Benefits transfer: The economic value of world's wetlands

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Short title: The economic value of the world's wetlands

Key Message: A global economic assessment of 63 million hectares of wetlands estimated their value at $3.4 billion per year. Wetlands play a significant role in delivering ecosystem services globally. The highest benefits are found in Asia with an economic value of $1.8 billion per year.

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1. What is the problem?

Wetlands around the globe are being modified, reclaimed and overexploited due to high levels of resource consumption, land conversion and/or upstream developments that alter the quality and flow of water that feeds into them. Decision makers often have little understanding of the economic value of wetlands because wetlands are often perceived as having little or no value compared with uses that yield more visible and immediate economic benefits (Schuyt and Brander, 2004). In the United States, 87 million hectares (54%) of original wetlands (Tiner, 1984) have been converted, primarily for agriculture. In Portugal, 70% of the Algarve region has been converted for agriculture and industrial development (Pullan, 1988). In the Philippines, 300,000 hectares (67%) of the country's mangrove resources were lost between 1920 and 1980 (Zamora, 1984).

In simplest terms, wetlands need to be valued so that today's generations can secure resources for tomorrow's. It is also essential to know and measure, more precisely, the value of important wetland resources that are being significantly depleted and undervalued for immediate gain – so that decision makers have the tools to make economically informed choices.

2. Which approach was taken?

A "value transfer" approach was employed – an approach that uses existing economic value studies to come up with a figure. To begin, 197 wetland studies were reviewed and 89 of these were found suitable for this approach. Then, using statistical regression analysis, a wetland value function was obtained. Wetland values were determined using a number of variables – such as wetland type, income per capita, population density and wetland size. The estimated value function was then available to help predict the value of wetlands of policy interest with similar characteristics. Finally, values were transferred to 3,800 wetland sites around the world (63 million hectares) in order to estimate a global economic value of wetlands. The idea behind

this large-scale valuation is that a global economic valuation is very useful to decision makers, making it possible for them to recognize the value of the wetland as a commodity and exercise sustainable management activities.

3. What ecosystem services are considered, and how?

Wetlands are one of the earth's most productive ecosystems. They have been described both as "the kidneys of the landscape," because of the functions they perform in the hydrological and chemical cycles, and as "biological supermarkets" because of the extensive food webs and rich biodiversity they support (Barbier et al. 1997). Wetlands regulate ecological processes that contribute to a healthy environment such as recycling of nutrients and human waste, watershed protection and climate regulation. They also have a "carrier function," providing space for human settlement, cultivation, energy production and animal habitat. Wetlands also provide resources such as food, water and raw materials for building and clothing. Finally, they contribute to mental health and have scientific, aesthetic and spiritual benefits.

4. What input was required?

The first step was to express data in the same currency and standardize them in the same year (2000). These values were adjusted for price differentials in different countries (using purchasing power parity (PPP), an indicator used to allow for variability in the prices of commodities and the basket of commodities consumed in different regions). From the 89 studies used, 246 separate observations of wetland value were extracted. Wetlands were divided into five types: mangroves, unvegetated sediment, salt/brackish marsh, freshwater marsh and freshwater woodland.

5. Results

The total economic value of 63 million hectares of wetland around the world was estimated at $3.4 billion per year. Wetlands in Asia have the highest economic value at $1.8 billion per year. This figure may even be higher if we take the estimate cited by Ramsar of global wetland area to be 12.8 million km square. In this case, the total economic value of the world's wetlands (based on the functions examined in this report) can be estimated at $70 billion per year.

Sediment wetlands have the highest values, followed by freshwater wooded wetlands ($374 and $206 per hectare per year respectively) (Schuyt and Brander, 2004). The high value of Asian wetlands can be explained by high population density. Large populations tend to have a high demand for wetland goods and services -- translating into higher economic values. High population density may also correspond to an increase in pressure on biodiversity and other important wetland values (scientific, socio-cultural) as well as the wetland's ecological processes. The inverse applies for Latin American wetlands, resulting in lower values. Population density is generally low in Latin American countries and there is a relative abundance of wetland area.

6. What was the policy uptake and what were the conditions for this effort to influence public management?

The study did not lead to new policy uptake and the present set of global regulations still appears too weak as persistent wetland degradation continues to occur in many parts of the world. However, the fact that the economic value of wetlands is increasingly being recognized by decision makers is significant. In December 2003, the International Convention on Wetlands (Ramsar, 1971) had 138 signatories and 1,328 "wetlands of international importance" (also known as "Ramsar sites") were designated, 28% of which have been facilitated by WWF since 1999 (Schuyt, 2004).

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