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Securing environmental flows for Indus Delta

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THE water resource management has become increasingly complex over recent decades. New challenges have emerged apart from meeting the water demands of mainusers.

Now the prime challenge is how to maximise the economic and social welfare of water users in an equitable manner without compromising the sustainability of vital ecosystems.

This requires the managers to recognise the multiple ways that people, especially the poor, depend on ecosystems and the services they provide. This includes basic elements of survival, improved community health, enhanced security, and better social relations.

The services maintained by ecosystems have real economic values that are generally neglected in project cost-benefit analysis. These values are linked to the products provided by ecosystems as well as the avoidance of costs related to declining profits, remedial measures, damage repair and health care.

The unallocated flows intentionally preserved in a river are most commonly termed the environmental flows. Although strict definitions of environmental flows vary, the most recent and widely held definition was developed during the second international conference on environmental flows and released as the Brisbane Declaration 2007.

According to the declaration, “the environmental flows describe the quantity, quality and timing of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend on these ecosystems”. This definition acknowledges the linked variables of quantity, quality, and timing that together constitute an environmental flow regime of sufficient quality to meet management goals.

Emphasis is also placed squarely on flows to improve human livelihoods and well-being, recognising that biodiversity conservation and other more traditional environmental motivations are an integral part of human well-being. The target environmental flow is not necessarily the natural flow, but rather a negotiated flow, set by either objectives (deciding what you want to achieve and setting flows to achieve it) or by scenarios (negotiating between different users).

Environmental flows are relevant for multiple levels of the hierarchy of water management, ranging from international policy to river scale flow management. For example, environmental flows, in their broad definition, encompass the objectives of international agreements such as the Ramsar Convention. Similarly, the implementation of specific environmental flow prescriptions achieves quantifiable results within river-scale water management plans.

Consequently, there is considerable momentum around the world to incorporate environmental flows into policymaking and river-scale management plans. Human well-being is dependent upon not one, but multiple and often interrelated, ecosystem services. For example, the basic material for a good life is largely based on provisioning services, yet other types of income generation, such as recession agriculture (cultivation in floodplain areas after flood recession), depend more on soil moisture and the sediments deposited during flooding, which are part of both regulating and provisioning services. Security from natural hazards has a strong link with regulation services.

An environmental flow regime supports a particular range of provisioning services such as clean water, plants, build building materials and food. The most important product derived from inland waters in terms of human nutrition is fish and fishery products. Inland fisheries in developing countries may be the only source of animal protein for rural people. The lifecycle of many fish species is heavily dependent on natural variability in river flows, e.g. large floods are important for fish migration and spawning in floodplain rivers.

With so few countries having developed environmental flows policies, it remains important to consider global mechanisms and systems through which countries commit to address the health of their freshwater systems and specifically environmental flows. International law and institutions can help push governments to develop the legal and regulatory systems to address environmental flows. The strategies of development banks and UN agencies can also spur action by countries.

Declarations at global conventions and conferences can also help set the bar for how issues are regarded by the global community. River treaties seldom have unique provisions that directly address environmental flows; however several international agreements have acknowledged the need to protect and restore freshwater ecosystems.

Pakistan's ecosystems, too, are economic users of water. Yet the economic benefits of water based ecosystems are rarely factored into river basin planning, or into water allocation decisions. The loss of freshwater to the Indus Delta, and consequent sea intrusion and natural habitat degradation, is manifest in a wide range of economic benefits foregone, including economic costs related to mangrove loss and reduction in agricultural land use opportunities.

The economic costs and losses arising from such omissions are immense and irreversible, impacting on some of the most fragile ecosystems and the poorest and most vulnerable human groups. Competition over water allocation within river basins, especially between upstream and downstream areas, between large scale and subsistence level uses, and between commercial and ecosystem uses, is becoming a source of severe economic and political conflict.

In many ways the Indus Delta epitomises a national situation, which has already reached crisis point, and is likely to deteriorate still further in future. For now, national policies have opted to allocate scarce water so as to maximise financial and commercial returns to agriculture often at the cost of natural ecosystems and of some of the country's poorest communities.

Yet there is growing concern that the failure to factor ecological economic values, or economic losses, into river basin planning is resulting in decisions being made about water allocation that are neither ecologically nor economically optimum.

As long as the economic value of ecosystem needs for freshwater flows is marginalised in national decision-making, these conflicts are likely to escalate.

So far three studies have been undertaken to determine the water requirements below Kotri barrage as envisaged by 1991 water accord. None of these studies could bring censuses. Hence, accord is not being implemented in letter and spirit.

Environmental flows fit well in this situation as it serve as an important link between environmental conservation and poverty alleviation. Environmental flows offer an effective means to mainstream the environment, especially freshwater ecosystems in national development planning processes.

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