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Using wetlands sustainably

Wetland agriculture can be sustainable

Wetlands contribute to the livelihoods of millions of people, but are threatened by population pressure, unsustainable agriculture, exploitation of resources, and upstream and groundwater diversions. Work is needed to improve our knowledge about the global extent of wetlands, the natural services they provide, and how they can be used sustainably to reduce poverty in local communities.

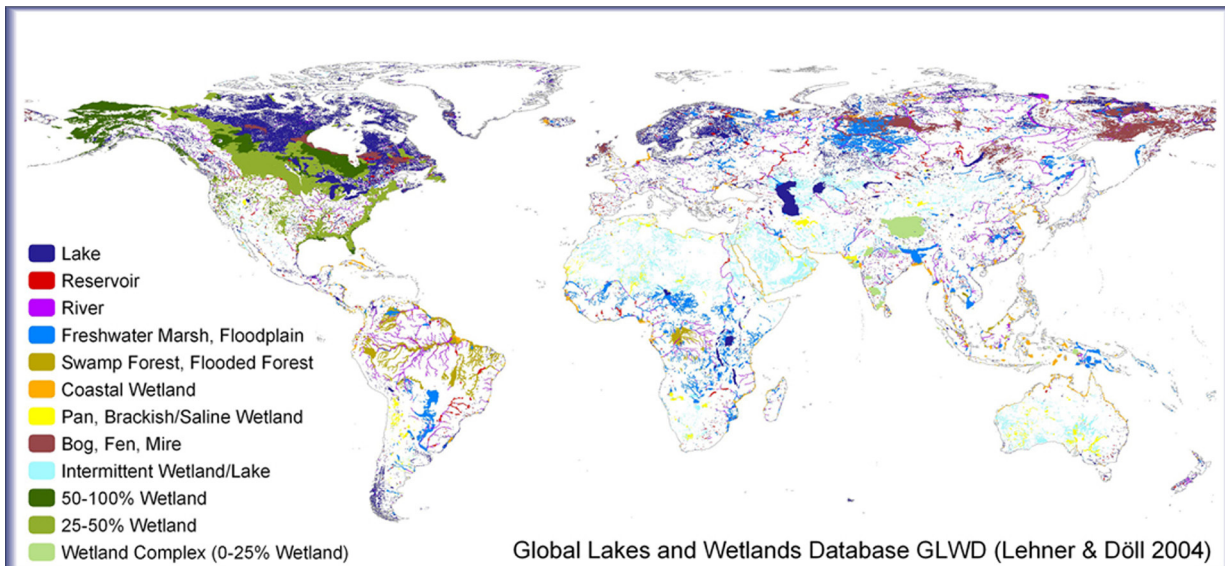
Key messages

- Wetlands contribute in diverse ways to the livelihoods of millions of people in Africa and Asia and are of huge economic importance.
- In many developing countries wetland agriculture is an important ecosystem service which is often overlooked and undervalued as a pathway out of poverty.
- Management approaches that incorporate appropriate sustainable water and agricultural practices can result in a net increase in the overall productivity of wetlands and their long-term economic value.

The context

Wetlands cover at least 6% of the Earth. They contribute to the livelihoods of millions of people in Africa and Asia and are increasingly being used for agriculture as populations rise and upland areas become degraded. Despite the importance of wetlands in supporting rural communities, governments often view them as underexploited resources of water, land and trees or wastelands that hinder development. As a result, many are being lost. Those wetlands that are protected tend to be designated as 'nature sanctuaries', rather than valuable ecosystems that can also be used sustainably by communities. "There is not enough information on how wetlands can be used in a sustainable way for agriculture," explains Matthew McCartney, Hydrologist, International Water Management Institute (IWMI), East Africa and Nile Basin office.

Wetlands provide a diverse range of valuable services. More than three billion people (around half the world's population) obtain their basic water needs from inland freshwater wetlands. A similar number of people rely on rice as their staple food, a crop grown largely in natural and artificial wetlands. In some parts of the world, such as the Kilombero Wetland in Tanzania, almost the entire local population relies on wetland cultivation for their livelihoods. Fisheries are also an extremely important source of protein and income in many wetlands. In addition to food, wetlands supply fiber, fuel and medicinal plants. They also help to reduce the damaging impact of floods, control pollution and regulate the climate.

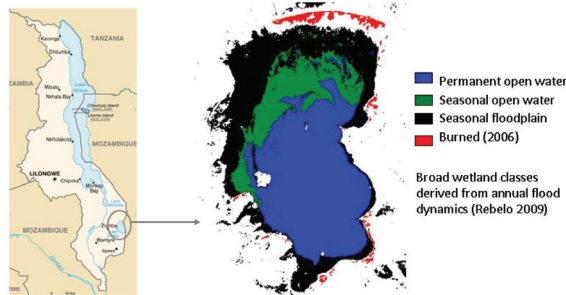


Lakes and wetlands cover a large portion of the world's surface and support the livelihoods of hundreds of millions of people (Source: Lehner and Döll 2004¹).

IWMI's position on wetlands

IWMI believes that wetland agriculture can sustain livelihoods and reduce poverty. Achieving this requires scientific and social knowledge of wetland functions, the way wetlands are used by local communities, and the

positive and negative impacts of wetland agriculture. In 2007, IWMI initiated a Global Wetland Inventory and Mapping programme which has contributed to international efforts to map and characterize wetlands. This work is now being developed further through participation in the wetlands theme of the Japanese Aerospace Exploration



The wetlands surrounding Lake Chilwa in Malawi are the basis of livelihoods for over a million people who use the wetlands for farming and fishing (Source: Rebello 2009²).

¹ Lehner, B.; Döll, P. 2004. Development and validation of a global database of lakes, reservoirs and wetlands. *Journal of Hydrology* 296(1-4): 1-22.

² Rebello, L. M. 2009. *Characterisation of inland wetlands in Africa: Kyoto and Carbon Science Report - Phase 1*. Tokyo, Japan: Japan Aerospace Exploration Agency (JAXA). 6p.

Agency's (JAXA) Kyoto and Carbon Initiative, which aims to provide information on wetlands of international importance. IWMI is also helping to establish a Global Wetlands Observing System.

Actions needed

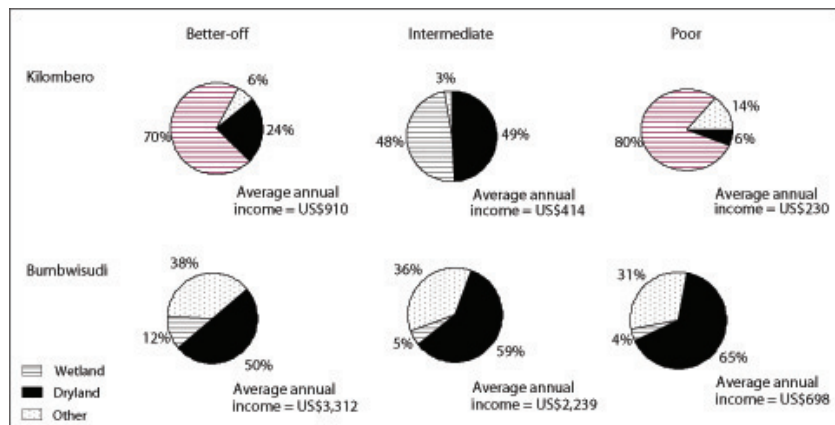
There are at least 131 million hectares of wetlands in Africa, and 286 million hectares in Asia. Although only a small portion of these wetlands are suitable for agriculture, the goods and services they produce and the livelihoods they support are significant. While *unmanaged* agriculture has the potential to destroy wetland ecosystems, appropriate small-scale farming *can be sustainable*, with negligible impacts on ecosystem services. IWMI scientists have been assessing the potential of wetlands to support agriculture by analyzing biophysical and socioeconomic aspects of wetland use. Studies clearly show the large contribution wetland agriculture makes to livelihoods and the potential to lift households out of poverty in both Africa and Asia. For example, cultivation in the 1 square kilometer (km²) GaMampa Wetland in South Africa yields an estimated annual gross value of US\$36,788 to people in surrounding communities. However, when a wetland is used for agriculture, there are trade-offs with other ecosystem services. It is important that these trade-offs are properly weighed against the benefits derived from agriculture.

Further research in wetland ecosystems has focused on analyzing the links between wetlands and rural livelihoods. For example, the 2,248 km² Lake Chilwa Wetland in Malawi is an important source of livelihoods for over 77,000 people, while some three million people in Cambodia depend on the Tonle Sap Wetland area for their well-being. However,

many of the world's wetlands are threatened. Degradation of wetlands and the consequent loss of ecosystem services often increase poverty. In sub-Saharan Africa, of 143 sites listed, by the Ramsar Convention on Wetlands, as Wetlands of International Importance, 93% support some form of fisheries or agricultural activity and 71% are threatened by those same activities. Finding ways to effectively manage wetlands to support essential ecosystem services and local livelihoods is an important goal for the future. "It's not practical to have a detailed management plan for every wetland, but you can educate people so they value wetlands and manage them in a way that balances the needs of the environment and agriculture," says McCartney.

How IWMI can help

The Ramsar Convention on Wetlands is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. Since 2005, IWMI has been one of five International Organization Partners (IOPs) of the Convention, with representation on its Science and Technical Review Panel. Through this role IWMI is able to highlight issues of importance and increase the Convention's focus on the links between wetlands, livelihoods, poverty and agriculture. At the 2008 Convention of Parties, IWMI scientists contributed directly to a number of resolutions including those relating to the links between wetlands and human health, biofuels, poverty reduction, biogeographic regionalization and biodiversity in rice paddies. These resolutions have the potential to influence policies and strategies implemented in the 159 signatory countries.



Depending on the context, the poor can derive as much as 80% of their income from wetlands cultivation (Source: McCartney and van Koppen 2004³).

³ McCartney, M.P.; van Koppen, B. 2004. Wetland contributions to livelihoods in United Republic of Tanzania. Rome: Food and Agriculture Organization of the United Nations (FAO) Netherlands Partnership Programme: Sustainable Development and Management of Wetlands.

Source

This Water Issue Brief is based, in part, on the following publication:

McCartney, M.; Rebelo, L-M.; Senaratna Sellamuttu, S.; de Silva, S. 2010. *Wetlands, agriculture and poverty reduction*. Colombo, Sri Lanka: International Water Management Institute. 39p. (IWMI Research Report 137).

Related IWMI publications

Open access (electronic version freely accessible via the internet)

de Voogt, K.; Kite, G.; Droogers, P.; Murray-Rust, H. 2000. *Modeling water allocation between wetlands and irrigated agriculture: Case study of the Gediz Basin, Turkey*. Colombo, Sri Lanka: International Water Management Institute (IWMI). 62p. (IWMI Working Paper 001)

Galbraith, H.; Amerasinghe, P.; Huber-Lee, A. 2005. *The effects of agricultural irrigation on wetland ecosystems in developing countries: A literature review*. Colombo, Sri Lanka: International Water Management Institute (IWMI), Comprehensive Assessment Secretariat. 28p. (Comprehensive Assessment of Water Management in Agriculture Discussion Paper 1)

Kashaigili, J. J.; McCartney, M.; Mahoo, H. F.; Lankford, B. A.; Mbilinyi, B. P.; Yawson, D. K.; Tumbo, S. D. 2006. *Use of a hydrological model for environmental management of the Usangu Wetlands, Tanzania*. Colombo, Sri Lanka: International Water Management Institute (IWMI). 39p. (IWMI Research Report 104)

McCartney, M. P.; Masiyandima, M.; Houghton-Carr, H. A. 2005. *Working wetlands: classifying wetland potential for agriculture*. Colombo, Sri Lanka: International Water Management Institute (IWMI). 40p. (IWMI Research Report 090)

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