Rationale: To support the implementation of adaptation (and mitigation) projects at the federal and provincial levels, the NCCP identifies the need to establish national and provincial implementing entities. Such entities have the potential to ensure that adaptation projects undertaken within their jurisdictions align with government needs and priorities, do not replicate ongoing or past efforts, and maximize synergies between initiatives. They could also play an expanded role in terms of coordinating adaptation action across government and sensitizing policy-makers at the national and provincial levels to climate change adaptation needs. A qualified National Implementing Entity (NIE) could also allow Pakistan to directly access the Adaptation Fund.

Main components: The primary objective of the proposed TORs will be to initiate a process leading to establishment of a NIE capable of being accredited by the Board of the Adaptation Fund. Components of the TORs could include determining the expected mandate and structure of the NIE

in full consultation with the Government of Pakistan. This mandate could be limited to the implementation of adaptation projects, but might also include a coordination function, a knowledge sharing function and/or a capacity building function. Required capacities for fulfilling this scope of responsibilities would then be determined, taking into consideration the fiduciary requirements for designation as a NIE under the Adaptation Fund. A landscape analysis would be used as the basis for assessing existing institutions that might be appropriate to become a NIE, or clarify the need to establish a new entity. A strategy for establishment of the NIE would then be prepared, accounting for capacity requirements and financing needs. As a secondary objective, guidance on an appropriate strategy for supporting the establishment of provincial implementing entities would be developed, drawing upon experience gained through efforts to launch the NIE.

Potential impact: Establishment of a NIE would enhance Pakistan’s capacity to effectively manage and deliver adaptation projects, increasing its capacity to access available funding from the national budget and international donors.

Opportunities to build on: A number of other countries, such as Kenya, India, South Africa and Uruguay, have successfully gained accreditation of designated NIE by the Adaptation Fund.¹⁹ A review of the process by which these countries’ established their NIE—including barriers encountered and how they were overcome—could inform Pakistan’s efforts. As well, Pakistan could gain from a review of other countries’ experiences with the establishment of national and inter-regional entities responsible for knowledge sharing and capacity building related to climate change (such as the Caribbean Community Climate Change Centre).

5. **Strengthening national and provincial institutions**

Rationale: Suitable institutional arrangements are needed at the federal and provincial levels to create an enabling environment for mainstreaming climate change adaptation across government. Such an environment is influenced by factors such as inter-departmental coordination, access to information, stakeholder engagement, and coordination with the provinces. Institutional strengthening needs identified in the NCCP include the establishment of Climate Change Cells in sectoral ministries at the national and provincial levels, formation of national and provincial Climate Change Commissions to coordinate climate change activities, and improvement of inter-ministerial and inter-departmental decision-making and coordination mechanisms.

Main components: The planned TORs will call for the development of a robust strategy for strengthening institutional arrangements at the national and provincial levels to support mainstreaming of climate change into policy and planning. Key components would include undertaking a review of existing knowledge regarding good practices for institutional arrangements to support mainstreaming, drawing upon international case studies; assessing the extent to which these good practices are being exercised within Pakistan; and providing guidance on options for addressing identified weaknesses within the existing system, giving attention to technical, human and financial capacities and ways in which the federal government might better support adaptation

¹⁹ A list of NIEs accredited by the Adaptation Fund Board may be found at: <https://www.adaptation-fund.org/national-implementing-entities>

action at the provincial level. Findings from this process would be used to identify strategies by which selected options for institutional strengthening could be implemented.

Potential impact: A strong institutional structure for responding to climate change can lead to better coordination of activities across government, improve access to information and expertise in different departments, and facilitate planned and autonomous adaptation at the sub-national level. In general, stronger governance of climate change fosters more effective implementation.

Opportunities to build on: Climate Change Policy Implementation Committees are being established at the federal and provincial levels, which offers an opportunity to assess capacity and institutional gaps and needs.

6. *Monitoring and evaluation system*

Rationale: A robust system for monitoring and evaluating adaptation actions will be needed by Pakistan to test the continued validity of the assumptions underlying priority measures, assess costs versus benefits, compare different approaches and inform future decision making. Establishment of a monitoring and evaluation (M&E) framework can help ensure that adaptation actions are appropriate, implemented in an effective manner, and modified in response to new information and knowledge. However, international understanding of how to effectively design and implement strategies for monitoring and evaluating climate change adaptation is currently at a nascent stage.

Main components: The aim of the proposed TORs will be to provide guidance to Pakistan on how it might proceed with the development of a robust and integrated framework for monitoring and evaluating its adaptation actions. It will include completion of a review of current understanding of good practice related to national level M&E frameworks, drawing upon international experience to date. Current efforts by Pakistan to establish an M&E system for adaptation will be identified and compared with the international good practices identified. This knowledge will be used to assess opportunities for more closely aligning M&E for adaptation efforts with existing federal government systems for monitoring progress towards development objectives (such as integration of M&E for adaptation into poverty reduction strategies and sectoral plans). Based upon this analysis, initial guidance will be provided regarding how Pakistan might go about establishing an M&E framework with clearly articulated goals, objectives and outputs.

Potential impact: A flexible, effective and robust M&E system can help governments identify adaptation actions that achieve their objectives, and those for which course corrections are required. It would also help meet funders' increased interest in demonstrating how their financial investments in adaptation projects and programs are reducing vulnerability to the impacts of climate change.

Opportunities to build on: M&E is an integral part of the development and implementation of National Adaptation Programmes of Action by LDCs. Insight gained through these processes can be

of assistance to Pakistan. As well, reviews of progress on M&E for adaptation have been completed by several institutions, including the UNFCCC.²⁰

Technical

7. *Strengthen meteorological monitoring and forecasting*

Rationale: The Pakistan Meteorological Department has several regional offices as well as regional agro-meteorological centers involved in monitoring and forecasting of key climate variables. Several reports and policy documents highlight the lack of weather stations, especially in mountain areas, as well as insufficient monitoring of glaciers, river flows and sea levels as well as tropical cyclones. Furthermore, turning hydro-meteorological data into useful short- and long-term forecasts for end users, such as farmers and emergency services, remains a challenge. The NCCP and other documents have called for strengthening of meteorological and related services.

Main components: The TORs will aim to identify gaps and propose improvements in Pakistan's hydro-meteorological monitoring and forecasting services. This option will require an assessment of current capacities within the meteorological department and other relevant agencies responsible for: collecting, synthesizing and analyzing hydro-meteorological data, including climatic factors, glaciers, snow cover, river flows, tropical cyclones and sea levels; and for sharing relevant climate data to end users such as farmers and emergency services. It will also call for identification of key gaps based on a comparison of existing capacities and desired climate risk information to support decision making. The TORs would call for an action plan to fill these gaps such as through identification of roles and responsibilities of involved agencies, cost-benefit analysis of potential measures, and potential funding sources. The action plan would consider how to make climate information more accessible to end users, such as a centralized information portal and translation into useful formats. The work under this option would also consider international standards and opportunities for cooperation on hydro-meteorological monitoring and forecasting (such as the Intergovernmental Panel on Tropical Cyclones in the Arabian Sea and Bay of Bengal).

Potential impact: Detailed, accurate and timely climate information is essential for short- and long-term responses to climate variability and change. A more solid data base, better forecasting techniques and better accessibility of climate information will directly increase the capacity of vulnerable people and sectors to adapt as well as allow for more accurate climate risk assessments. More targeted adaptation actions based on these risk assessments will be possible.

Opportunities to build on: The Global Framework for Climate Services could be an opportunity for learning and capacity building. This World Meteorological Organization enables researchers and climate information producers and users to improve the quality and quantity of climate services worldwide, particularly in climate vulnerable developing countries. Partnerships might also be established with relevant South Asian Association for Regional Cooperation centres.

²⁰ For example, in 2010, the UNFCCC Secretariat published a paper based on experiences in the European Union: "Synthesis report on efforts undertaken to monitor and evaluate the implementation of adaptation projects, policies and programmes and the costs and effectiveness of completed projects, policies and programmes, and views on lessons learned, good practices, gaps and needs."

8. *Identification and promotion of technologies for adaptation*

Rationale: As identified in the NCCP, many adaptation measures that promote water, food and energy security depend on the application of new and improved technologies such as rainwater harvesting, efficient irrigation, wastewater recycling, drought and pest-resistant crop varieties, modern farming techniques and biotechnology. The Government of Pakistan can facilitate access to and the transfer of such technologies by identifying and prioritizing technology needs and by developing strategies to meet these needs, such as regulatory measures, financial incentives and capacity building. In doing so, it should build on mechanisms and processes developed under the UNFCCC.

Main components: The TORs would call for development of a process to identify and prioritize Pakistan's technology needs for adaptation and to elaborate a strategy to support public and private actors in meeting those needs. Requirements for the identification and prioritization process would include building on the outcomes of Pakistan's completed adaptation planning processes, close alignment with the UNFCCC technology needs assessment guidelines, and detailed consultations with relevant stakeholder groups. The strategy to promote prioritized adaptation technologies would consider such factors as research and development requirements, creation of deployment and diffusion plans, strategies for accessing technologies from other countries, analysis of potential barriers to the transfer of prioritized technologies, and defining the roles of various public and private actors. The TORs would also call for elaboration of potential government measures to promote the development, transfer and deployment of technologies for adaptation, such as a review of regulatory requirements of key technologies, public-private partnerships, financial incentives such as tax breaks and subsidies, the establishment of technology centres and networks, and other capacity building measures.

Potential impact: New and improved technologies play an important role in the implementation of many key adaptation options. A coherent and comprehensive process for identifying and promoting relevant technologies will thus increase the feasibility and reduce the cost of adaptation in key sectors. The technology strategy should result in streamlined development, deployment and diffusion of technologies for adaptation within Pakistan, increased transfer of key technologies from abroad, and improved cooperation between different public and private actors.

Opportunities to build on: The UNFCCC promotes and facilitates the application of technology needs assessments and capacity building measures, including through the publication of handbooks and guidelines. The United Nations Environment Program (UNEP) and UNDP have also supported the preparation of Technology Needs Assessments in various countries with financing from the GEF. The Technology Mechanism established under the Cancun Agreement, with its planned policy body, the Technology Executive Committee and operational arm, the Climate Technology Centre and Network, also could provide support to Pakistan. The mechanism aims to foster national innovation systems, support the elaboration of technology action plans, and strengthen international collaboration on research and development, public-private partnerships and other areas. As the detailed design of both elements of the Technology Mechanism are being developed, Pakistan might seek to influence its modalities to ensure it better meets its technology needs in the future.

Capacity building

9. *Communication, promotion and awareness building*

Rationale: Pakistan has fully recognized the need to ensure that the general public and key stakeholders understand the causes and potential consequences of climate change, as well as the means by which these risks may be reduced. Building this understanding reflects the multi-faceted and long-term nature of climate change, the numerous actors it affects, and the need for some changes in societal practices and behaviours. Widespread knowledge of climate change by the public is necessary to facilitate understanding of government initiatives to reduce vulnerability to climate change and support implementation of targeted adaptation actions.

Main components: As recommended in the NCCP, the TOR will outline requirements for development of a comprehensive national climate change awareness program focused on adaptation. The program will aim to increase knowledge at two levels: building general awareness of climate change, its potential impacts and appropriate adaptation responses; and targeted messaging to support implementation of key measures (for example, conservation of water and energy, and disaster preparedness) and reach key audiences (such as farmers and forest communities). Requirements under the TORs would include: building on the communication priorities identified in the NCCP and draft FACC; conducting a survey to establish a baseline of understanding of climate change and capacity to respond; augmenting existing efforts by the Government of Pakistan to inform its citizen about climate change; identifying and engaging key partners (such as radio, television, print media, private sector organizations, and civil society organizations); prioritizing and crafting messages tailored to target audiences; ensuring a process for coordinating climate change messages to the public across government; and identifying appropriate avenues for the dissemination of information, including use of social media. The program could also include designing a strategy for building the capacity of key partners to develop and communicate messages related to climate change adaptation.

Potential impact: Greater awareness of climate change by the general public will increase the potential for implementation of adaptation actions that require behavioural changes by individuals. It can also encourage the integration of climate change risks in planning within the private sector, and support implementation of actions that reduce greenhouse gas emissions.

Opportunities to build on: The government is working to raise awareness of climate change in Pakistan. These experiences provide an important foundation upon which to develop a new climate change awareness program. The DFID-funded “Climate Leadership for Effective Adaptation and Resilience” is working to increase the capacity of civil society in southern Pakistan to support adaptation to climate change at the national and local level. Internationally, opportunities through the UNFCCC include its Climate Change Information Network (CC:iNet) clearing house, which is intended in part to provide governments with access to materials and strategies for motivating people to engage in climate change actions.²¹ As well, the United Nations Alliance on Climate Change Education, Training and Public Awareness launched during COP18 (2012) aims to “support Parties to the UNFCCC in their efforts to design, initiate and undertake activities related to climate change

²¹ CC:iNet can be accessed at: http://unfccc.int/cc_inet/cc_inet/items/3514.php

education, training, public awareness, public participation and public access to information” (UNFCCC, 2013).

10. *Research capacity*

Rationale: Effective adaptation action requires a sufficiently solid evidence base of relevant climate risks and available risk management options to inform decision-making. The NCCP notes that Pakistan’s scientific institutions lack sufficient human and financial resources to conduct needed research. The plan also identifies specific research areas to support adaptation, such as the development of new crop varieties, design of sustainable land management practices, forest pathology and changes in Pakistan’s glaciers. A strategy is required to determine how to fill research gaps and to increase the technical capacity of key research and academic institutions to provide this evidence base.

Main components: Develop a strategy to fill identified gaps in climate risk research and the development of adaptation options, while building capacity of research and academic institutions. TORs for this option could include: synthesis of known research needs to support adaptation planning and implementation (for example, by thematic area); identification of technical capacities in research and academic institutions; assessment of financial and technical research capacity gaps; and development of a plan for filling these gaps that considers the need to build capacity in relevant institutions at different scales. The strategy should outline who should be involved in undertaking the required research (public versus private sector) and how required financial and human resources will be secured, such as by considering available national and international sources of financial and technical assistance, existing initiatives that might be built upon, and appropriate incentives that might be required.

Potential impact: Improved research capacity allows scientific institutions to provide decision-makers and adaptation planners with relevant evidence they need to design and implement effective and efficient adaptation action, and better coordinated and more targeted research on climate risks and risk management options. Sustainable research capacity encourages high-quality research in those areas that are most relevant for Pakistan’s context, and better alignment and coordination of international assistance.

Opportunities to build on: Expertise in established research facilities and universities could be harnessed to support adaptation to climate change. Examples of institutions that contribute to climate change research include the Pakistan Agricultural Research Council, COMSATS Institute of Information Technology’s Centre for Climate Research and Development and Pakistan Forest Institute, as well as provincial level research institutes and various government departments. Opportunities exist in terms of bilateral and multilateral financial and technical support. The recently signed agreement between the Italian-based Ev-K2-CNR research centre and GCISC on research in mountain areas illustrates this potential.

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Appendix 1: Adaptation Projects in Pakistan

In addition to a number of development projects into which consideration of climate change is being integrated, a number of on-going or recently completed projects in Pakistan that specifically seek to support adaptation to climate change. These projects are classified into two groups: projects for which Pakistan is the sole focus; and projects that involve multiple countries, including Pakistan.

A. Projects only within Pakistan

1.	Promotion of Rural Livelihoods through Adaptation Support Programme
	Reduce stresses and associated costs posed by climate change to Pakistani irrigated agricultural by improving efficiency, piloting resistant varieties of crops and introducing basic weather forecasting in extension services. This project will work to promote promotion of agricultural adaptation and capacity building for climate change mainstreaming.
Funder:	Special Climate Change Fund. Budget: US\$16.46 million
Implementer(s):	International Fund for Agricultural Development (IFAD), Ministry of Environment
Duration:	2011 – 2014
Priority Sectors:	Agriculture; Freshwater supply
Scale:	Sector level
Citation:	Adaptation Learning Mechanism, http://www.adaptationlearning.net/project/rural-livelihoods-climate-change-adaptation-support-programme

2.	Integration and Harmonization of Sustainable Development Interventions in the Central Karakorum National Park, Pakistan
	To promote sustainable development through better coordination of on-going efforts and initiatives, and development of integrated management plans supported by knowledgebase and environmental monitoring programs. Key activities include: improving the knowledge base on ecosystems, including “local capacity to deal with likely impacts of climate change;” and identifying and assessing “appropriate alternative mitigation and adaptation scenarios, and prioritize suitable mitigation and adaptation measures according to their effectiveness in terms of reducing vulnerability to threat from climate change and variability, associated cost, and implementation potential.”
Funder:	Italy
Implementer(s):	UNEP with the Ministry of Environment, IUCN-Pakistan, WWF-Pakistan, International Centre for Integrated Mountain Development (ICIMOD), Sustainable Development Policy Institute, Karakorum International University & Pakistan Meteorological Department
Duration:	2010 – 2013
Priority Sectors:	Ecosystem conservation
Scale:	National level
Citation:	Karakorum Trust, http://www.evk2cnr.org/cms/en/research/integrated_programs/karakorum_trust

3.	Reducing Risks and Vulnerabilities from Glacier Lake Outburst Floods in Northern Pakistan
	This project reduces risks and vulnerabilities from GLOFs and snow-melt flash floods in Northern Pakistan. The main objectives of the project are: (1) To develop the human and technical capacity of public institutions to understand and address immediate GLOF risks for vulnerable communities in Northern Pakistan; (2) To enable vulnerable local communities in northern areas of Pakistan to better understand and respond to GLOF risks and thereby adapt to growing climate change pressures. The project takes place in the Bargrot Valley in Gilgit-Baltistan and Drongagh Valley Chitral in Khyber Pukhjtunkhwa, Pakistan.
Funder:	Adaptation Fund
Implementer(s):	UNDP, Ministry of National Disaster Management
Duration:	2011 – 2015
Priority Sectors:	Ecosystem conservation; Disaster risk reduction

Scale:	Sub-regional
Citation:	UNDP, https://www.adaptation-fund.org/project/1332-reducing-risks-and-vulnerabilities-glacier-lake-outburst-floods-northern-pakistan ; Adaptation Learning Mechanism http://www.adaptationlearning.net/project/af_pakistan

4. Climate Change Adaptation in Pakistan	
This project focuses on the Sindh and Punjab districts in Pakistan, and seeks to study the impacts and cost effectiveness of climate change within these districts. It particularly looks at the “pattern, cost and benefits and the political economy of climate change adaptation strategies” and aims to inform planners and policy makers on “their expected return on conservation investment in the area of climate change adaptation and food security.”	
Funder:	International Center for Climate Governance
Implementer(s):	Lahore University of Management Sciences
Duration:	2011 – 2014
Priority Sectors:	Government
Scale:	Provincial level
Citation:	Think Tank Map, http://www.thinktankmap.org/ThinkTankDetails.aspx?ID=293&Lan=en-US&Letter=C

5. Climate Change Adaptation in Practice Community-based Adaptation and Advocacy in Coastal Pakistan	
The project concentrates in two villages, Mohammad Ali Chandio and Village Khmoon Mullah, in the Union Council of Bhugra Memon in Tehsil and District Badin. The project seeks to “improve the capacity and sustainability of existing resources, empowering affected communities with their own adaptive capacity for the foreseeable future.” The project has two approaches: adaptation measures and advocacy activities. Project activities include: strengthening and expanding existing water ponds, building embankments; rehabilitating degraded land; advocacy and disaster preparedness activities.	
Funder:	
Implementer(s):	Oxfam International
Duration:	
Priority Sectors:	Disaster risk management; Coastal zone management
Scale:	Sectoral level
Citation:	Oxfam International, http://www.oxfam.org/sites/www.oxfam.org/files/pakistan-climate-adaptation.pdf

6. Building Capacity on Climate Change Adaptation in Coastal Areas of Pakistan	
This project aims to raise awareness and increase resilience to the impacts of climate change, in particular sea level rise, in the communities of Sindh and Balochistan. Through the development of vulnerability assessments the projects seeks to compile a contextual and policy analysis of the focus area, including recommendations and mechanisms to address existing and future climate change and the development of adaptation plans with the participation of the local communities. “Adaptation will be integrated into sectoral policies and development plans, while addressing the issues of water allocation and sustainable flow requirements.”	
Funder:	WWF
Implementer(s):	LEAD Pakistan
Duration:	Local level
Priority Sectors:	Community Based Adaptation
Scale:	Community level
Citation:	LEAD, http://www.lead.org.pk/projects/ccap/index.htm and Business Recorder, http://www.brecorder.com/business-a-economy/189/1158471/

7. Sustainable Land Management Programme to Combat Desertification in Pakistan
The aim of this project is to alleviate environmental degradation and increase resilience to climate change within the arid and semi-arid regions of Pakistan, covering 800,000 hectare, through the use of Sustainable Land

Management and the creation of a decision-support system for planning, monitoring and adapting climate resilience sustainable land management at provincial and district levels.	
Funder:	GEF Trust Fund
Implementer(s):	UNDP
Duration:	2012 – ?
Priority Sectors:	Agriculture; Government
Scale:	Provincial level
Citation:	GEF, http://www.thegef.org/gef/project_detail?projID=4754

8. Climate Leadership for Effective Adaptation and Resilience (CLEAR)	
The project focuses on southern Pakistan’s civil society and strengthening its capacity to adapt to climate change at the local and national level. At the local level the projects seeks to enhance the CSOs work with communities in identifying their vulnerabilities and to influence policy formation. At the national level, the project aims to support “networks of CSOs and communities will be supported to collectively advocate for adaptation strategies and policies in Pakistan that specifically address the vulnerabilities and rights of poor and at-risk communities.”	
Funder:	DFID - Civil Society Challenge Fund
Implementer(s):	LEAD
Duration:	2011 – 2016
Priority Sectors:	Civil society
Scale:	Community level; National level
Citation:	LEAD, http://www.lead.org.pk/projects/clear.htm

B. Multi-Country Projects that include Pakistan

1. Floods from the Roof of the World: Protection thanks to applied research	
The project seeks to protect people and infrastructure from the hazards of GLOFs. Based on previous fundamental research, the countries of Nepal, Bhutan, India, Pakistan and China/Tibet now have an inventory of glaciers and glacier lakes as well as a GLOF monitoring system. The data gathered is used as the basis for early-warning systems. This enables priorities to be set and corresponding action to be taken. The database is also used to determine the amount of total available water resources the region will have in the future.	
Funder:	Swiss Development Corporation
Implementer(s):	ICIMOD
Duration:	Phase Two: 2008 – 2012
Priority Sectors:	Disaster risk management
Scale:	International level
Citation:	Swiss Development Corporation, http://www.deza.admin.ch/en/Home/Projects/Selected_projects/Floods_from_the_Roof_of_the_World

2. Mangroves for the Future	
The project has two main objectives: to strengthen the environmental sustainability of coastal development; and to promote the investment of funds and efforts in coastal ecosystem management. Mangroves for the Future re-orient the current focus of coastal investment by moving from a reactive response to disasters, to progressive activities that address long-term sustainable management needs. These include building awareness and capacity for improved food and livelihood security, disaster preparedness, and climate change adaptation. Initially focused on countries that were highly affected by the 2004 tsunami—India, Indonesia, Maldives, Seychelles, Sri Lanka and Thailand—the project has expanded to include Pakistan and Viet Nam.	
Funder:	2007 – 2009: Australia, Germany, Norway, Sweden, UNDP, UNEP 2010 to present: Norway and Sweden
Implementer(s):	National governments with CARE International, Food and Agriculture Organization (FAO), IUCN, UNDP, UNEP and Wetlands International with non-governmental and community-based organisations.

Duration:	2006 – present
Priority Sectors:	Coastal zone management
Scale:	International level
Citation:	Mangroves for the Future, http://www.mangrovesforthefuture.org/ and http://www.mangrovesforthefuture.org/assets/Repository/Documents/2011-MFF-Brochure.pdf

3. Management of Flash Floods: Capacity building and awareness raising in the Hindu Kush Himalayas	
Flash floods have caused huge loss of lives and properties of people in the Hindu-Kush Himalayan region. This project aims to improve the capacity of stakeholders of the region to cope with flash floods.	
Funder:	USAID – US Agency for International Development
Implementer(s):	ICMOD
Duration:	<i>Phase I: 2006 – 2007</i> <i>Phase II: 2008 – 2010</i>
Priority Sectors:	Disaster risk management
Scale:	International level
Citation:	ICIMOD, http://www.icimod.org/?q=258

4. Glacial Melt and Downstream Impacts on Indus-dependent Water Resources and Energy	
Glacier-fed river basins are a major source of irrigation and hydropower in Himalayan countries, with the Indus river basin of major importance for the economy of several countries in South Asia. This project will develop climate adaptive measures to reduce some of the adverse climate impacts on environmental degradation, building a level of climate resilience at the target watersheds. The project will support the mainstreaming of climate adaptation activities into ADBs projects and programs in the water and hydro-energy sector in these countries.	
Funder:	ADB Small Grant for Adaptation Project <i>Budget: US\$200,000</i>
Implementer(s):	ICIMOD, UNEP-General Assembly, Centre for International Climate and Environmental Research- Oslo
Duration:	2007 – 2009
Priority Sectors:	Freshwater supply; Energy
Scale:	International level
Citation:	Asian Development Bank (ADB), http://www.adb.org/projects/documents/glacial-melt-and-downstream-impacts-indus-basin-dependent-water-resources-and-e-0 ; and Asia Pacific Adaptation Network, http://www.asiapacificadapt.net/projects/glacial-melt-and-downstream-impacts-indus-dependent-water-resources-and-energy-ta-6420-sga

5. Adaptation to Climate Change in the Hindu Kush Himalayas and Central Asia	
This project is addressing how to adapt to too much and too little water in the Hindu Kush Himalayas and Central Asia, covering the following activities: <ul style="list-style-type: none"> • Improved scenarios for climate change variation and impacts; • Scenarios for water demand and availability; • Improved knowledge on climate change effects on biodiversity and ecosystem services; • Improved understanding of impacts on agro-ecology and food production systems and food security; • Critical factors for achieving sustainable adaptation. 	
Funder:	Norway (through UNEP) <i>Budget: US\$62 million</i>
Implementer(s):	Centre for International Climate and Environmental Research - Oslo, UNEP, ICIMOD, national governments
Duration:	2007 – 2011
Priority Sectors:	Climate information services; Biodiversity; Agriculture
Scale:	International level
Citation:	Adaptation Learning Mechanism, http://www.adaptationlearning.net/research/too-much-too-little-water-adaptation-climate-change-hindu-kush-himalayas-and-central-asia

6.	Protection of Sustainable Policy Initiatives in the Management of Natural Resources in the Hindu Kush Himalayas
	The program strengthens the role of ICIMOD as an organization and service provider in the region, and increases the accountability of the eight member countries. It helps develop and implement regionally agreed concepts and strategies to facilitate adaptation to climate change and sustainable resource management. This is realized by institutional strengthening of ICIMOD in areas such as data collection related to climatic changes and forests. GIZ further promotes the ICIMOD priority program Environmental Change and Ecosystem Services.
Funder:	Federal Ministry for Economic Cooperation and Development, Germany
Implementer(s):	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), ICIMOD
Duration:	2008 – 2012
Priority Sectors:	Government
Scale:	International level
Citation:	GIZ, http://www.giz.de/themen/en/33473.htm

7.	South Asia Water Initiative
	Working with DFID and the World Bank, the South Asia Water Initiative is building capacity for water resource management to address serious water availability issues in Himalayan watershed countries of Afghanistan, Bangladesh, Bhutan, India, Nepal and Pakistan.
Funder:	DFID, Australia, Norway Budget: US\$9.6 million
Implementer(s):	World Bank (lead); regional and national bodies
Duration:	2009 – 2013
Priority Sectors:	Freshwater supply
Scale:	International level
Citation:	UN, http://www.un.org/climatechange/projectsearch/proj_details.asp?projID=182&ck=aVmfG453KHSJI81

8.	Support to Policy Consultation and Actions to boost Sustainable Use of Water and Energy Resources for Agricultural Production and Livelihood Improvement in the Near East and North Africa Region in the context of Climate Change
	The project will assist in building the capacity of governments and civil society to prepare national reviews, analyze the current national policies for water development, examine cooperation on transboundary water management, and identify the investment needs and investment strategies for food, water and energy security to be adopted on a national and regional basis in the context of climate change. Its main objectives are: <ul style="list-style-type: none"> • Carry out studies and workshops to increase awareness of water-energy-food interrelation and their sustainable use. • Address food and energy security in the Near East and North Africa region through a convergent approach which integrates four critical resource factors - water, energy, technology, and knowledge under the stress of climate change. • Carry out studies on the use of water resources, on the management strategies and on the investment needs at national level. • Capacity-building of governments and civil societies for optimal natural resource management.
Funder:	FAO Budget: \$436,000
Implementer(s):	FAO; Organisation of the Islamic Conference
Duration:	2010 – 2011
Priority Sectors:	Freshwater supply; Energy; Agriculture
Scale:	International level
Citation:	Statistical, Economic and Social Research and Training Centre for Islamic Countries, http://www.sesric.org/activities-oicfao.php

9.	Vulnerability to Climate Change: Adaptation strategies and layers of resilience
	Provide science-based solutions and pro-poor approaches for adaptation of agricultural systems to climate change for the rural poor and most vulnerable farmers in semi-arid regions of Asia, specifically India, Peoples' Republic of China, Sri Lanka, Bangladesh, and Pakistan.

Funder:	ADB
Implementer(s):	International Crops Research Institute for the Semi-Arid Tropics
Duration:	2010 – 2012
Priority Sectors:	Agriculture
Scale:	International level
Citation:	International Crops Research Institute for the Semi-Arid Tropics, http://ongoing-research.cgiar.org/factsheets/vulnerability-to-climate-change-adaptation-strategies-and-layers-of-resilience/

10.	Drought Monitoring System Development by Integrating In-situ Data, Satellite Data and Numerical Model Output
	This project aims to improve the drought monitoring capability within Asian countries—Bangladesh, China, Nepal, Mongolia, Philippines, Pakistan, Thailand, and Vietnam—by building a drought monitoring and research network in targeted countries.
Funder:	Asia-Pacific Network for Global Change Research
Implementer(s):	Asia-Pacific Network for Global Change Research
Duration:	2010 – 2011
Priority Sectors:	Disaster Risk Management; Infrastructure
Scale:	International level
Citation:	Asia-Pacific Network for Global Change Research, http://www.apn-gcr.org/resources/items/show/1680