Water governance: learning by developing adaptive capacity to incorporate climate variability and change

A. Kashyap
Climate Change and CDM Adviser, UNDP, 304 East 45th Street FF-9th Floor, New York, NY 10017, USA
(E-mail: arun.kashyap@undp.org)

Abstract There is increasing evidence that global climate variability and change is affecting the quality and availability of water supplies. Integrated water resources development, use, and management strategies, represent an effective approach to achieve sustainable development of water resources in a changing environment with competing demands. It is also a key to achieving the Millennium Development Goals. It is critical that integrated water management strategies must incorporate the impacts of climate variability and change to reduce vulnerability of the poor, strengthen sustainable livelihoods and support national sustainable development. UNDP’s strategy focuses on developing adaptation in the water governance sector as an entry point within the framework of poverty reduction and national sustainable development. This strategy aims to strengthen the capacity of governments and civil society organizations to have access to early warning systems, ability to assess the impact of climate variability and change on integrated water resources management, and developing adaptation intervention through hands-on learning by undertaking pilot activities.

Keywords Adaptation; capacity development; climate change; millennium development goals; poverty; variability; vulnerability; water; water governance

Climate change – an issue of sustainable development

Human induced climate change is a reality. There is widespread scientific consensus that such climate change is an important new stress particularly on ecological and socioeconomic systems that are already suffering from non-sustainable management practices and increasing resource demands. Given the conclusion of the experts that future changes in climate are inevitable, the Third Assessment Report of the International Panel on Climate Change (IPCC, 2001) provides a comprehensive understanding of the impacts, adaptation and vulnerability to climate change.

Most climate change impacts are expected to be adverse, widespread and sustained and will reduce access to essential water, energy, health, agriculture and biodiversity services by the poor. Recent changes in climate have already affected hydrological systems and terrestrial and marine ecosystems in many parts of the world. The adverse impacts of climate change will be most striking in the developing nations because of their geographical and climatic conditions, high dependence on natural resources, and lack of capacity to adapt to a changing climate. The IPCC Third Assessment Report (TAR) also projects least developed countries and the Small Island Developing States (SIDS) to be highly vulnerable to climate change because of limited capacity and widespread poverty. These conditions contribute to disproportionate risk and high vulnerability of these countries to damaging effects of climate change. Among the changes to which developing countries will have to adapt are an increase in the frequency and intensity of severe weather including the frequency and intensity of droughts and natural disasters, higher temperatures, and rising sea levels.

1 Those with the least resources have the least capacity to adapt and are the most vulnerable, IPCC 2001, p. 8.
2 Ibid, p. 48, p. 66.
An analysis of the lessons learned in reducing poverty while strengthening the capacity of the poor people to adapt to climate change show that addressing poverty implies also preparing for climate variability and extremes. Climate change is therefore a serious threat to poverty eradication and threatens to undo decades of development efforts. It is also a cross-cutting problem that impacts issues that are intrinsic to achieving sustainable development. In order to achieve the key Millennium Development Goals (MDGs) of reducing poverty, hunger and the proportion of population without access to safe drinking water by half in the next couple of decades, it is critical that adaptation to the effects of climate variability and change be incorporated within the broader context of poverty eradication and sustainable development.

**Climate change adaptation**

Human beings have traditionally adapted to changes in environment including climate change and climate variability and therefore to realigning means for living and livelihoods, often referred to as coping strategies. However such changes to a large extent were evolutionary that required gradual and at times spontaneous adaptation. Consequently social systems were able to draw upon their intrinsic resilience and allow for changes in environmental conditions.

However, climate change as we understand it today is different; the likely changes are expected to be rapid, more intense and randomly frequent thereby making the risks to the quality of life of the poorest higher and more complex. The larger the changes and rate of change in climate, the greater will be the adverse effects. Potential changes in the frequency, intensity, duration and persistency of climate extremes (e.g. heat waves, heavy precipitation, and drought) and in climate variability would result in increasing risk and enhancing vulnerability to the livelihoods of the poor. Furthermore, some impacts of climate change may be slow to become apparent and several could be irreversible.

Climate change adaptation – all responses to actual or expected climate conditions that reduce vulnerability – is increasingly considered an integral and critical part of the response to climate change and a component of all poverty reduction and sustainable development strategies, since the current commitments to limit the emissions of greenhouse gases (GHG), even if implemented, will not stabilize the atmospheric concentrations of these gases. Developing adaptive capacity to minimize the damage to livelihoods from climate change is also the expressed need of the developing countries.

**Adaptation to climate change in the water sector**

Currently at least 1.7 billion people lack access to safe water supply and almost 2.5 billion lack adequate sanitation, predominantly in the developing countries. One-third of the world’s people now live in countries where water is in short supply. In Africa, women and girls spend nearly three hours a day fetching water, an energy expenditure that exceeds one-third of their daily food intake. Lack of water sources closer to homes significantly constrains the time that mothers have available to care for their children and that girls have to attend school. The lack of access to safe drinking water and adequate sanitation is a major cause of ill health and life-threatening diseases in developing countries. If current trends in

---

3 Over 96% of disaster-related deaths in recent years have taken place in developing countries. Often extreme events have retarded the development process for decades. “Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation,” An Inter Agency Document, UNDP et al., 2002, pp. X–XI.

4 Besides, the sea level and ice sheets would continue to respond to warming for many centuries after greenhouse gas concentrations have been stabilized. IPCC (2001); Statement of the IPCC Chairman at COP7.
water use persist, the water scarcity is projected to affect around 5 billion people by 2025, independent of climate change\textsuperscript{5}.

In most countries, highly fragmented water institutions manage growing water scarcities and block integrated water management approaches\textsuperscript{6}. Currently the greatest vulnerabilities worldwide are in unmanaged or unsustainable water systems in developing countries. Typically such systems are already at high risk due to population growth, increasing agricultural uses, water contamination, adverse policies, and other forces that make the system unsustainable. Climate variability and change will exacerbate the already severe problems and worsen livelihoods and quality of life of the poorest\textsuperscript{7} in many water scarce regions, particularly in the subtropics, due to increased frequency of droughts, increased evaporation, and changes in rainfall patterns and run-off.

**Adaptation as a cross-cutting issue of sustainable development**

Reducing vulnerability of livelihoods is about risk management and risk reduction. Furthermore, assessment of climate change impacts, adaptations, and vulnerability draws on a wide range of physical, biological and social science disciplines and therefore employs an array of diverse methods and tools. Although development activities modify adaptive capacity, yet they have a tendency to omit climate change risks. Water managers are no different. They have in the past cursorily included climate variability as a part of water resources management; addressing climate variability in the context of climate change would require, *inter alia*, an integrated approach to water resource management and participation of diverse stakeholders. This is also the finding of the IPCC\textsuperscript{8}.

While adaptation studies have begun to apply methods and tools for costing and valuing effects, treatment of uncertainties, integrating effects across sectors and regions, and applying decision analytic frameworks for evaluating adaptive capacity, practical on-the-ground implementation is required. Experience in such implementation efforts will build a strong foundation for integrated decision making. With advances in the science of seasonal to inter-annual climate prediction, skilful forecasts can provide valuable information for adapting to climate variability and change. While utilizing this science, it is important to implement demand-driven strategies for adaptation (e.g. management of water demand first and than issues of storage, etc.) that are participatory and are an integral component of national development initiatives.

Adaptation is an evolving process. Adaptation measures will be strengthened by making progress in areas related to good governance (including an active civil society, and open, transparent and accountable policy making processes), human resources, institutional structures, public finance and natural resources management. Combining approaches at the government and institutional level with bottom up approaches rooted in regional, national and local knowledge, and vulnerability assessments that address the different shades and causes of poverty will also strengthen those measures. This reflects the pressing need to develop capacity at human, institutional and system-wide levels to adjust to climate change by strategies that reduce risks by promoting changes in practices, processes or structures of systems – also termed adaptive capacity.

Access to good quality information on the impacts of climate change is essential. It is the key for poverty eradication strategies. Early warning systems and information dissemination systems help to anticipate and prevent disasters. Finally, increasing the resilience of

\textsuperscript{5} IPCC (2001): Impacts, Adaptation and Vulnerability.


\textsuperscript{7} Kasperson and Kasperson, Op Cit. p. 5.

\textsuperscript{8} IPCC (2001), p. 879.
livelihoods and infrastructure is also essential. Traditional risk sharing mechanisms such as asset pooling and kinship could be complemented by micro-insurance and infrastructure design and investment both for public and private uses that takes into account the impacts of climate change.

**Challenges to develop adaptive capacity using the water sector as an entry point**

Water is a “local” issue as well as a regional issue. The unmet demand of the global population that does not currently have access to sustainable water services but needs them can be effectively addressed through national level integrated water resource management strategies (IWRM) and equitable governance regimes. At the same time, many of the issues, relating to supply and demand of water services, are basin-wide and may cut across jurisdictional boundaries. Shared river basin and aquifer systems present opportunities for cooperation and joint water resources development within as well as between countries. Since the application of integrated water resources management principles in shared water resources systems also makes a good case for efficient and equitable water allocation and harmonization of water governance systems, it is critical to include climate change impacts within such a framework.

Currently, the ability of water management agencies to incorporate climate change varies considerably between countries. In many countries, the principles underlying IWRM have yet to be fully internalized into the socio-economic development policies and governance systems. Nor have people been brought to the center of the decision-making process through decentralized planning and management of water resources, particularly at the basin level. At the same time there is a serious lack of planning tools, management strategies, and human, institutional and systemic capacities to meet local demand for sustainable water services under climate variability and climate change regimes. Trans-boundary and regional water issues bring about additional complexity in developing appropriate national responses to water resource management.

Integrated water resources development and management strategies are regarded as the most effective way to achieve sustainable development of water resources in a changing environment with competing demands. Such strategies can also provide guidance to linking local and national priorities to regional and global mandates. An important challenge therefore is to ensure that both water managers and climate professionals communicate with and understand each other, and also to relate these issues within the overall context of national development and priorities for poverty eradication.

**Learning by undertaking activities with on-the-ground implementation**

Building on the outcomes of its adaptation strategy, drawing from extensive internal and external consultations including learning from the past and ongoing pilot activities and country level experiences, UNDP highlights learning by developing adaptive capacity in its client countries that leads to internalization of climate issues into national development activities and ensures robustness of poverty reduction programs to climate change. Given that the LDCs and SIDS will have the greatest difficulty in adapting to climate change as they represent countries with least resources and the least capacity to adapt and therefore greatest vulnerability to climate change, they represent UNDP’s priorities. UNDP’s adaptive capacity activities focus on developing national level capabilities that address human, institutional and system wide components necessary to develop an efficient adaptation process using, for instance, water governance as an entry point. The learning through the capacity development approach pursues a solution-oriented approach grounded in generat-
ing sustainable livelihoods and drawing from host country needs and concerns through *inter alia*, stakeholder consultations.

Wherever possible the learning-by-doing activities build upon national and regional vulnerability and adaptation assessments and explore participatory approaches to incorporate climate variability and climate change interventions into practical policy proposals and strategic implementation of national development priorities. The capacity development equally emphasizes creating an effective and efficient enabling environment and a knowledge and information base to integrate vulnerability from climate variability and change along with other non-climate risks in project design and implementation.

It is therefore important to seek opportunities to develop adaptive capacity based on ongoing projects and practices that are more amenable to incorporate adaptation planning and assessment into project designs that will lead to real livelihood benefits. While this would require the availability of adequate and relevant information, it is beneficial to start with activities such as water resource management as they are of immediate direct concern to the livelihoods of the poor and the disadvantaged and also indirectly through issues related to disaster prevention and preparedness.

It is opportune to start work in LDCs, including SIDS, as the Conference of Parties (COP) to the Framework Convention on Climate Change (UNFCCC) recognizes that these countries require prioritized assistance in building adaptive capacity to combat climate change while eradicating poverty10. Accordingly a work plan has been established for LDCs that aims to strengthen existing, and establishing, national climate change secretariats, provide training in negotiating skills and language and support the preparation of National Adaptation Plans of Action (NAPA). In addition, a LDC fund and the special climate change fund have been created to assist such countries, *inter alia*, in pursuing climate change adaptation. Bilateral and multilateral sources are also encouraged to fund activities to assist LDCs11.

**Water governance and adaptation to climate change**

UNDP has received assistance from Swedish International Development Assistance (SIDA) to work on an innovative project relating to developing adaptive capacity to climate variability and change in a least developed country using water governance as an entry point but within the national framework for sustainable development and poverty eradication.

As the work undertaken jointly by UNDP and a number of international agencies12 clearly demonstrates that the best way to address climate change impacts on the poor is by integrating adaptation measures into sustainable development and poverty reduction strategies, UNDP is *walking the talk* by internally coordinating the work of its water governance and climate change teams both at the level of strategy development and also project implementation.

10 UNFCCC Decision 5/CP7 and 6/CP7.
11 COP7 (i) requests the operating entity of the Fund to meet full costs of preparing national adaptation programmes of action (NAPAs); adopt simplified procedures and arrange for expedited access to the Fund by LDCs and adopt streamlined procedures for the operation of the Fund. The decision also encourages the use of national and, where appropriate, regional experts; (ii) has issued guidelines for the preparation of NAPAs that include objectives, characteristics, guiding elements, process and structure of the eventual document and lists criteria for selecting priority activities; (iii) invites Parties to make submissions to improve the guidelines by 15 July 2002, for consideration by the Subsidiary Body for Implementation at its seventeenth session; (iv) has decided to review the progress at COP9, need for continuation and TOR of the LDC Expert Group, including the duration of the terms of its office of its members taking into account the implementation needs identified in completed NAPAs, as well as the experience of LDCs which have started the implementation of NAPAs.
As discussed earlier, adaptive capacity will be closely related to issues relating to enabling environment and efficient governance, human resources, institutional structures including public finance and resource management so as to strengthen the resilience of communities and households to the climate change shocks.

National water strategies will provide a foundation for addressing national water issues. Lessons from existing and relevant past activities to address the national and regional water related issues undertaken by SIDA, UNDP, UNDP-GEF International Waters portfolio, and other germane work will add value to the project activities. It will be useful to build upon strategies to cope with current climate variability as a starting point for addressing adaptation in the context of poverty reduction. The documentation of lessons will provide guidance on how to coordinate climate change and water governance activities and will assist in the preparation of a national strategy for conducting the multi-stakeholder dialogue in the selected country.

Once the country is selected, the work will be executed under the guidance of the relevant UNDP Country Office to gain from the strong relationships of the office with the diverse stakeholders in the country. The project activities will aim to promote multi-stakeholder dialogue, assessing the impact of climate variability and change on IWRM and water governance, and strengthening the national adaptive capacity. An objective of the project is to strengthen the knowledge base to incorporate climate change adaptation into national development planning through a demand driven policy demonstration project in the river basin sector, undertaken in close cooperation with partnering institutions and diverse stakeholders. It is envisaged that the results from the project activities will in turn feed back into new research and activities, particularly those relating to NAPAs. It will be equally important to learn from existing ongoing activities relating to water governance at the national level as well as the relevant region and build as necessary on the work done particularly by organizations like Dialogue on Water and Climate (DWC)\(^{13}\), International Research Institute for Climate Prediction (IRI) and the Global Water Partnership (GWP).

UNDP will also seek partnerships with other institutions and centers of excellence with relevant ongoing activities to create greater synergy and add value to the learning from past experiences. It is expected that on the ground capacity-building activities will highlight innovative governance systems that are robust, flexible, and adaptable and can enable water institutions to deal with new challenges presented by climate variability and climate change in a sustainable development framework. Learning from experience and learning by sharing will be the building blocks for learning by undertaking activities and help to integrate adaptation to climate change in the national sustainable development efforts.

References


---

\(^{12}\) UNDP *et al.* (2002).

\(^{13}\) The activities will be executed in partnership with DWC.