

# Wetland Ecosystem Services

## – an introduction

It is no accident that river valleys and coastal plains with abundant wetlands have been the focus of human civilisations for over 6,000 years – and that these wetland systems, with their rich natural resources, have been critical to the development and survival of humanity. Our advancing technological skills may sometimes be portrayed as enabling us to ‘conquer’ and control nature, but recent environmental catastrophes – floods, landslides, storms, many with their roots in unsustainable use of land and water – suggest otherwise. The reality is that we still depend on properly functioning ecosystems to sustain us.

Wetland ecosystems are part of our natural wealth. At a worldwide scale they provide us with services worth trillions of US dollars every year – **entirely free of charge** – making a vital contribution to human health and well-being. With the global population set to increase to nine billion by 2050, increasing pressure on water resources and the threats posed by climate change, the need to maximise these benefits has never been greater or more urgent.

This set of 10 Ramsar Factsheets profiles the ‘ecosystem services’ – the benefits people obtain from ecosystems – provided by wetlands. They cover:

- 1 **Flood control**
- 2 **Groundwater replenishment**
- 3 **Shoreline stabilisation & storm protection**
- 4 **Sediment & nutrient retention and export**
- 5 **Water purification**
- 6 **Reservoirs of biodiversity**
- 7 **Wetland products**
- 8 **Cultural values**
- 9 **Recreation & tourism**
- 10 **Climate change mitigation and adaptation**

Wherever possible, specific examples of US-dollar values from real-life situations are included, illustrating why ecologists, economists and experts in sustainable development are all highlighting the need to protect wetlands.

### Sources of information

- Many publications and reports have been consulted in compiling these factsheets on Ecosystem Services. The key sources used in each sheet have been collated in one PDF file available for download from the Ramsar website: [www.ramsar.org/pdf/info/services\\_12sources.pdf](http://www.ramsar.org/pdf/info/services_12sources.pdf).
- This introduction and the 10 factsheets are available in PDF format from the Ramsar website: [www.ramsar.org/cda/ramsar/display/main/main.jsp?zn=ramsar&cp=1-30-103^24258\\_4000\\_0\\_\\_](http://www.ramsar.org/cda/ramsar/display/main/main.jsp?zn=ramsar&cp=1-30-103^24258_4000_0__).
- Higher-resolution PDFs suitable for printing and photocopying and the design files for translating and customising these sheets are also available on request from the Ramsar Secretariat: [ramsar@ramsar.org](mailto:ramsar@ramsar.org).

Not all wetlands provide all of the services listed above all of the time. Different wetlands provide a range of services according to their type, size and location. Nevertheless, the highly respected and influential United Nations Millennium Ecosystem Assessment recognises the enormous global economic importance of wetlands, valued at up to US\$15 trillion dollars in 1997.

The economic worth of the ecosystem services provided to society by intact, naturally functioning wetlands is frequently much greater than the perceived benefits of converting them to ‘more valuable’ intensive land use – particularly as the profits from unsustainable use often go to relatively few individuals or corporations, rather than being shared by society as a whole.

## World Wetlands Day

As part of your World Wetlands Day celebrations – held on 2 February each year – perhaps you can assess just which of these many functions and services apply to the wetlands near you and whether you can assign a monetary value to them. And if you can, tell us in the Ramsar Secretariat so that we can compile and disseminate even more information about the value and importance of wetlands, locally, nationally and internationally.

Studies show that the value of converting Thai mangroves to shrimp farms, draining freshwater marshes for intensive agriculture in Canada, and operating unsustainable fishing practices on coral reefs in the Philippines, was between 60% and 75% lower – in the long term – than the benefits from wetland conservation and sustainable use.

*“Conversion of remaining habitat for agriculture, aquaculture or forestry often does not make sense from the perspective of global sustainability.”*

Balmford *et al.* 2002

Unfortunately, the attraction of short-term, private-sector profits continues to drive the destruction and degradation of wetlands in many parts of the world. In fact, there are worrying signs that wetlands – and the services they provide us with – are being lost at a higher rate than some other ecosystem types. Decision-makers must factor in the longer-term costs of lost or damaged ecosystem services and ensure that their formulation and implementation of policies and legislation helps to redress the balance – for example, the removal of public subsidies, amounting globally to hundreds of billions of US dollars, that support wetland conversion.

One problem has been the lack of hard economic data that prove the value of retaining intact ecosystems, but this is now changing. For example, a recent study of the role of coastal wetlands in reducing the severity of impacts from hurricanes in the United States found that they provided storm protection services with an estimated value of US\$23.2 billion per year. The conversion or loss of one hectare of coastal wetland resulted in the loss of ecosystem services worth US\$33,000 per year, on average.

Growing understanding of the economic benefits of wetlands has resulted in significant expenditure in some countries on wetland restoration and rehabilitation of lost or degraded hydrological and biological functions of wetlands. However, concerted action at a global scale will be needed if we are to avert the worst consequences of global climate change and increased pressure on water resources.

The ability of wetlands to adapt to changing conditions, and to accelerating rates of change, will be crucial to the well-being of people – and the water and biodiversity on which we all depend – throughout the world.

The factsheets illustrate the great diversity of ecosystem services delivered by wetlands and their values. The factsheets do not cover valuation *techniques*. A few references to further information on such techniques can be found in the data sources document.



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