Outline of recommendations for

Theme C: Water for Development and Ecosystems

Draft for comment
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Preliminary findings

In March 2005, the governments of the Asia-Pacific region agreed to a new approach to sustainable development. Called *Green Growth*, the strategy was designed to reconcile seeming conflicts between commitments to environmental sustainability and poverty reduction within the framework of the Millennium Development Goals. The power of this approach is in its call for a move away from an emphasis on economic growth with some attention to the environment, to a more proactive, integrated thinking in which development enhances sustainability instead of threatening it.

The Asia-Pacific region is ready to move into the next generation of coordinated and holistic water management that reflects the shift in thinking signaled in *Green Growth*. With political commitment from decision-makers across the region, the application of a suite of emerging approaches and tools to water management can drive real progress towards the mutually dependent goals of ecosystem protection and human development. Innovative approaches to water management will be successful only if awareness of the urgency of water management is raised broadly across society.

One great challenge in moving forward as a region is the great diversity that exists across Asia-Pacific ecosystems, populations, political institutions and socio-economic conditions. A number of regional trends highlight the importance for renewed thinking and innovative approaches to managing water at the ecosystem level.

1. The agricultural sector makes an overwhelming claim on water resources.
2. Watershed degradation has intensified in areas of high resource dependency.
3. Intensification of agriculture, industrial development and urbanization have severely affected water quality
4. Economic growth rates have been high, even as poverty remains a chronic problem in both urban and rural areas.
5. Further expanding economies and increasing populations entail increases in water demand form all sectors.
6. Water resources are unevenly distributed, and water availability is complicated by a combination of physical, economic and environmental water scarcity.
7. Large-scale water management schemes create transboundary tensions in shared basins, where institutions are not sufficient to deal with the political complexity of international water.
8. There is widespread tension between trends towards decentralization and closed decision-making.
9. The region has high vulnerability to climate change, but this vulnerability takes several different forms.
10. Aquatic biodiversity has high economic and social value, but is threatened by overexploitation and alternations in hydrological regimes.

[Introductory material will be revised based on the findings of the review paper]

The region needs to move beyond the general goals of IWRM to commit to more specific, tangible and achievable objectives in support of linking human development and ecosystem maintenance. Decision-makers of the region should invest in ecosystems as development infrastructure, as systems that need to be maintained, restored, monitored, and managed. Further capital investment in water infrastructure for water supply, sanitation, flood control, but also irrigation to meet MDG goals and targets can be reduced if essential ecosystem services provided by the aquatic ecosystems, the upstream watersheds, and the agricultural landscapes are recognized, maintained, and/or restored.

Recommendations

1. Implement good governance at the ecosystem level

The need for ecosystem approaches to development has resonated with many decision-makers across the region, yet implementation of ecosystem approaches has not been effective. Similarly, the decisive role that governance plays in determining the outcomes of development is increasingly recognized by all sectors of society. The governments of the region have already committed to enhancing governance in development through Principle 10 of the Rio Declaration, which calls for ensuring access to information, participation and justice in environmental matters, and allocating authority in decision-making at the level that best represents stakeholders. The current challenge is to combine these agreed-upon principles – access and subsidiarity – to achieve better governance at the ecosystem level.

In much of the Asia-Pacific region, governance at the ecosystem level is weak, because political and natural boundaries do not coincide. In many cases, rights over water are not clear, and deterioration of water quality has proven difficult to control. There has been much progress in establishing river basin organizations, for example, which strive to manage resources at levels appropriate to the functions of ecosystems. Yet, opportunities for open dialogue and meaningful participation among a range of stakeholders remain limited in many diverse settings across the region. Decision-makers should commit to enhancing governance processes at the ecosystem level by increasing transparency and accountability of development planning and implementation. In many cases, this can be achieved by providing political space and support for the 'institutional software' of civil society and public-private partnerships.

1.1 Enhance coordination at sub-national level by increasing stakeholder representation

National decision-makers should provide the legal and policy framework for a diverse range of institutions – including RBOs, networks, coalitions and dialogue platforms – that can provide necessary inputs from the different sectors of society. Calls for integrated water resources management have often resulted in efforts to decentralize decision-making. Some of the difficulties in integrating multiple sectors, agencies and policies may be offset by institutions that focus on coordination among stakeholders. For example, multi-stakeholder

dialogues and informal networks at the river-basin level can provide the flexibility and facilitation needed for negotiating tradeoffs, building constituencies for change and enhancing information flows.

Large-scale infrastructural projects (such as hydropower and irrigation), as with any others, should be planned, built and operated within a governance regime that embodies social justice ethics, is transparent, and participatory. Participation in governance should not be restricted to technical experts and bureaucrats, but should be open to representatives of affected communities and interest groups. The water rights and responsibilities of all stakeholders should be openly negotiated and established, with equity and sustainability being primary considerations. Improvement of governance will have broader positive impacts on ecosystem management.

1.2 Enhance transboundary collaboration through more open and informed dialogue

Transboundary water has been addressed largely through inter-governmental agreements and institutions, often in an atmosphere of high sensitivity dominated by national interests and official diplomatic processes. Some existing institutions have tried to make important changes in the way they interact with stakeholders. As resource competition intensifies, the political sensitivity and volatility of transboundary negotiation can be magnified, further reducing the space for broad dialogue and transparent process. Similar issues are also found in countries with a federal government when water is a state issue.

Because transboundary institutions tend to be inter-governmental bodies, the burden of bringing change lies with the member nations. National governments, the primary drivers of transboundary water management, should create institutions that allow for non-governmental inputs, ensure availability of information and recognize the limitations to national sovereignty that are needed for peaceful cooperation and conflict prevention. International and regional cooperation bodies should encourage and support these efforts. Significant change in the governance of transboundary water resources will require the highest level political commitment from national governments and regional decision-making bodies. Civil society pressure for more access to information and participation should be delivered in a constructive and transparent way.

2. Adopt practical tools to improve environmental and social outcomes of water management

There is an urgent need for a more holistic linking of development, livelihoods and ecosystems concerns. Currently, water for the environment, or environmental flows, is not accounted for in development planning. Moreover, the distribution of benefits from ecosystem goods and services remains skewed towards downstream, often urban, populations. Water management must recognize that ecosystems themselves require certain levels of water flows in order to remain productive and provide for the needs of all stakeholders in society. Likewise, ecosystem services and public goods delivered by agriculture water management systems also need water. Tools to deal with these issues exist, and are being tested in many situations around the region. There is great scope for a scaling up of these efforts, but political commitment to the improvement of environmental and social outcomes of development is necessary to realize the full potential.

2.1 Adopt E-flows in water development planning

E-flows approaches can help ensure that water is allocated to the environment in development planning, especially involving large infrastructure. With a better understanding of environmental requirements and the potential trade-offs with other uses, decision-makers can make more informed decisions about how water is allocated to competing users. Implemented as a process among stakeholders within an ecosystem, E-flows can be a catalyst for obtaining information and analysis from a diverse range of stakeholders and specialists such as ecologists, hydrologists, lawyers, planners, social scientists, etc. Information and analysis of this type is essential for decision-making that affects the trade-offs associated with water management. E-flows approaches provide a roadmap for defining environmental flow requirements, considering the implications for infrastructure development, assessing costs and benefits, nurturing a supportive institutional and policy framework and generating political consensus for change. A better understanding of environmental flow requirements is essential for sustaining livelihoods and other human development, because ecosystems cannot provide goods and services without sufficient levels of water. Such improved understanding must draw on a broad range of disciplines, spanning the natural and social sciences. E-flow approaches would need to be adapted to the characteristics of the region, where agricultural water management systems such as paddy fields also provide important ecosystem services at local at basin levels. The provision of these systems is through an allocation which is typically considered only for agriculture or irrigation, while beneficiaries from these ecosystem services are also from other sectors and locations.

2.2 Develop payment for environmental services schemes for public and private involvement

While economic growth is rapid across much of the region, the distribution of benefits across society is more uneven. In many cases, it is the rural poor who are being asked to maintain supplies of critical ecosystem goods and services, for example watershed functions. For example, upland and upstream communities may face significant constraints on land use and access to resources necessary for their livelihoods.

Payment for environmental services scheme have been tested in many parts of the region, but should be taken to the next step of refinement. In addition to the transfer of payments to compensate upstream watershed service providers, incentives such as tax breaks, tenure and other financial and non-financial instruments should be considered. In the Asia-Pacific region, the rapid rate of urbanization provides an opportunity for redistribution of the benefits of ecosystem goods and services. The requirements of water for domestic use, sanitation and industrial use in urban and peri-urban areas can provide a clear political imperative for decision-makers, in addition to a stock of resources that could be re-invested in the ecosystems upon which urban communities depend. The challenge is to build on these political imperatives with mechanisms to ensure downstream water supplies, in the process achieving more equitable outcomes for upstream and upland water users. Similar schemes should be considered for ecosystem services provided by agricultural water management systems.

3. Invest in raising the productivity of water and decreasing the environmental footprint of agricultural production

To meet the future food security needs of the Asia-Pacific region and socio-economic aspirations of rural populations, increasing the availability of water by developing new supply sources or increasing water allocation to agriculture will still be needed in some basins but should not be considered as the main option for the region and is indeed no longer possible in some countries. Water management must first focus on making better use of the water being accessed and also restore a strategic balance between rainfed production and irrigated production. Given the overwhelming dominance of irrigation in the region's water use sectors and its role in securing food security, it is necessary to focus on improving the benefits of irrigation water. Moving in this direction will deliver direct benefits to achieving food security for a rapidly growing population and to farming communities. With fast pace of urbanization and industrialization in Asia-Pacific, pressure on the agricultural sector to perform more effectively and efficiently and reduce its environmental impact will continue to rise. Policy-makers can avoid conflict between agriculture and competing sectors by providing direction and incentives for reform of irrigation management and infrastructure.

3.1 More balanced strategic approaches to increase water productivity in both rainfed and irrigated agriculture

The potential to increase food production by boosting the productivity of rainfed production has been neglected in the region on favor of irrigation-only water management strategies. This potential must be fully realized by providing incentives to increase rainfed agriculture productivity through providing incentives for and encouraging the adoption of improved soil and water management practices, supplementary irrigation and water harvesting, which would result in more equitable investment patterns targeting marginal rural populations.

3.2 Modernize irrigation systems management to enhance the welfare of farming communities, enhance the environmental sustainability of irrigation its multifunctionality, and allow reallocation of water to other uses and downstream water supply

Irrigation in the region is often characterized by poor water productivity and efficiency, and poor services to farmers, limiting their social benefits and hampering their capacity to adapt to and benefit from the transformation in the agricultural sector, changing consumption patterns, and changes in water allocation due to competition for water. In addition to the production of vital food crops, irrigation systems in the Asia-Pacific region also provide farmhouse water, habitat for fish and other aquatic resources, rural enterprise water supply, urban domestic water, hydropower and navigation. The ecological benefits of multi-functional irrigation include flood control, catchment stability, groundwater recharge, water purification, biodiversity conservation and climate adjustment. In addition to these, there is a range of cultural values that are essential for local wellbeing and livelihoods. Food security, health and sanitation of local communities can be improved by policies that recognize and promote the multi-functionality of irrigation water.

The past generation of irrigation management transfer and participatory irrigation management should be reoriented to focus on professionalization of management and service provision. This shift should bring a merging of the needs for representation and empowerment along with performance objectives and market-based instruments. Investments in physical structures, technical capacity and management institutions should provide accountability of service providers to the users. Considerable investment in capacity building at all levels will be needed to bring about this shift in irrigation management, and

countries need to adopt national benchmarking systems to monitor effects of change in policies, and improvements in performance of the irrigation sector.

Much-needed investments in irrigation systems should be based upon understanding of the changing demand in irrigation services from farmers, existing and potential multi-functionality, and the need to improve the environmental performance of the systems in a river basin management context. Reductions in agricultural pollution will mean significant gains in reducing water-related pollution at larger basin levels. These reforms will require not only improving physical structures, but also continuing to improve the institutions that are responsible for managing irrigation water.

3.3 Reduce the environmental footprint of agricultural production through the adoption of good practices

Intensification of agricultural production and exploitation of natural resources such as forests practices in the region have been characterized by high use of agri-chemicals, high losses in transformation and marketing, degradation of watersheds, that have resulted in severe pollution of water bodies, increased erosion, etc. Recent industrialization of livestock production have exacerbated agricultural pollution of rivers and coastal waters. Policies need to be revised, and regulations and incentives introduced to promote conservation agriculture, integrated pest management, integrated plant nutrition, sustainable forestry management practices, more efficient processing and marketing processes and more environmental friendly livestock production processes to reduce the environmental impact of agricultural production on water resources and ecosystems.

4. Protect and restore urban environments

Approximately half of the population of the Asia-Pacfic region lives in urban areas, and urbanization will continue to proceed into the future. Regardless of the scale of settlement, from mega-city capitals to the smaller cities growing across the region, the status of rivers, urban wetlands and other waterways greatly influences the quality of life in urban areas. Strategic visions for improving the health and function of urban aquatic systems is vital for ensuring health and sanitation.

There is experience and expertise in urban water system restoration in countries such as Japan, Korea and Singapore. But healthy urban environments should not be considered a luxury of economically developed countries. In the urban setting, protection of valuable systems should be coupled with restoration of degraded systems. Concerted efforts to improve waterways and bodies of water within urban environments are an important strategy for contributing to human development in cities.

5. Prepare for climate change impacts on water availability

In recent years disaster preparedness has topped the priorities of many countries, as flooding and other extreme weather events have brought about large-scale damage to human life, infrastructure and ecosystems. But the threat of climate change is much broader and potentially much more far-reaching for water resources management. In addition to disaster preparedness, climate change has major implications for how water is allocated among society. Furthermore, climate change threatens the capacity of ecosystems to provide for

human needs. Government responses to climate change should focus on reducing human vulnerability to uncertainty while protecting and restoring the ecosystems that can help buffer the impacts of changes in water availability. Effective responses will require concerted efforts to build society's capacity to adapt, as the basic assumptions about food production, flood protection, and resilience to drought are challenged by climate change.

5.1 Prepare for changes in flow regime in continental basins

The continental rivers of the region will feel the impacts of changing flow regimes and precipitation patterns, particularly those originating in the Himalayas. Changes in flow regime vary drastically across the region. Decision-makers will be required to understand and respond to the threats from climate change. There is a need for coordination across the region to understand the potential areas of threat and holistic approaches to addressing the threats. The first order of priority is sharing information and monitoring signals of change among countries linked through large catchment ecosystems.

5.2 Prepare for rising sea-level and changes in delta hydrology

Small coastal watersheds of the Asia-Pacific region will be affected by rainfall patterns and sea level rise. Technical interventions to reduce the impact of climate change on livelihoods and ecosystems must be driven by capacity building, knowledge networks and sustained political mobilization. In the Pacific, the threat of climate change has reached the highest level of political and public awareness. Decision-makers in continental and insular Asia must heighten awareness of and attention to the multiple dynamics – a combination of flow regime changes, sea level rise, ocean temperature change, and shifts in rainfall patterns – of climate change, as well. Many of the region's most important rice producing areas stand to suffer major damage from climate change.

6. Adopt indicators of water availability and scarcity at the ecosystem level

There is a fundamental mismatch between the scales of information management and decision-making. Most data and indicators of water availability and scarcity are collected at the national level, and feed into national development planning. But water availability and scarcity are tangible at the ecosystem level, be it in sub-national or transboundary basins. And policies to deal with these issues at the relevant level need to be informed by data at a corresponding scale. Moreover, indicators that integrate the water required by an ecosystem to maintain the flow of goods and services are not widely adopted. Indicators that include ecosystems themselves as users can provide a better basis for policy to address problems of water scarcity.