Use Wetlands *Wisely*

GORDANA BELTRAM shows that destroying wetlands, in the name of human well-being, is also destructive to society and to sustainable development

People perceive wetlands in very different ways, but all understand that there can be none without water, even if it is not there all the time. Wetland ecosystem diversity and the provision of its services depend on the frequency, quantity and quality of water flowing into, retained in, or flowing from the ecosystems. Wetlands are biodiversity – rich, and important as habitats for species that depend on water and for those which share aquatic and terrestrial ecosystems.

These important roles were recognised by the global treaty signed in Ramsar, Iran, in 1971 and further elaborated during the more than 30 years in which the Convention on Wetlands has developed. The 2002 World Summit on Sustainable Development in Johannesburg emphasised the growing scarcity of freshwater. In 2004 and 2005, the Commission on Sustainable Development devoted sessions to the management of water for people and nature, and in March 2005 the UN launched the International Decade for Action, "Water for Life". Water and wetlands, therefore, are at the forefront of international thinking. Yet, the capacity of wetlands to deliver services important both for human well-being and for the continued functioning of natural systems has declined.

Threatened ecosystems

The recently released Millennium Ecosystem Assessment (MA) firmly supports two important, and seemingly contradictory, situations:

– Wetlands contribute to a high biodiversity and consequently provide critical ecosystem services, but at the same time, they are – and continue to be – the most threatened ecosystems worldwide.

Population growth and increasing economic development have been indirect drivers of the degradation and loss of both inland and coastal wetlands. Paradoxically, they are destroyed using arguments and strategies which aim to improve human well-being. They are converted to arable or urban areas, over-harvested and over-exploited for their resources, and drained because their water influx is being used solely for human needs. Water flows are increasingly overloaded with nutrients and other pollutants, causing dramatic change – and possible collapse – in wetland systems.

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The driving forces destroying or degrading wetlands, while aiming at improving human well-being, may vary. But the result is always destructive for societies depending, directly or indirectly, on the ecosystem services they provide. Recent studies prove that the healthier the wetland ecosystem, the better it serves human needs.

Many wetlands are the most productive and species-rich ecosystems of all. They are also important for maintaining the water cycle. They are key players in retaining water in a landscape, recharging the aquifers, controlling floods, thus regulating flows in the global water system.

Current demands

Wetlands deliver many services that contribute to human well-being – and thus help achieve the MDGs. There are four interdependent types of them: provisional, regulating, cultural and supporting. Supplying fish and drinking water are two of the most important provisioning services of inland waters. The people of Cambodia, for example, largely depend for animal protein on the fish catch in Tonle Sap and associated wetlands. There are similar examples in Africa and the Americas; and fishing and harvesting aquatic plants in wetlands is a source of subsistence and income for local communities on all continents. Meanwhile groundwater, which is most commonly recharged through surface wetlands, is the principle supply of renewable fresh water for 1.5 to 3 billion people worldwide. Yet the MA has confirmed that the use of both of these two critical ecosystem services is now well beyond levels that can be sustained even at current demands, much less at future ones.

Destructive power

Among their regulating services, wetlands play a major role in treating and detoxifying a whole variety of wastes in water. Some, for example, have been found to reduce the concentration of nitrates by more than 80%. Many – such as flood plains, lakes and reservoirs – diminish the destructive power of floods, and losing them increases risks of inundations. Nearly 2 billion people live in areas of high flood risk, which will be increased with wetland ▶

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loss or degradation. Similarly coastal wetlands and vegetation play an important role in reducing the impacts of storm surges from the sea.

Wetlands are also important in regulating the global climate by sequestering and releasing carbon in peatlands, estimated to cover 3-4% of the world's land area. They are thought to hold 540 Gt of carbon, representing about 25-30% of the amount stored in soils and terrestrial vegetation. Inland waters also contribute to the regulating of local climate.

The cultural services provided by wetlands range from aesthetic, educational and spiritual ones to recreational and tourist opportunities. Wetland biodiversity attracts visitors and water provides recreational activities, benefiting visitors and local people alike.

Enormous damage

Human activities caused more than half the wetlands of Europe, North America, Australia and New Zealand to be lost over the 20th century, and are still doing enormous damage worldwide. They have now been joined by a new and increasing threat – the invasion of alien species. Estuarine systems are among the "invaded" ecosystems, with introduced species causing major ecological changes.

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The ecological consequences include habitat loss and alteration, altered water flow and food webs, the creation of novel and unnatural habitats (often subsequently colonized by other invasive alien species), abnormally effective filtration of the water column, hybridization with native species, the introduction of highly destructive predators, and introductions of pathogens and disease. All these impacts affect ecosystems, and influence our ability to achieve the MDGs.

Market failures

Physical and economic water scarcity, and limited or reduced access to water, are key factors limiting sustainable development in a number of countries. Trade-offs between different wetland ecosystem services need to be considered to ensure sustainable development. Cross-sectoral approaches implemented at the catchment scale (such as river basin management and integrated coastal zone management) are critical in designing actions supporting the Millennium Development Goals. The primary focus on wetlands and water must address the indirect and direct drivers of change and include actions to eliminate production subsidies, sustainably intensify agriculture, slow climate change and nutrient loading, correct market failures, encourage stakeholder participation and increase the transparency and responsibility of government and private sector decision-making.

Achieving commitments

Ensuring the future of wetlands and their services requires maintaining the quantity and quality of the natural water regimes on which they depend, and the frequency, amounts and timing of water flows. There are methods and tools available to apply this approach at the catchment scale, to assess the "environmental flows" needs of wetlands and socio-economic development requirements, to address the trade-offs for water allocation between ecosystem services and to ensure that there is enough water allocated to meet the objectives agreed by the wider stakeholder community. Intergovernmental environmental commitments must be considered jointly if they are all to be achieved. Although trade-offs may differ in specific locations, progress towards achieving commitments – such as the MDGs – is generally likely to be less when they are addressed in isolation, than when they are addressed jointly.

Ecological character

The Ramsar Convention's 'wise use' concept, back in the 1970s, promoted the need for a cross-sectoral approach and integrated management of wetland ecosystems. Now, using the MA conceptual framework, it is still the leading concept for maintaining ecological character of wetlands in the context of sustainable development. It will ensure the delivery of ecosystem services to support human well-being, and thus the achievement of the Millennium Development Goals ■

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