

"Greening" Agriculture in the developing world

Agricultural policy in developing countries focuses on productivity and rural livelihoods while paying little attention to environmental sustainability. Consequently, both the environment and the poor suffer. Innovative policy is therefore necessary to balance trade-offs between agricultural benefits and environmental costs.

All humans are dependent on ecosystem goods and services for their well-being. The Millennium Ecosystem Assessment (MA) concluded that many ecosystem services around the world are seriously degraded (www.maweb.org). Many of the world's 1.1 billion poor, i.e. those living on one US-Dollar (USD) a day or less, derive a substantial proportion of their income, including agricultural income, from ecosystems. Small-scale agriculture typically involves livestock grazing and the cultivation of subsistence crops for home consumption and commodity crops such as cocoa or maize. A combination of factors, including agricultural intensification and population growth, has caused ecosystem services to decline in size, quality and availability.

Agricultural policy today

Agricultural policy in developing countries typically tries to help farmers cope with the demands of their local environment and improve agricultural productivity, through, for example, technical (seeds, fertilizers) or financial assistance (credit, loans). Poverty alleviation is a common policy objective, e.g. by moving people away from sub-

sistence farming and towards income-generating agriculture. Globally, billions of dollars are spent every year on agricultural and rural assistance. For example, the World Bank lent USD 537 million to Africa for rural development in fiscal 2005 alone.

However, agricultural policy may have other, unintended impacts, in particular ones that damage the environment. Through the intensive use of pesticides or fertilizers, for example, local water supplies for drinking and washing can become contaminated. Thus, trade-offs result where one kind of "ecosystem production" such as agriculture is preferred over another, e.g. flood control. Since the rural poor tend to be more directly dependent on the local environment, they are usually the first to feel the environmental effects of policy on land-use. This implies that unless the underlying causes of environmental degradation are tackled, agricultural policy may, in the long-term, be ineffective in alleviating poverty.

Why the environment is ignored

There are numerous reasons as to why local decision-makers and farmers might not consider environmental impacts when implementing agricultural policy. A lack of awareness or ignorance may exist with regards to the effects of any particular policy, and there are often scientific difficulties in associating cause and effect. Some environmental impacts can take many years before they even become appar-

ent. For poor farmers, growing enough food to feed their family is of greater importance than worrying about possible impacts a few years hence. Moreover, farmers taking decisions over fertilizer use and forest clearance may not have much impact individually. It may be the cumulative effect that causes long-run damage. Some effects may be diffuse, perhaps affecting everybody a little bit at the same time, but not with any substantive impacts on any particular group in society. By contrast, when serious problems suddenly arise, governments can be shocked into taking action. For example, the flooding of the Yangtze River in 1998 devastated large areas of central China and resulted in damage in excess of USD 30 billion, leading to rapid shifts in national land-use policy.



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Wider environmental effects

While most environmental events are not of this magnitude or speed, the Yangtze River example shows how environmental degradation can also affect people living outside the local domain. Impacts on so-called “global public goods” such as biodiversity and carbon will not be considered by farmers deciding on fertilizer use or land clearance. Nevertheless, these types of impacts have assumed ever greater importance in international policy debates. There has been increasing awareness of the inter-linkages in policies and impacts among different sectors. For example, agricultural production, land clearance and the burning of biomass directly and indirectly produced over 30 percent of global greenhouse gas emissions in 2005 (http://climate.wri.org/pubs_pdf.cfm?PubID=4093).

Policy efforts to enhance the natural resource stock in agricultural landscapes should therefore consider the incentives faced by individual farmers who decide on land-use practices. Environmentally-friendly agricultural practices are, in large part, not necessarily the most profitable from the perspective of individual farmers.



Photo: J. Boehling

Fertilisers and pesticides are needed to improve productivity but their application should be environmentally friendly.



Photo: J. Boehling

“Enviro-agricultural” policies

Economic incentives in agriculture can be used to put a price on the environment. Agricultural policy should be designed to increase the profitability of environmentally-friendly agricultural practices such that they could lead to widespread adoption by farmers. One well-established policy instrument is that of eco-labelled goods such as shade-grown coffee. Here the profitability of environmentally-friendly coffee growing practices is boosted by inducing consumers to pay a premium for farmers’ agricultural outputs.

Another policy approach that has been receiving increasing attention from development practitioners is one in which direct payments are made (e.g. by individuals or governments) for the provision of ecosystem services. This approach attempts to incorporate the impacts of farmers’ behaviour into their land-use decisions. Thus, the environmental damage caused by pesticide use, for example, is factored into the choice of whether or not to adopt these practices in the first place. The payments do not prevent landowners from farming altogether. Instead, they are given another productive option, one that practitioners hope will be regarded as the most profitable one of all, at least profitable enough to induce a shift in production. For example, at three degraded pastoral sites in Colom-

Agricultural and environmental policies should become more coherent.

bia, Costa Rica and Nicaragua, the Regional Integrated Silvopastoral Ecosystem Management Project (RISEMP) is piloting the use of direct payments as a means of generating ecosystem benefits whilst maintaining agricultural production (www.worldbank.org)

The suitability of incentives for policy

The use of direct payments to shift farmers’ production practices whilst preserving natural resources is intuitively appealing. Unlike eco-labelled goods, direct payments do not assume any explicit linkages between the demand for an agricultural product and the demand for an ecosystem service. In theory, a payment can be paid by any demander of an ecosystem service. But leaving aside the question of whether or not such schemes can be effectively scaled up given, for example, high monitoring costs, there are a number of issues for consideration regarding the suitability of direct payments in developing countries.

Robust institutional arrangements such as land tenure security, access and use rights are crucial for the effective functioning of economic incentives as well as more traditional “command-and-control” land-use policies (e.g. land zoning). Much of the agricultural income earned in the developing world originates from common pool resources (CPRs), including forests, pastures and agricultural lands. These are resources to which no individual

Community conservation agreements in Lore Lindu National Park, Indonesia

Village communities with legitimate CPR forest claims have been clearing forest to grow coffee and cocoa. In response, the Park authorities working with NGOs negotiated agreements with communities where the latter agreed to sustainable land management plans in exchange for land use rights. Since these agreements were made, squatters have moved into the Park, cleared forest and tried to claim similar arrangements. While the government refused to recognise these new settlements, it has neither been able to enforce its own (Park) rules regarding land use nor able to help protect communities' negotiated rights.

Around 30 NGOs work in and around the park, although with very little collaboration or coordination among them. Some NGOs have been lobbying the government to recognise squatters' rights to forest, while environmental groups have been keenest on moving people away from the Park. With differing agendas, it has been difficult to induce cooperation in areas of mutual interest.

has exclusive rights and instead are typically owned and administered by a village, tribe, clan chief, or some other social grouping. CPRs have become degraded at least partly due to weak property rights and problems of free-riding by outsiders. This is not to argue for private property rights or state ownership over common property regimes, but merely to stress that for any system to be effective it needs to be well-defined and properly enforced.

Where these basic institutional conditions for sustainability are not present, it is unlikely that long-term investments in the environment will be made. If they are then "positive" incentives such as direct payments could potentially metamorphose into perverse ones as observed in Lore Lindu National Park, Indonesia (see box). Policy to improve and strengthen local institutional arrangements, acting in concert with other sectoral policies requires the coordination of stakeholders, including government, civil society and the private sector. Where natural resources are scarce, different groups may have contradictory and competing interests, again as observed in Lore Lindu (see box), a situation that has been further complicated by little or weak regulatory oversight over their behaviour.

Potential ways forward

Competing interest groups illustrate the need to merge environmental,

developmental and agricultural policy objectives so that the trade-offs and areas of mutual interest can be identified. Demonstrating the inter-linkages among different policy areas and non-market ecosystem values of agricultural landscapes is a big challenge. Moreover, effective capture mechanisms for these values are necessary to ensure the financial sustainability of agricultural practices that can provide social, as opposed to private, levels of ecosystem services.

Recent developments in the climate change debate show some promise whereby policy issues that were previously considered separately are now being discussed in the same policy context. In 2005, the European Union introduced a market in carbon dioxide emissions for major greenhouse gas emitting industries. Despite various problems, which are perhaps to be expected given its size and complexity, the system is being modified and expanded. The trade in developing country credits is where emissions reduction takes place. Those firms that have been set emissions reductions targets can meet their targets by cutting their own emissions or by purchasing credits from other countries. Consequently, a sellers' market has sprung up among developing countries, with all manner of carbon sequestration projects being established to offset emissions. In time, with institutional and technological improvements, this market could be harnessed to provide

sustainable funding for "carbon-neutral" agricultural practices in developing countries.

Trade-offs are perhaps inevitable as human populations expand and poor people around the world aspire to higher standards of living. The key is to ensure that these are identified and managed in ways that preserve the overall integrity of ecosystems and their capacity to provide the services valued by humans. While more research is needed to ascertain their impacts, innovative policies such as direct payments put the environment at the heart of agricultural policy thus revealing the trade-offs more explicitly than would otherwise be the case. Incentives matter, and these coupled with institutional capacity-building could, in the long-run, potentially benefit both the environment and the rural poor.

Zusammenfassung

Die Landwirtschaftspolitik in den Entwicklungsländern ist primär auf Produktivität und Einkommenssicherung ausgerichtet, während die ökologische Nachhaltigkeit meist vernachlässigt wird. Auf lange Sicht werden aber sowohl die Umwelt als auch die Armen zu den Verlierern gehören. Notwendig sind innovative politische Konzepte, die den Umweltschutz in die Landwirtschaft integrieren und gleichzeitig institutionelle Verbesserungen ermöglichen, um einen Ausgleich zwischen landwirtschaftlichem Nutzen und ökologischen Kosten zu erreichen.

Resumen

La política agraria en los países en desarrollo se centra en la productividad y el sustento de las personas, pero no presta mayor atención a la sostenibilidad ambiental. A largo plazo, esto obra en desmedro tanto del medio ambiente como de los pobres. Se requiere una política ambiental que combine valores ambientales en la agricultura con mejoras a nivel institucional, a fin de equilibrar los beneficios agrícolas con los costos ambientales.