

Global Environment Outlook

Policy options for Latin America and the Caribbean



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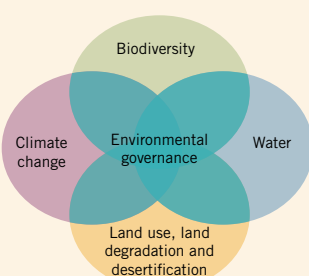
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Changes in land use unfold at the expense of natural ecosystems, forcing decision makers to take action and implement strategies to reverse negative trends. Agricultural development, fossil fuel and mineral extraction, forestry, urban development, increased tourism in coastal and other areas, as well as land tenure systems should therefore be addressed under the scope of effective land-use policies that prevent land degradation and rehabilitate deteriorated land. This in turn could contribute to attain goals set by paragraph 40(b) of the Johannesburg Plan of Implementation.

POINTS TO REMEMBER

- Sustainable agriculture, incentives for sustainable livestock production and promotion of sustainable eco-tourism and rural tourism are considered effective policies to both diminish pressure on land resources and to promote environmentally-friendly productive activities;
- Small-scale agriculture and large-scale commercial agriculture have distinct stakeholders, inputs and outputs; decision makers should therefore distinguish them at the time of policy making;
- Access to micro- and small-scale credit and harmonization of policies related to market access and distribution process are key conditions to ensure sustainable land use and management.

GEO5 process reflects priority areas for environmental action in LAC



SELECTED GOAL

GEO5 provides a scientific analysis of selected environmental challenges and the solutions available to address them, including their environmental and social costs and benefits.

A global intergovernmental and multi-stakeholder consultation undertaken as part of the GEO5 process established a High-Level Intergovernmental Advisory Panel to identify and concur on internationally agreed goals to be analyzed as part of the GEO5 process, to identify gaps in their achievement, and to frame the regional policy assessment. The Panel also provided high-level strategic advice to guide chapter authors when evaluating the gaps in achieving these goals and identifying the policy options for speeding up their achievement. The Latin America and the Caribbean Regional Consultation was held in Panama City, Panama, from 6 to 7 September 2010. Participants at the consultation selected a set of regional environmental challenges, together with a set of internationally agreed goals which were considered to be the most effective in addressing these challenges.

For Land use, land degradation and desertification, the selected goal, the Johannesburg Plan of Implementation, para. 40(b) reads as follows:

“Develop and implement integrated land management and water-use plans that are based on sustainable use of renewable resources and on integrated assessments of socio-economic and environmental potentials”

Since the 1960s, the area of arable lands has greatly increased in South America (83%), Africa (46%) and Asia (36%)¹. Although cultivation of new lands has resulted in short-term economic benefits in some countries (e.g. Bolivia, Brazil and Argentina), the expansion of agricultural areas has coincided with alarming rates of deforestation and the expansion of unsustainable livestock production. In this regard, governmental institutions have an important role in regulating land use patterns. Policies and decisions can either mitigate or aggravate land-use conflicts, which may in turn have social, economic and environmental consequences. In light of the expected negative social impacts related to land-use changes, and thanks to a review of current and past experiences in LAC, the Global Environment Outlook (GEO5), recommends a cluster of policy options related to sustainable agriculture and livestock production, an approach that has demonstrated its potential as an option to achieve the objectives set out in paragraph 40(b) of the Johannesburg Plan of Implementation.

POLICY OPTIONS

Agriculture provides food, raw material and fuel, hence fulfilling most basic needs and increasing the quality of life. However, high demands for agricultural products, combined with unsuitable techniques and competing land uses, are placing pressure upon the available natural capital.

Sustainable agriculture and livestock production, a practice consisting of “successful management of agricultural [and livestock] resources to satisfy human needs while maintaining or enhancing environmental quality and conserving natural resources for future generations²” is therefore advocated as an effective way to achieve sustainable use of land resources.

Mutually supportive options for sustainable agriculture and livestock production proposed in the GEO5 report are: organic agriculture, incentives for sustainable livestock production (e.g. silvopastoral) and the promotion of sustainable eco-tourism and rural tourism. Given their distinct challenges, benefits and enabling conditions, the differentiation between small-scale agriculture and large-scale commercial agriculture should be distinguished at the outset in time of land-use policy, development and planning.

BENEFITS

Sustainable small or large-scale agriculture, aims to establish an ecological balance between the protection of soil fertility and the prevention of pest problems³. It also generates additional income for farmers living in impoverished conditions (rural poverty reaches 52.8% in the region)⁴.

Sustainable livestock production and the promotion of silvopastoral strategiesⁱ can provide many on site benefits (e.g. improvement of pasture productivity and new related products such as fruit, fuelwood, fodder, timber) while generating higher levels of ecosystem services.

Empirical evidence in Latin America and the Caribbean suggests two ways of developing environmentally friendly livestock production systems, regardless of the farming

Box 1: Positive ways forward

- Emigration and land sparing, a system under which some land is farmed intensively to maximize yields while other land is protected as a nature reserve, allow more land to be devoted to preserving biodiversity and providing ecosystem services;
- Small-scale agro-ecological systems appear to be a good option for combining hunger alleviation and biodiversity preservation;
- The use of a policy-making matrix that integrates agricultural and conservation elements could boost small-scale agro-ecological options. Policy-making matrices that use a framework built around payment for ecosystem services (PES) can significantly strengthen this approach.

scale. First, by increasing beef production efficiency through the dilution of maintenance costsⁱⁱ; and second, by integrating crops, pastures, fodder and livestock production. The first case results in a significant reduction in land, water, fossil fuels, feed consumption and outputs of manure and greenhouse gas (GHG). In the second case, experiences of rotating crops, livestock production and zero-tillage operations – as done in the Brazilian Cerrado- show the sustainable production of grain and meat on the same lands, hence eliminating the need to deforest more land⁵.

Policies linked to sustainable eco-tourism and rural tourism, aim to offer local communities an opportunity to benefit from the growing tourism industry in a context of economic viability and equitable distribution of benefits. Sound policies in this regard also promote the optimal use of natural resources in addition to respecting socio-cultural diversity. If well planned, such practices can have positive results for social development equity, and overall resilience. As an example, the experience of sustainable rural tourism in nine communities in Guatemala and Nicaragua has resulted in increases in household income, improvements in social investment related to basic infrastructure (e.g. schools and roads) and increases in levels of food security amongst others improvements⁶.

Although benefits of this policy cluster mainly lie in preventing additional pressure on land resources, the proposed practices would most often positive impacts on biodiversity, water and adaptation to climate change (see Table 1). For example, silvopastoral strategies benefit biodiversity by offering food and refuge to wildlife as well as by acting as biological corridors⁷.

ENABLING CONDITIONS

Policies for small-scale farming should ideally promote: consolidation of land tenure and property rights; access to micro-credits for poor rural communities; ecological and agri-tourism (see Case study 1); silvopastoral and silvocropping systems (see Case study 2); payment for ecosystem-service schemes; access to markets of low-input farming products; and strong participation of stakeholders in local policy design.

On the other hand, policies for large-scale commercial farming should advocate: clear policy rules (laws) to regulate the expansion of commercial farming on natural lands that provide high-quality ecosystem services; the use of conservation tilling methods (no-tillⁱⁱⁱ, minimum tillage) to preserve soil stability; the use of low-impact pesticides; the application of integrated pest management schemes; the application of precision-

Case study 1: Agritourism in the Caribbean or How to connect Sustainable Agriculture with Tourism⁹?

AgroSandals (Jamaica), the Nevis Model of Hotel / Farmer Partnership (Nevis) and the Tri-Lakes Project (Guyana) are good examples of how to successfully link agriculture with tourism and culture. Due to effective partnership with the private sector, community members and government agencies, those projects have succeeded to develop productive activities with tangible economic benefits while reducing pressure on resources.

As an example, the Sandals hotel chain teamed up in 1996 with the Rural Agricultural Development Authority (RADA) and Jamaican farmers in order to regularly supply crops of higher and consistent quality and of more diversity to the hotel chain. In the first three years of the initiative, farmers' sales income increased over 55 times from US\$60,000 to US\$3.3 million. Other Jamaican-based chains such as Holiday Inn and Superclubs have since developed similar programmes. Sandals is also replicating the farming project in St Lucia where over 50 farmers (of which 75% are women) are enlisted in the programme.

In 1990, The Department of Agriculture, Allied Farming Agencies and the Four Seasons Resort in Nevis developed a partnership aiming to supply local produce to the hotel. This partnership has led to a change in the production scheme, which has shift from a production/supply-driven in agriculture to a market-led system. As a consequence, the value of produce sold by the Nevis Growers Association quadrupled during the period 1991-2002. Fishermen, bee-keepers and agri-processors have also developed similar arrangements with Four Seasons as well as with other hotels on the island.

While ecological benefits from those three projects go from the conservation of natural resources (e.g. forests and soils), the decrease in slash and burn and the diversification of types of crops grown, socio-economic benefits are related to the betterment of rural sustainable livelihoods in farming and in agro-products in addition to the diversification of the local agricultural sector.

There is increased awareness in other countries that agro-tourism partnerships can successfully function in the Caribbean and that the Nevis Model can be replicated. The model has raised interest for replication in several islands in the Caribbean including Jamaica, Trinidad and Tobago and The Commonwealth of Dominica.

farming techniques^{iv}; the strategic use of fertilizers and irrigation water; the increase of capacity building through the dissemination of modern agronomic practices; and the access to good international prices and markets.

CHALLENGES AND WAYS FORWARD

The development of robust local markets is an important challenge for achieving sustainable agricultural practices. In order to motivate

Table 1:
Examples of cross-linkages and cross-benefits between sustainable agriculture and livestock production and other regional environmental priorities

	Water	Biodiversity	Land use, land degradation and desertification	Climate change	Environmental governance	Oceans and seas
Sustainable agriculture and livestock production	<ul style="list-style-type: none"> Promotes efficient water use; Improves water quality. 	<ul style="list-style-type: none"> Fosters conservation and ecological integrity; Promotes payment for ecosystem services. 	<ul style="list-style-type: none"> Organic agriculture promotes the adoption of environmentally friendly practices and technologies in farmlands; Promote crops and livestock diversification; Promotes agricultural intensification to increase food production; Reduction of land degradation. 	<ul style="list-style-type: none"> Favors GHG reduction by preserving ecosystems; Increases resilience and reduces vulnerability. 	<ul style="list-style-type: none"> Promotes green jobs; Alleviates rural poverty; Promotes sustainable development; Respects socio-cultural diversity, economic viability and equitable distribution of benefits. 	<ul style="list-style-type: none"> Reduces the amount of land based sources of pollution; Fosters the development of aquaculture projects.

buyers to pay higher prices for organic products and fortify local markets, awareness on the health and social benefits for farmers, as well as benefits to the environment need to be promoted. The development of standards (e.g. for water sources, waste reduction and management), certification processes and public-private partnerships should also be considered. Encouraged by the current global movement toward organic production, many LAC countries are in the process of establishing regulations and standards to facilitate market access to sustainable production. In a few countries, limited financial support is being given to pay certification costs during the conversion period⁸.

With respect to the development of agritourism, the inability to link local eco-tourism and rural tourism projects with the main distribution

channels (tour operators and hoteliers) is considered as a major drawback⁶. In this context, lessons learnt from agritourism projects in the Caribbean are valuable (see Case study 1).

Constraints caused by high initial investment costs should also be considered as they hinder communities to take part in both organic agriculture and agritourism projects. Challenges raised by long-term financing should also be addressed, as financing is essential to ensure sustainability of all three policy options⁷. Investment (public, private-public partnership from local, national and international stakeholders) can support farmers' initiatives in addition to stimulating the growth of tourism in rural areas. In the case of agritourism, investment can be directed to human capital and language programme in addition to customer service training⁶.



Box 2: Key facts on LAC agriculture¹⁻⁸

- Over 280,000 LAC producers manage 8.6 million ha of agricultural land organically, which represent 23% of the world's land under organic management;
- The highest shares of organic agricultural land are in Dominican Republic and Uruguay;
- In South America agricultural land increased by 20% between 1970 and 2008, while livestock production grew by 37% during the same period.

Case study 2: Silvopastoral practices and payment for environmental services in Nicaragua, Colombia and Costa Rica⁷

The Regional Integrated Silvopastoral Ecosystem Management Project, financed by a US\$4.5 million Global Environment Facility (GEF) grant, is piloting the use of payment for environmental services to induce the adoption of silvopastoral practices in degraded pastures of the Matiguás-Río Blanco area (Nicaragua), Quindío (Colombia) and Esparza (Costa Rica). Implemented in the field by local non-governmental organizations and directed mostly to farmers living below the poverty line, the Silvopastoral Project developed an 'environmental services index' (ESI) and pays farmers for the expected increase in biodiversity conservation and carbon sequestration services throughout a system of ESI points. The project has shown that a US\$75/point/year payment induces substantial land use change.

Results of the implementation in Nicaragua show that over the first two years, 24% of the total project area experienced some form of positive land use change (e.g. pastures with high density trees). Figure 1 shows that the area of degraded pasture fell by two thirds (a decline of near 600 ha), while pastures with high tree density increased substantially (about the same distribution in all income groups) as did fodder banks (to a greater extent in the extremely poor households group).

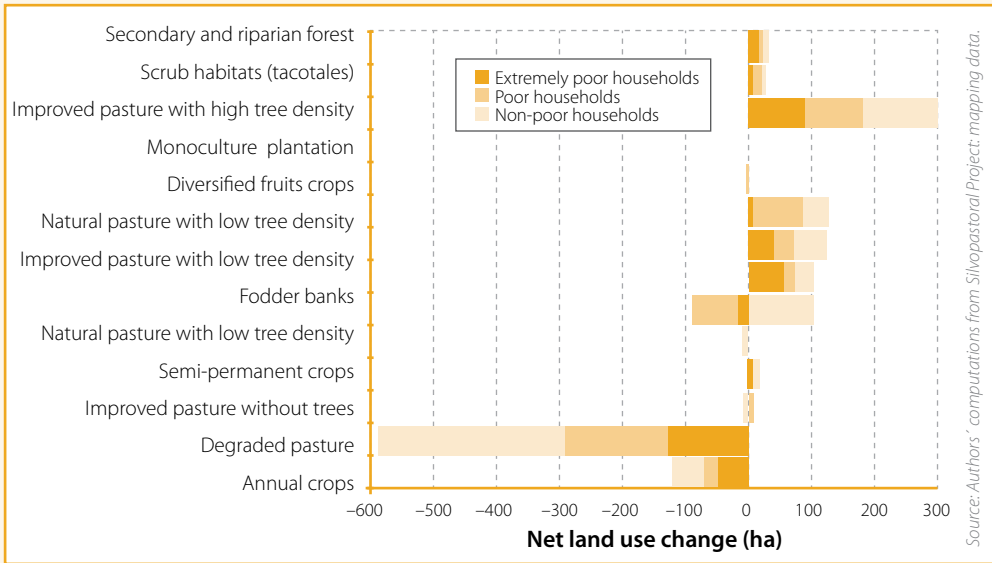


Figure 1: Land use changes by Silvopastoral Project participants, by income group, Matiguas-Río Blanco, Nicaragua, 2003-2005

These results are promising, however ensuring that these changes are sustainable is challenging. Although short-term payments may sometimes be sufficient to influence land use changes, longer-term payments are likely to be required hence raising the issue of suitable long-term funding sources. The best opportunities may arise when services being provided are private goods or where regulations create a market for public goods (e.g. for carbon, the Kyoto Protocol and regulations in some countries).

REPLICATION AND TRANSFERABILITY

Local, social, economic and political conditions; infrastructure; international and regional frameworks and agreements; as well as regional treaties, highly influence the likelihood of replication and transferability of the above policies. Although the majority of LAC countries have the necessary legal and regulatory frameworks to implement them, they often fail to integrate policies related to sustainable agriculture and livestock production into national-level planning and work programmes, hence hampering their effectiveness.

Furthermore, countries would benefit from sharing successful mechanisms used by regional initiatives. Amongst them: agritourism development initiatives in the Caribbean⁹, Cuba's transition to organic agriculture¹⁰, silvopastoral practices and payment for environmental services in Nicaragua, Colombia and Costa Rica⁷ and rural based community tourism in Central America⁶.



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Case study 3: Sustainable agriculture practices in Argentina¹⁴

For the past 50 years, agricultural production in Argentina has risen mainly due to putting more land into agriculture (at the expense of natural forests and rangelands) and increasing productivity (through modern technology, external inputs and management practices). However, when a comparison of Argentinean practices with other countries employing intensive farming was undertaken, results showed that, impacts of extensive agricultural practice on soil erosion, nutrient balance and energy use were less significant in Argentina.

The evaluation of 1197 Argentinean farming systems during three periods of time (1956-1960, 1986-1990 and 2001-2005) has shown that low-input, rotational cattle-crop production schemes used in Argentina have been favorable in preserving land resources.

Conservation tillage practices (i.e. the management of surface residues to reduce soil erosion caused by wind or water) and the use of environmental friendly pesticides are two important steps toward sustainable agriculture. In Argentina, the combination of those two techniques caused a dramatic decrease of soil erosion and contamination risk throughout the period 1956-2005 (see Figure 2).

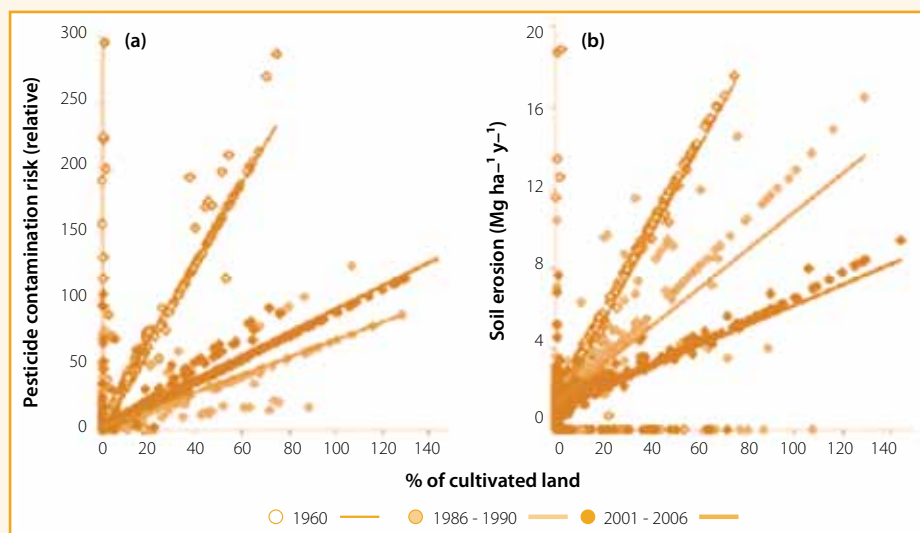


Figure 2: Pesticide contamination risk and soil erosion in relation with % of cultivated land in Argentina during 1960, 1986-1990 and 2001-2005





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ⁱ **Silvopastoral strategy** is "the integration of trees and shrubs in pastures with animals for economic, ecological and social sustainability"¹¹.

ⁱⁱ **Dilution of maintenance costs**: the decrease of fixed costs (i.e. nutrients needed for maintenance and for milk synthesis) over more units of milk production¹².

ⁱⁱⁱ **No-till (or zero tillage)**: «technique of drilling seed into the soil with little or no prior land preparation», which has a positive impact on soil erosion¹³.

^{iv} **Precision-farming procedures**: The use of monitors and Global Positioning System (GPS) to collect data on crop performance in order to increase productivity.

This policy brief was compiled by:

United Nations Environment Programme, Regional Office for Latin America and the Caribbean (UNEP/ROLAC)
Graciela Metternicht, Maia Leclerc, Silvia Giada, Andrea Salinas.

Chapter 12 of GEO5 was written by:

Coordinating lead authors: Keisha Garcia, Joanna Kamiche Zegarra

Lead authors: Ligia Castro, Arturo Flores Martínez, Daniel Fontana Oberling, Elsa Galarza, Alexander Girvan, Ernesto Guhl Nannetti, Gladys Hernandez, Paul Hinds, Martha Macedo de Lima Barata, Ana Rosa Moreno, Rodrigo Noriega, Maurice Rawlins (GEO Fellow), Ernesto Viglizzo.

Contributing authors: Dolores Armenteras, Andrea Brusco, Guillermo Castro Herrera, Antonio Clemente (GEO Fellow), Keston Finch, Silvia Giada, Mayte González, Mark Griffith, Martin Obermaier, Mary Otto-Chang, Graciela Metternicht, Keith Nichols, Aida Pacheco, Andrea Salinas, Asha Singh, Michael Taylor, Elisa Tonda, Angel Ureña, Oscar Vallarino, William Wills, Jessica Young.

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