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"Development on the margin"

Conserving Biodiversity through the "Polluter Pays Principal": An Application to Agriculture Driven Land Use

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Abstract

The environmental externalities framework in economics posits that markets may fail because they do not adequately price impacts to society and the environment, such as the loss of biodiversity and ecosystem services driven by land and water use in agriculture. Global patterns of agricultural production, consumption, and biodiversity are skewed. Richer, northern countries – of low relative biodiversity value – predominantly consume, while poorer, southern nations – of high relative biodiversity value – predominantly produce. Because the majority of biodiversity impacts occur during the production phase, the external costs of biodiversity loss due to agriculture are levied upon nations and peoples with the lowest relative capacity to afford them. Various policy mechanisms have been proposed to deal with external costs, and each reveals a set of assumptions that must be critically assessed. These include top-down approaches, such as protected area expansion and environmental taxes, or incentive-based approaches such as "habitat offsets" and payments for ecosystem services. This study investigates the potential of applying a "safe minimum standard" (SMS) to biodiversity, and shifting the costs of meeting this SMS to the consumer via the polluter-pays principal. This entails levying the cost of conserving a minimum set of protected areas on the economic activities that drive biodiversity loss. In doing so, developing nations may achieve an ecologically benign economic development while avoiding the significant external costs of biodiversity loss. Northern nations could express their willingness to pay for global biodiversity conservation in terms of higher prices on major commodities, thus providing a further incentive to reduce overall resource consumption – a prerequisite for environmental sustainability. I illustrate how such a system could be operationalized at both global and regional scales using early research results derived from a combination of techniques in spatial ecological modelling with data on agricultural production and other economic activities. I finish by discussing future developments and the overall potential of the proposed scheme, focusing on methodological issues of data availability and uncertainty.

Keywords: Agriculture, biodiversity, biodiversity loss, conservation, land use, polluter pays principal

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