COMPENSATION FOR ECOSYSTEM SERVICES AND RURAL COMMUNITIES

LESSONS FROM THE AMERICAS

PRISMA PROGRAMA SALVADOREÑO DE INVESTIGACIÓN SOBRE DESARROLLO Y MEDIO AMBIENTE
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COMPENSATION FOR ECOSYSTEM SERVICES AND RURAL COMMUNITIES: LESSONS FROM THE AMERICAS

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ECOSYSTEM SERVICES AND COMMUNITIES

From a functional viewpoint, the Millennium Ecosystem Assessment (MEA)\(^1\) classifies ecosystem services as follows:

**Provisioning services:** Food, natural medicines and pharmaceuticals, genetic resources, fuel wood, fiber, water, minerals, etc.

**Regulating services:** Air quality maintenance, climate regulation, water regulation, erosion control, water purification, waste treatment, human disease control, biological control, risk mitigation, etc.

**Cultural services:** Cultural diversity and identity, religious and spiritual values, knowledge (traditional and formal), inspiration, aesthetic values, social relations, heritage values, recreation, etc.

**Supporting services:** Primary production, soil formation, oxygen production, soil retention, pollination, habitat provision, nutrient cycling, etc. Such services maintain conditions for life and are necessary for generating other ecosystem services.

The type of ecosystem services sought by different communities and their extent of dependency may vary. Certain ecosystems services such as edible nuts and roots, fuelwood production and moderation of extreme weather events are particularly important to the livelihoods and security of the poor. Some communities may attribute a relative high value to the religious and spiritual services provided by ecosystems. Communities thus perceive the condition of a given ecosystem in relation to its ability to provide the desired services. Nonetheless, while some sections of human society may be temporarily protected against environmental immediacies by social organization, culture and technology – ultimately, all humans are fully dependent on the flow of ecosystem services.

From an economic perspective, many ecosystem services have traditionally been considered “positive externalities” or external benefits from production and management decisions. From that perspective, the development of markets for ecosystem services, or more generally, the use of market-based instruments, are attempts to “internalize” or “monetize” such benefits into the economic sphere. The expected outcome is that valuable ecosystems can be maintained or restored, thus guaranteeing the maintenance or increased flow of ecosystem services.

While most rural communities are engaged in markets, and “monetizing” the ecosystem services they help in providing could create new streams of income for them, a community perspective on ecosystem services and its compensation requires a broader framework. The following discussion identifies critical

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\(^1\) For details on the MEA framework, see Joseph Alcamo et al 2003. Ecosystems and human well being: a framework for assessment / Millenium Ecosystem Assessment. Island Press, Washington D.C. This report is also available for download at http://www.milleniumassessment.org
elements for such a framework. In the following section, multiple perspectives on the need for, and possible benefits that may accrue from compensation schemes for ecosystem services are presented. The subsequent section argues that poor rural communities need to be the focus of such schemes. The section on case studies presents the lessons learned from initiatives in various countries of the Americas related to the idea of compensating for ecosystem services. The paper concludes with a discussion on key issues that need to be considered to strengthen community-based strategies for ecosystem services and its compensation.

**PERSPECTIVES ON ECOSYSTEM SERVICES AND ITS COMPENSATION**

Multiple perspectives argue for the need to pay or compensate those who facilitate the provision of ecosystem services:

- First, payments for ecosystem services programs (PES) can serve as a financial instrument for undertaking traditional conservation efforts.

- Second, some PES programs address the increased need to ensure global ecosystem services such as carbon sequestration to mitigate climate change. Here, rather than protecting specific ecosystems, the usual goal is to find the lowest-cost option to obtain a specific service – carbon sequestration in this case.

- Third, some compensation schemes for ecosystem services seek to increase the supply of ecosystem services of local or regional interest, such as regulation of water flows and ensuring its quality.

- Fourth, compensations for ecosystem services can be used to strengthen rural livelihoods and attribute value to rural landscapes with their diversity of practices and ecosystems.

Although the foregoing perspectives do not exclude each other, their emphases are important. The traditional approach to conservation of excluding local communities from ecosystems has often alienated indigenous and peasant communities and compromised their livelihood options, thereby exacerbating their poverty. Moreover, illegal and unsustainable utilization of the resource often continued thereby undermining conservation objectives. In contrast, a conservation perspective that values local communities’ knowledge and practices can lead to a sustainable provision of environmental services, while expanding communities’ rights and opportunities, thus improving their living conditions.

Looking for the lowest cost option, as in many carbon sequestration initiatives, can have negative ecosystem and social impacts if it promotes the simplification of ecosystems and economic efficiency over equity. On the other hand, in many water-related initiatives, to ensure service provision, it is necessary to deal with diverse land uses and multiple stakeholders. In that context, complex negotiated compensation schemes tend to emerge to promote ecosystem restoration while benefiting downstream consumers as well as the producers themselves.

In a community perspective that values local communities’ knowledge and practices, and aims to expand their access and usufruct rights, these steps can lead to positive outcomes in terms of poverty alleviation and improved ecosystem management. The process of setting up the compensation schemes as per this perspective tends to be more complex and so far this has not been the dominant perspective.
WHY FOCUS ON POOR RURAL COMMUNITIES?

The first argument for compensating indigenous and peasant communities for their role in facilitating the provision of ecosystem services is purely a pragmatic one. Many areas that contain ecosystems of interest to conservation and ecosystem services provision are inhabited, managed and used by these communities and it is not always possible to permanently exclude them. Furthermore, in many places around the world, communities’ struggles to expand their access rights and their control over natural resources are being settled in their favor. It is therefore necessary to develop compensation schemes that include them fully. Moreover, certain ecosystem services such as the genetic diversity of species essential for food, medicines and other uses, can be lost if the traditional knowledge systems and management practices of communities that reproduce such services are not maintained.

The second argument for compensating the poor for facilitating the delivery of ecosystem services is based on equity considerations. Conservation schemes that do not fully integrate the social objective of directly benefiting rural communities with the environmental objective of guaranteeing the provision of ecosystem services can turn into instruments of exclusion. By separating the objective to protect and conserve natural resources from the objective to strengthen rural livelihood strategies, environmental goals may be met, but at a high social cost. In contrast, compensation strategies that are planned and implemented from the perspective of rural, indigenous and peasant communities can contribute to strengthening their livelihoods and to improved management of rural spaces.

CASE STUDIES FROM THE AMERICAS

In the Americas, there are several examples of initiatives based on the idea of compensating or paying for ecosystem services. These initiatives have been shaped by their national and local contexts and the interests of the different stakeholders.

Costa Rica stands out in the hemisphere with its institutionalized state-driven national system of payment for ecosystem services. Mexico is unique in terms of the high level of access to and control over natural resources enjoyed by peasant and indigenous communities. In contrast, in Brazil, access to and control over resources by peasant and indigenous communities is uneven and restricted.

El Salvador, with limited natural areas, forces us to consider the role of agroecosystems and the importance of restoring degraded landscapes. The experience with compensation in the Delaware/Catskill watersheds of New York State demonstrates the importance of negotiation processes in defining compensation schemes that respond to local needs.

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2 The report on Mexico was written by John Burstein (Coordinator), Gonzalo Chapela y Mendoza, Jazmín Aguilar, Emiliene de León, Adalberto Vargas, Luisa Paré, Héctor Marcelli, Matha Miranda and Francisco Chapela. The report on Brazil was prepared by Rubens Harry Born (Coordinator), Sergio Talocchi, Adalberto Verissimo, Salo Vinocur Coslosky, Ramón Arigoni Ortiz, Yann Le Boulluec Alves, Ronaldo Seroa da Motta, Clarissa Riccio de Carvalho, Jasylene Pena de Abreu and Muriel Saragoussi. The report on Costa Rica was written by María Antonieta Camacho (Coordinator), Olman Segura Bonilla, Virginia Reyes Gatiens and Miriam Miranda Quiros. The report on El Salvador was prepared by Doribel Herrador (Coordinator), Leopoldo Dimas, Ernesto Méndez, Nelson Cuellar, Oscar Díaz and Margarita García. The report on New York was written by Ryan Isakson. These reports are available at www.prisma.org.sv
LESSONS FROM COSTA RICA

An official program of PES in Costa Rica began in 1996 after amendments were made to the National Forestry Law (Law 7575). This program grew out of prior experience with direct subsidies for the forestry sector. While the scheme is primarily funded from internal resources (the tax on fossil fuels), it emphasizes global ecosystem services such as biodiversity and carbon sequestration.

The PES program focuses on tree-based land use systems. Originally four categories of land use were eligible for payments on a per hectare basis: forest protection, forest management, reforestation, and tree plantations. Between 1997 and 2002, 314,472 ha were incorporated into the program and total payments reached US$80.5 million.

This program however had limited success in ensuring the broad participation of small-scale farmers and indigenous communities. Owing to an emphasis on forestry-based conservation, a requirement that participants have clear property titles, and complicated bureaucratic procedures that resulted in high transaction costs, it was mostly large and medium-sized property owners who were the main beneficiaries under the PES program. Internal criticism and pressure from indigenous and small-scale producer organizations who felt excluded from the official PES program led to an effort to modify the program and make it more inclusive. However, the conflicting positions of entrenched stakeholders and poor representation by small-scale producers served to limit the reforms. As a result, the PES scheme instituted by the 1996 Forestry Law remains in effect. Nevertheless, the participation of indigenous communities has increased slightly and agro-forestry systems finally became eligible through executive decrees in 2002. Actual payments for agroforestry systems – on a US$0.60 per tree basis - began in 2003. Nonetheless, participation continues to be limited in the PES program.

Alongside the official PES program, local initiatives have been more appealing to small-scale producers. The local initiatives tend to focus on services such as protecting water resources for human consumption, improved landscapes, and electricity generation. Relative to the national program, these initiatives use more flexible eligibility criteria. Although small-scale producers that participate in such initiatives consider PES largely unprofitable, except for large-scale producers, they put a high value in the local benefits (improved water and landscapes) and the benefits of the technical assistance associated with the payment schemes, as this permits the diversification of production and entry into new markets.

The Costa Rican experience, seen from the perspective of poor rural communities, offers the following lessons:

- It is critical to have broad and genuine participation in the early stages of institutionalizing compensation schemes. This ensures their long-term legitimacy and sustainability. An accelerated institutionalization of compensation schemes, without adequately including the interests of small producers and indigenous communities, generates barriers to entry for these actors that are difficult to overcome later on. This highlights the need for strong and representative organizations of small producers and indigenous communities. Such groups are critical to ensuring wider participation that will result in truly inclusive schemes. The conflicting visions at the local level regarding natural resource use pose challenges to implementing compensation schemes and need careful negotiations.
In order to make compensation for ecosystem services schemes attractive to small-scale producers, it is important to adopt a broad conceptualization of ecosystem services and compensation schemes. Programs need to be linked more directly to a variety of productive activities and practices (agroforestry, agrotourism, ecotourism, non-timber products, sustainable agriculture etc). This serves to improve, diversify and strengthen the livelihood strategies of rural communities. In this context, it is important to design appropriate eligibility criteria and operational rules for the compensation schemes, since they to a large extent determine the capacity for inclusion.

- Incorporating local-level perspectives, priorities and visions empowers local communities and promotes participatory management. When local communities are able to exercise greater control over resource utilization decisions, their social capital also increases.

**LESSONS FROM MEXICO**

Rural and indigenous communities in Mexico have access to and control over half of the land and 80% of the country’s forests. This ample access to the resource base has stimulated community-based initiatives in biodiversity protection, carbon sequestration, ecotourism and environmentally friendly production.

In Chiapas, more than 300 individual farmers are participants in the Scolel Té project, a pilot project to sequester carbon. They have agreed to plant trees to sequester carbon on a portion of their land - typically one hectare out of their individual four to five hectare parcels – in exchange for direct payments. The International Automobile Federation purchased the first 5500 tons of carbon to offset its annual emissions. While the payments represent minimal additional income, there are other associated incentives, namely, the potential to penetrate the sustainable timber market and integrate carbon sequestration into other agricultural initiatives such as organic coffee production and other agro-ecological initiatives. While the participating farmers have shown the ability to come together to manage resources, in some cases, conflicts have also arisen between them and the rest of the community.

In Oaxaca, UZACHI (Union of Zapotec-Chinantec communities) began as a movement to regain control over forest utilization on community lands. Currently, the lands are being managed under a forest management and land use plan wherein diverse land use practices are being carried out in designated zones. The different activities are integrated through participatory resource planning and management tools that specify areas for family subsistence farming (wheat and corn); income generation (timber); and the areas for the protection of biological diversity, soils, and water. In an effort to develop ecosystem services, UZACHI focused on biodiversity and carbon sequestration activities. UZACHI has diversified their crops to include mushrooms, orchids and other ornamental plants. A “bioprospecting” contract was also signed with Novartis, a multinational pharmaceutical company, to assess the feasibility of developing drugs from local medicinal plants. In the area of carbon sequestration, UZACHI together with other indigenous communities and supporting NGOs, drew up a proposal for fixing 836,000 tons of carbon over 30 years through silviculture and agrosilviculture systems that would stabilize the agricultural frontier and increase forest cover.

There are several examples of ecotourism initiatives in Mexico. In Mazunte, a local community association manages a
shorefront concession that supports a significant turtle population. Seven years since its inception, Mazunte had 400 beds, 12 restaurants, a small hotel, 30 beach-front businesses and four taxis. Most of the population derived its livelihood from tourism. However, this success led to a level of utilization that exceeded the carrying capacity of the ecosystem. In Ventanilla, in addition to rehabilitating and reforesting areas affected by Hurricane Pauline (1997), the habitats of several bird species and crocodiles were improved with an eye to increasing ecotourism revenues. Similarly, the Selva del Marinero project offers tours within a protected area to nearly 500 visitors a year, primarily from Mexico City. The current average annual earnings (US $35) are however modest, and represent only about 10 days of work.

Overall, ecotourism appears to be an attractive alternative for many rural communities. The various existing projects, however, show mixed results, both in social and ecological terms. The success of the Mazunte project led to a degradation of the very resource that sustains it. The Ventanilla and Selva del Marinero projects on the other hand managed to preserve the landscape to a greater extent, however their economic viability is questionable.

The various community-based Mexican initiatives provide important lessons:

- Existing production practices provide the most convenient starting point for supplying ecosystem services to the market. Suitable strategies include diversification (the case of farmers who expanded their agro-forestry activities to include carbon sequestration activities), or by means of marketing ecosystem services associated with existing crops (the case of biodiversity-friendly shade-grown coffee). Furthermore, it is useful to combine markets for ecosystem services with fair trade markets or solidarity markets associated with peasants and indigenous people.

- It is necessary to develop participatory resource planning and management tools at different scales: from the plot or farm level up to the landscape level where it may be necessary to reconcile different and often conflicting land uses.

- The economic potential of ecotourism is best harnessed by integrating other production strategies (handicrafts, non-timber forest products, organic products, etc.) so as to increase incomes. However, the question of desirable level of use from the standpoint of ecological carrying capacity needs to be carefully resolved.

- Strategic associations between communities or peasant organizations and intermediary organizations are crucial. Peasant and indigenous communities rely heavily on the support of NGOs that assist with research, technical assistance, certification, seeking financial support, promotion and commercialization.
LESSONS FROM BRAZIL

Compared to Mexico, indigenous and peasant communities in Brazil have lower and less secure access to natural resources. In Brazil, most conservation efforts have followed the traditional model of creating protected areas and excluding local communities from such areas.

In Vale do Ribeira in the State of São Paulo and Paraná, concern for preserving the Mata Atlântica coastal forest has resulted in more than 50% of the area being designated under protection of some kind. Consequently, this has imposed severe restrictions on the livelihoods of rural communities in the region. Nevertheless, in an attempt to survive, they continue to engage in extraction activities through illegal channels. The current form of “protection” is therefore neither benefiting the environment nor the rural communities. In this context, compensation schemes for ecosystem services may be a suitable vehicle for delivering ecosystem services while strengthening local livelihoods. Several compensation mechanisms are currently being employed in the Vale do Ribeira region, some of which if suitably modified, may address this need.

The ICMS tax is perhaps the most well known instrument. Each state allocates a portion of the revenues from sales tax proceeds to municipalities which in some cases are in proportion to the municipal area protected as state protected areas. This allocation has been labeled the Ecological ICMS. In 2001, Vale do Ribeira, the poorest region of the State of São Paulo, received 37% of the ecological ICMS collected in that State. Nevertheless, the concerned municipalities considered the compensation to be insufficient relative to the livelihoods that were lost due to the creation of the state parks, and associated social-economic upheaval. Barra do Turvo, a municipality that was particularly affected went as far as asking the governor to suspend the ecological ICMS quota (R$150,000 per month which is equivalent to USD 52,000) and instead allow small farmers to use degraded areas of the park.

Deriving income from agro-extractive activities is critical to the livelihoods of many communities in Brazil. The concept of “extractive reserves” aims to reverse the earlier trend of restricting access and usufruct rights of the forest communities. These reserves help to expand the access enjoyed by populations living within these protected areas by formally recognizing their usufruct rights (e.g. the right to extract rubber and other non-timber products). For example, in the State of Acre, under the Chico Mendes Law, for every kg of rubber collected, a sum of R$0.60 is paid to the rubber tapper associations in recognition of their role as forest stewards who facilitate the provision of ecosystem services. Channeling the payments through the associations has also served to increase the social capital of these communities by enhancing their ability to organize themselves, solve common problems and negotiate with external agents (e.g. government, rubber buyers, banking institutions and suppliers of consumer goods).

Even within national parks, there are examples of involving local communities in resource planning. A case in point is Jaú National Park - a World Heritage Site and Brazil’s second largest national park. Despite a law that forbids human settlements within national parks, over 930 individuals engaged in subsistence activities live in Jaú. This community played an important role in the participatory planning process used to develop a management plan for the park. They participated in meetings, contributed to resource-use

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3 The total ecological ICMS tax revenue for the state of São Paulo in 2002 was nearly R$40 million.
mapping exercises and were involved in technical meetings to define park zones and programs. Completed in 1998, the management plan was the first participatory plan for a Brazilian national park. Nevertheless, the legal status of the lands within the park used by local communities has yet to be defined. One solution would be to reclassify the land and establish an extractive reserve or an ecological-cultural reserve in an area of the park, at this would guarantee the traditional rights of communities. This could also pave the way for introducing compensation for ecosystem services. For example, communities could be compensated for providing traditional knowledge on aspects of biodiversity that can aid in park management. Currently, the park managers are concerned that this knowledge would be lost if the communities are relocated far away.

The experiences in Brazil provide important lesson as follows:

- A traditional conservation focus, and incentive mechanisms that support such conservation schemes, can have negative impacts on communities that are heavily dependent on the natural resource base.

- It is crucial to integrate ecosystem objectives with social and equity objectives in the design and implementation of compensation schemes. The focus should be on expanding access and usufruct rights, and strengthening the productive activities of communities that preserve or enhance ecosystem services provision. This can strengthen livelihoods while guaranteeing the flow of ecosystem services.

- Public discussion and decisions on rights, responsibilities, procedures and rules and close scrutiny of compensation schemes can prevent perverse effects and help in achieving equitable results.

**Lessons from El Salvador**

El Salvador with an area of just over 20,000 km² provides an interesting case study in terms of access to the resource base by the rural poor, predominance of human-dominated landscapes, social organization and influence of traditional conservation discourses. El Salvador’s economy is driven by remittances from abroad that promote accelerated urbanization processes, while agricultural activities collapse in rural areas. During the eighties and early nineties one-fifth of the territory was redistributed, thereby broadening rural community access to the resource base. The potential of this greater access has not been realized, due to a crisis in the agricultural sector and an unfavorable policy environment.

Given that so-called “natural” areas are quite small and exist within landscapes dominated by agro-ecosystems (e.g. essential food basic grains on degraded hillsides and pasturelands, shade-coffee on rich volcanic soils etc.), one would expect that the idea of achieving synergies among production, conservation and ecosystem restoration would have enthusiastic public support. And that this support would translate into compensation schemes that involve small producers and are focused on ecosystem services that are of local relevance.

Paradoxically, most programs including donor supported government initiatives have prioritized large producers over small producers and have focused on ecosystem services that are of global relevance. A case in point is the GEF-World Bank funded “Coffee and Biodiversity” project (1998-2001) that sought to conserve biodiversity on shade-grown coffee plantations. Through the certification of “biodiversity-friendly coffee” the project expected that producers would be able to realize price premiums on alternative coffee markets as a compensation for the ecosystem services.
provided. However, the selection criteria that were employed including certification and ecological data collection requirements meant that the project ended up working almost exclusively with medium and large size farms. Yet, small farms (under 7 ha), not only represent 80% of individual farms, but are also more complex agro-ecosystems than larger farms. Small farms, as mixed production systems, provide, besides coffee, a variety of goods – fruit, firewood, medicinal plants and forage – buffering households from the volatile international coffee market.

The second issue related to the type of ecosystem service that was emphasized. While donor projects and high profile regional initiatives such as the Mesoamerican Biological Corridor focus on global ecosystem services, it is hydrological services that command the greatest interest within the country. The loss of capacity to regulate hydrological flows is associated with droughts, flooding, water supply problems and reduced hydroelectric power generating capacities.

It is in this context that local initiatives are emerging that seek to involve small-scale farmers. In keeping with the emphasis on local priorities, most of these initiatives are focused on water resources management at multiple scales. An example of one such initiative is the action taken by the Environmental Committee of Chalatenango (CACH) which demanded that the San Salvador Metropolitan Region compensate the province of Chalatenango in the upper-Lempa river watershed for various water-related services (hydroelectric energy, and maintenance of water quality). In addition, CACH is also exploring the ecotourism potential of the region. At the micro-regional level, the “Mancomunidad La Montañona,” an association of seven municipalities in the province of Chalatenango, is developing a territorial resource management strategy where ecosystem services play a strategic role both in terms of providing new economic alternatives (e.g. ecotourism) and improving water resource management. There are also small scale initiatives, as in the NGO-driven scheme in the municipality of San Francisco Menéndez, where poor local communities pay a surcharge in their water bills to cover the salary of a warden in the neighboring El Imposible National Park.

The experiences in El Salvador provide several lessons:

- It is important to see beyond the forest and transcend traditional conservation and agriculture perspectives to recognize that improved practices in agro-ecosystems can enhance the supply of ecosystem services while strengthening livelihoods. Recognizing and valuing the role of rural communities in providing ecosystem services assumes an institutional and policy framework that furthers the inclusive management of anthropogenic landscapes, rural areas and the agricultural sector. All of this goes well beyond the scope of traditional policies, both in agriculture and in conservation.

- Strong social organization is crucial. Managing heterogeneous and fragmented landscapes for ecosystem services require effective collective action that in turn demands strong, local negotiating processes. Social organization is also essential for the negotiation of compensation schemes, their rules, and to guarantee an equitable distribution of benefits.

- Genuine participation in defining policies and rules. Pre-conceived schemes may be of little relevance to local realities or turn out to be inequitable. Through broad and genuine participation, local realities and initiatives that attempt to integrate environmental objectives in production
and local development strategies can exert greater influence in public policy-making towards rural areas and in the definition of the orientation and rules of compensation schemes.

**LESSONS FROM NEW YORK**

New York City's (NYC) water supply system provides its 7.4 million residents—along with some 1.5 million visitors, migrant workers, and residents of neighboring communities—with 1.4 billion gallons of water per day. The water is obtained from three watersheds: Delaware, Catskill, and Croton, with the former two providing about 90% of the City’s water supply.

In 1989, the United States Environmental Protection Agency (EPA) through its Surface Water Treatment Rule required the filtration of public water obtained from surface sources, unless stringent public health criteria were met and an approved watershed management strategy was put in place. The estimated cost of a filtration system for the Catskill/Delaware systems was estimated at US$6 billion with another $200-$300 million required annually for operation and maintenance costs.

Faced with such costs, the NYC Department of Environmental Protection in 1990 tried to impose new land use regulations that would have severely limited agricultural opportunities and rural livelihoods in the watershed areas. The proposed regulations were met with resounding opposition from the rural communities living in the watershed. They particularly resented the implication that farmers were poor stewards of the land, given that low-density agriculture presents the least danger to water quality relative to other land uses prevalent in the region (e.g. commercial real estate development).

The struggle to impose new land use regulations was resolved through intense negotiations lasting several years that involved numerous stakeholders. The City accepted agriculture as the preferred land use for the watershed, while the farmers assumed commitments to transform their practices with support from the City, to guarantee a supply of clean water.

The 1997 watershed management strategy that formalized this outcome includes different initiatives to support farmers’ efforts to improve the quality of the water supply. The centerpiece of the strategy is the Watershed Agricultural Program (WAP), a voluntary and locally administered program whereby City funds are used to implement environmentally friendly practices on watershed farms. Each participating farmer receives technical assistance to develop a Whole Farm Plan, which is a comprehensive strategy for controlling potential sources of pollution on the farm, through best management practices. NYC covers all costs associated with the implementation of these best practices, which often include technical and managerial assistance, new farming equipment, and infrastructure improvements to their agricultural operations.

The participating farmers are also eligible for other components of this compensation package, which includes: a Conservation Reserve Enhancement Program that pays farmers to remove streamside lands from agricultural production; a Whole Farm Easement Program that compensates farmers who demonstrate a long-term commitment to sustainable agriculture by forgoing development rights to their land; a Natural Resources Viability Program that helps to develop markets for the products of water-shed farmers; and, a Catskill Family Farms Cooperative that taps niche markets for vegetables and other produce cultivated in the area. This cooperative provides capital equipment and an organizational structure for farmers to achieve economies of scale and market power. While the
WAP mainly targets larger farms that are focused on livestock operations, a Small Farms Programs modeled along the lines of the WAP was also initiated. This experience provides important lessons:

- A direct payment mechanism does not necessarily represent the most favorable form of compensation or the most appropriate. Instead, it is often better to consider a broad package of compensations with different components including training, financial assistance and marketing support.

- Multi-stakeholder negotiations are essential to harmonize landscape visions and to establish appropriate compensation schemes. Negotiation processes can also enhance social capital as was the case in the Catskills. The negotiation and consequent agreement enhanced the social capital of the watershed farmers. Increased farmer participation in the Watershed Agricultural Council facilitated social cooperation and helped forge a common identity. The farmers have been formally recognized as good stewards of the land. They now have a voice in determining how the watersheds are managed and in how rules are interpreted.

- The State can play multiple roles in the design and implementation processes related to compensating for ecosystem services. In this case, the EPA served as the catalyst, while the state and local governments stepped in to defend the interest of their respective constituencies. New York State played the crucial role of mediating among the competing interests of stakeholders and ultimately, producing a mutually beneficial arrangement.

STRENGTHENING COMMUNITY STRATEGIES FOR ECOSYSTEM SERVICES

It is clearly evident from the above discussion that there are significant differences among the case studies in terms of the natural resources being managed, social capital of the communities, property rights regimes, and the compensation schemes that were implemented. Given such different contexts, it would be simplistic to borrow a successful compensation scheme from one context and apply it to another and expect it to work well. Nevertheless, lessons that have broad relevance can be derived from the different experiences. Based on the preceding analysis, we offer a set of enabling conditions that we believe are necessary, but not always sufficient, for promoting compensation schemes that address the twin objectives of improving ecosystem management and strengthening rural livelihoods.

INTEGRATE RELATIONSHIPS AT MULTIPLE LEVELS BETWEEN COMMUNITIES AND ECOSYSTEMS

The relationships between rural communities and the ecosystems they manage can be organized into three levels. The most direct relationship involves managing ecosystems to provide subsistence needs such as food, fire-wood, water and spiritual well-being (Level 1). The next set of relationships relates to communities utilizing natural resources to engage in productive activities so as to generate a surplus which can be traded in existing markets to provide income (Level 2). The final level (Level 3) relates to management practices related the provision of ecosystem services of regional or global interest (e.g. water quality, biodiversity, carbon...
Critical Issues for Equitable and Efficient schemes

Defend, Expand and Innovate Rights
(access, extraction, management, tenure).

Landscape Perspective that Values Human Action
(anthropogenic components within landscape mosaics)

Strengthen Organizational Capacity
(for collective action, conflict resolution, external linkages)

Compensations Supporting Improvements in the three — levels

Technical assistance
Infrastructure / Investment support
Marketing support
Financial compensation
Securing tenure / Management rights
Support negotiating platforms

Institutional Arrangements
(Community, Local, Micro—Regional, Regional, National, Global)

Rural Communities’ Levels of Natural Resource Management Practices

1 Practices for Self — Provisioning
(Food, Water, Fuel, Spiritual well—being)

2 Practices for Income · Generation
(Agriculture, Agro-Forestry, Forestry, Non-Timber Products, Rural Tourism, Handicrafts)

3 Practices to guarantee Ecosystem Services of Regional / Global Interest
(Water quality and water regulation, Biodiversity, Carbon Sequestration)

sequestration) which are now the focus of new initiatives which aim to provide compensation for these services. Community strategies for the enhanced provision of ecosystem services should integrate across the three levels and enable the overcoming of hurdles at each level.

Relationships within Level 1 are crucial as they are focused on the subsistence needs of the rural community. Most of the transactions are within the community and transactions with outside actors and formal markets rarely occur. Provision of ecosystem services at this level are dependent on access rights and control over natural resources, and the management systems established by communities themselves to ensure the continued flow of these services. Compensation schemes that do not adequately understand Level 1 relationships may either fail or be detrimental to rural communities.

Within level 2, provision of ecosystem services is dependent on the extent to which production strategies incorporate various ecosystem attributes or services into the production processes. If traditional forms of production already incorporate these attributes, then impetus should be on making these attributes explicit through marketing. Examples include organic farming or biodiversity-friendly products such as shade-grown coffee, certified sustainable forestry, etc. In these cases, the need is for certification, major marketing efforts, training, and specialized technical assistance.

The relationships within Level 3 are the most complex. Here, external recognition is sought for the role of rural com-
munities in providing ecosystem services that benefit other members of society. At this level, unlike Level 2, compensation for services is not bundled into a product in the form of a premium. Instead, the challenge is to design and implement an appropriate compensation program in which the rural communities (providers) and the urban or global communities (consumers) can participate. A failure to place Level 3 relationships within the context of the earlier two levels can make the entire effort unviable or turn into a threat for the welfare of rural communities.

A BROAD FRAMEWORK FOR VALUING AND COMPENSATING FOR ECOSYSTEM SERVICES

Valuation of ecosystem services in the context of heterogeneous landscapes, from a social and ecological point of view, is a complex task. The traditional economic valuation framework based on the utilitarian approach does not adequately accommodate the heterogeneity of interacting factors (biophysical, social, institutional, etc.) and diversity of actors’ interests and stake in the natural resources.

Therefore, it is necessary to apply broader, integrated frameworks of ecosystem services valuation that is more representative of the reality of community circumstances and contexts. It is quite common to encounter initiatives that assume that compensation for ecosystem services must have a monetary form, ideally determined through economic valuation studies. In practice, however, negotiation and consensus-building processes among all interested and involved actors leads to more effective compensation schemes that may combine financial and non-financial, individual and collective, or even territorial components. Accordingly, it requires identifying the most appropriate types of compensation and mechanism package to strengthen community strategies at all levels, while at the same time ensuring the provision of the ecosystem services of interest.

Examples of compensation instruments4 include: taxes and subsidies, transfer payments, markets for products with ecosystem attributes (labels and certificates), support for community strategies for rural or ecological tourism, international markets for ecosystem services, etc. In addition, technical assistance, financing of investments, marketing support, may also be included in compensation packages.

A LANDSCAPE PERSPECTIVE THAT VALUES HUMAN ACTION

According to the traditional conservation perspective, emphasis is laid on “setting aside” large tracts of natural areas by enlarging or buffering existing protected areas and connecting them through biological corridors. The compensation mechanisms are focused on forest conservation activities including those that foster natural regeneration. This approach has limited potential for increasing the availability of ecosystem services while alleviating poverty.

When we turn our sights toward rural communities and the rural spaces where they seek their livelihoods, we find complex mosaics – or landscapes - that combine natural and anthropogenic ecosystems. Many analysts and conservationists underestimate and devalue the positive role that humans play in managing ecosystems. In this

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way, land use practices that could strengthen livelihoods and improve the supply of ecosystem services originating from anthropogenic ecosystems are discounted and remain outside of the policy frameworks. This is a serious issue, especially when such a perspective is applied in countries with high rural poverty and absent or inadequate policies for rural spaces. In attempting to exclude humans to protect "natural" ecosystems that are viewed as endangered, the opportunity to apply a more comprehensive approach - which is the only guarantee that the “natural” components can be preserved – is lost.

The landscape perspective offers much more promise. It enables us to recognize that ecosystem services are generated and distributed throughout a great variety of land uses - forests, wetlands, pastures, different types of farming practices, perturbed wooded areas, human settlements, etc. - and that the interactions among the varied components of the mosaic are also important. By focusing on the entire landscape, we can also avoid the risks of focusing on isolated services, which just like the case of monocultures, can have negative ecosystem impacts and increase the vulnerability of local communities.

**COLLECTIVE ACTION AND SOCIAL CAPITAL**

Social capital\(^5\) refers to the relations of trust, reciprocity and exchange, common rules and norms, connectedness and networks of a community that enable them to undertake collective action and secure other important resources (market access, financial resources, knowledge, etc.). As such, social capital serves as the underpinning for influencing and shaping basic decisions and institutional arrangements that affect natural resource use and the livelihoods of rural communities.

Social capital constitutes a critical element for landscape management and ecosystem services provision, because in many cases the area to be managed exceeds the specific parcel of land or farm. Therefore, the actors present in the landscape need to coordinate their efforts to ensure appropriate management.

Social capital also serves as a bridge to building larger management units, thus allowing for the integrated management of heterogeneous landscapes with multiple actors. It is in this context that collective action defined - as the coordination of individual or group activities in pursuit of a common interest - becomes important.

Social capital can be leveraged to improve the effectiveness of compensation schemes in two ways. First, it fosters internal cohesion within a community by using internal organization and resources to discuss, resolve conflicts, reach consensus, and implement and monitor actions. Second, it strengthens the community’s capacity to negotiate with external actors in order to receive support and resources that advance community goals.

**EXPAND THE RIGHTS OF RURAL COMMUNITIES**

The nature and extent of utilization of natural resources including the prioritizing of ecosystem services is to a large degree, determined by the property rights regime employed.

Traditional conservation schemes have sought to restrict access and usufruct rights, in an attempt to foster the provi-

sion of ecosystem services. In contrast, some recent initiatives have sought to expand rights. This change reflects the growing recognition that expanding the rights of communities can better ensure ecosystem services provision than restricting access, since it turns usufructuaries into partners interested in ensuring the provision of such services. Furthermore, the expansion of rights is considered to be an effective way of advancing poverty reduction objectives, because it puts assets into the hands of the poor, strengthening their livelihood strategies.

In attempting to expand the rights of communities, a broad perspective on these rights is needed, one that goes beyond conventional categories of private, state or communal property. The common-property rights conceptual scheme that categorizes property rights into rights of access, withdrawal, management, exclusion and alienation, provides a valuable framework for exploring the relationships between property rights, ecosystem management and livelihoods.

Access rights include the operational right to enter into defined areas and enjoy non-extractive benefits, chiefly recreation activities. Withdrawal rights give in addition to the above, the right to extract specified products from the area. Following this logical progression, management rights include the rights to enter, extract products, and determine the patterns of resource use. Those who additionally have the right to determine who can have access and extract resources, hold the exclusion rights. Finally, those who have the right to transfer the resource possess alienation rights. In most situations, the various property rights are divided among a variety of agents. While poor rural communities do not need to possess alienation rights - as in private property schemes - in order to reap a benefit, they do require access and withdrawal rights and, at least, partial management rights.

THE ROLE OF THE STATE, INTERNATIONAL DONOR AGENCIES AND SUPPORT ORGANIZATIONS

The State plays a decisive role in the development of compensation schemes for ecosystem services and its influence is played out in multiple ways. To ensure equity, the State can play a fundamental role in expanding and defending the rural communities’ rights to access, use and control of natural resources. The state in its policy making capacity can focus on rural communities and rural spaces, and prioritize community-based strategies for provision of ecosystem services. The State also shapes the market for ecosystem services and sets the guidelines for compensation schemes. If compensation mechanism rules do not favor poor rural communities, these communities can be excluded from the benefits and greater inequity would be the end result. Since the rule-making process is often influenced by the more powerful actors, the State needs to strengthen the participation of rural communities in rule-making processes.

International donor agencies also play a critical role in the development of compensation schemes. Donor agencies play a positive role when they support the strengthening of social capital and negotiating platforms which enable an effective participation of rural communities in defining compensation strategies, the mechanisms and ground rules. Inappropriate donor interven-

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tions including the foisting of preconceived mandates, priorities and timeframes instead of facilitating processes, can actually impede community appropriation and turn into another hurdle to be overcome by communities.

Due to the complexity of compensation schemes, their design and implementation require the presence of intermediaries and support organizations that can provide technical assistance and training, certification, funds management and market access. These organizations have a role to play at the local, national, and at times international level.

Nevertheless, support organizations can have a negative influence. A large chain of intermediaries can reduce the benefits received by producers and communities. Conflicts can arise when intermediaries and communities adopt differing approaches to compensation strategies and associated mechanisms. It is essential that support organizations respect communities’ agendas, priorities, concerns, and values. They should work collaboratively with local actors, employ transparency in their dealings, and respect community decisions regarding the management of natural resources.

**CONCLUDING REMARKS**

Compensating those who facilitate the provision of ecosystem these services with their actions can spur the rehabilitation of ecosystems thereby increasing the availability of ecosystem services, while simultaneously strengthening rural livelihoods. Compensation for ecosystem services is however not a panacea for combating rural poverty and ecosystem degradation. Compensation strategies should be part of a wider strategy that seeks to diversify existing community livelihood strategies. In that way they can add value to existing livelihood strategies.

The notion of compensating for ecosystem services can also have a catalyzing effect through the processes it sets in motion. For instance, it can catalyze efforts by local communities to introduce more sustainable production and management practices. It can also facilitate a policy dialogue with regard to the crucial role played by rural indigenous and peasant communities in the sustainable development of rural landscapes. In this way, it can contribute to the development of policy frameworks that address rural, agricultural, ecosystem and socio-cultural challenges in a more comprehensive way.