

Landscape Approaches

Addressing food security, climate change and biodiversity conservation in an integrated way

Landscapes – result of intimate interaction between people and nature

For generations, people have managed natural resources in such a way that their multiple needs for food, fibre, fodder, fuel, building materials, medicinal products and drinking water were largely fulfilled. Farming, livestock, forestry and fisheries systems have evolved, and been adapted to variable and changing environmental and socio-economic conditions. Not only natural factors, but also population growth or loss, tenure arrangements, labour availability, access to markets and economic growth, as well as cultural traditions and political strategies, have shaped landscapes over time. These complex interactions have generated today's rich diversity of semi-natural and cultural landscapes (FAO, 2012).

Common to most definitions of 'landscape' is that they imply the interaction between human societies and the natural environment, resulting in a unique set of distinguishing characteristics. Landscapes tend to cross administrative units or national borders. A clear delineation of landscape boundaries often depends on the stakeholders involved, and the activities envisioned. As a general rule for implementing Landscape Approaches, the area should be large enough to allow for management of complementary and inter-dependent elements and resources, and small enough to enable all relevant stakeholders to cooperate and participate in planning and decision-making (FAO 2012).

Unsustainable development of landscapes

Human population growth resulting in increased demand for goods and services has often been responsible for unsustainable development of landscapes, leading to degradation of land and water resources, as well as biodiversity loss. Furthermore the management of natural resources is often unsustainable due to the fact that a cross-sectoral approach on landscape level is not been followed and various actions are implemented simultaneously and often in contrast to each other.



However, the problem of unsustainable management has been further intensified by certain market-driven approaches that aim at ‘optimizing’ the production derived from forestry, animal husbandry or farming enterprises by focusing on relatively few marketable products.

As a result, non-marketable benefits of diversified farming systems, such as ecosystem services, are likely to be overlooked. The deterioration of natural resources, such as water and soil, or increased climate variability, are treated as ‘external cost’. Thus, strategies that focus mainly on immediately realizable economic benefits tend to neglect other benefits and costs that may affect society as a whole, or might become relevant in the future. Furthermore, some landscapes are managed unsustainably because traditional knowledge or social structures have eroded, e.g. as a result of population displacement, or because capacities, resources, technologies and investments are lacking (FAO, 2012).

Landscape Approaches – integrating and balancing multiple goals

Landscape Approaches combine natural resources management with environmental and livelihood considerations, and address optimization of production and resource use at landscape level. By moving the scale, it becomes clearer that management decisions made at farm level, concerning issues such as water use, soil management and the maintenance of diversity-rich landscape features, have an impact on the surrounding landscape and the ecosystem services they provide. Important for the land user, they also profoundly influence the productive capacity of the land. Landscape Approaches thus help identify and develop positive externalities and reduce negative impacts resulting from individual management decisions.

Landscape Approaches require a multidisciplinary perspective and multi-stakeholder engagement to negotiate goals and priorities and implement actions across scales. Trade-offs and synergies need to be carefully assessed and appropriate landscape-scale management interventions identified. Planning approaches, such as participatory Integrated Land Use Planning (ILUP), can support these multi-dimensional and multi-jurisdictional processes. (FAO, 2012)

Ecosystem services are resources and processes that are supplied by ecosystems to the benefit of humans and all forms of life. They include, for example, effective nutrient, water and carbon cycling, resulting in fertile soils, clean air and drinking water. Furthermore, ecosystem services include microbial decomposition of wastes or pollutants, pollination of crops, as well as natural pest and disease control and resilience to shocks and climate variability. In a broader sense, cultural, recreational and spiritual aspects are also included, e.g. places for recreation or ‘beauty’ of landscapes (Millennium Ecosystem Assessment, 2005).

Food security for people and agricultural biodiversity conservation – key concerns of sustainable landscape development

Landscapes should not only provide the resident population and traditional users with the basic means to support their livelihoods, but also contribute to the food supply of urban populations. Ensuring agricultural productivity, yield stability and quality of food produced are thus crucial for food and nutrition security. This is even more important in rural areas of developing countries, where the majority of the world’s poor and malnourished people live.

Agricultural biodiversity involves crops and their varieties, the wide range of wild and semi-wild plants and animals traditionally used, as well as associated organisms, such as pollinating insects and soil micro-organisms. Active management and use of agricultural biodiversity could become an important corner stone in Landscape Approaches as it links human nutrition and resource needs with the requirements to maintain and increase productivity and ecosystem services in the wider landscape. Along with sustainable farming practices and catchment management, biodiversity conservation can result in positive impacts on soil fertility, tolerance to pests and diseases, as well as enhancing overall adaptation capacity and resilience of agricultural production systems (Frison et al., 2011).

Contact

Dr. Klaus Ackermann:
klaus.ackermann@giz.de

Ragna John:
ragna.john@giz.de

Tanja Pickardt:
tanja.pickardt@giz.de

Caroline Schaefer:
caroline.schaefer@giz.de

However, many of the benefits of agricultural biodiversity are manifested at different spatial and temporal scales, and cut across political divisions and administrative entities. Though obviously highly related to agriculture, nutrition and environmental sustainability, the topic is not among the top priorities for policies relating to any of these fields. Landscape Approaches offer the opportunity to make the multiple relations between (agro-) biodiversity and development goals more tangible and visible to all stakeholders.

Landscape Approaches and climate change

Landscape Approaches can help reduce negative impacts for people and distribute costs, risks, benefits and opportunities more equitably, while increasing resilience and adaptive capacities of people and ecosystems.

By taking a Landscape Approach and applying climate-smart agriculture, there are many options for mitigating negative effects and increasing productivity of farming systems. For example, by conserving valuable wetlands, managing flooding areas and increasing water infiltration and retention in soils, impacts from excessive rainfall events can be reduced, while also increasing agricultural productivity and the level of agrobiodiversity in the entire landscape. Moreover, cooperation of stakeholders can help reduce greenhouse gas emissions from farming, for example by improving the management and use of organic manures and energy sources.

Uniting the benefits from forestry and agriculture

Forests and trees on farm and rangeland contribute to food and nutrition security in multiple ways. Besides providing direct benefits to farmers, forest dwellers and herders, they are of particular importance for clean water supply, catchment protection, regulation of microclimates, as well as flood and erosion control.



Photo: © GIZ / Michael Tsegaye

The restoration of forest ecosystems has gained international attention in the context of the Aichi Targets agreed under the Convention of Biodiversity; at least 15% of the world's degraded ecosystems (including forests) should be restored by the year 2020 (CoP, 2010).

Furthermore, in the negotiations of the UN Framework Convention on Climate Change (UNFCCC), forest restoration and enhancement of tree cover in landscapes have been identified as important approaches to combat climate change while providing multiple social, ecological and economic benefits.

Unlike other re- and afforestation initiatives that focus on planting trees for timber production and carbon sequestration, the concept of Forest Landscape Restoration (FLR) can be seen as a tree-based Landscape Approach, with a focus on restoring ecosystem services provided by forests and trees combined with achieving benefits for local people. Besides forest in general, FLR also applies to smaller tree formations in landscapes (e.g. along rivers and roads, or islets of forests in agricultural lands), as well as agroforestry systems (ITTO/IUCN, 2005).

What makes Landscape Approaches successful?

The main problem to be solved in Landscape Approaches is that trade-offs exist between long-term and short-term benefits and costs, and economic and other (social, ecological, cultural) benefits and costs. Furthermore, even if a change in management measures can increase benefits on the landscape level, individuals can have fewer benefits and others more. Finding solutions for such problems seems to be a significant challenge in Landscape Approaches.

Local benefit-sharing mechanisms can be one part of the solution. For example, ecotourism enterprises that rely on the landscape 'beauty' can support farmers and forest dwellers by offering local food products to visitors, or by passing on a share of their fees to communities. This is currently practiced in Namibia with income generated by lodges for wildlife watching or hunting tours. However, other funding instruments may also be needed to actively support long-term benefits (see paragraph on Funding Instruments).

Landscape Approaches pose challenges for governance, particularly if implemented on a larger scale. Even though it is urgently necessary that government institutions at all relevant levels are involved, implementing and governing a Landscape Approach may exceed existing capacities and require more specialization (FAO, 2012).

In such cases, coordinating bodies that are given a clearly defined mandate could be an option to consider. Capacity building at all levels is required to develop a shared vision and establish appropriate governance procedures. Facilitating communication both horizontally (e.g. between farmers of different villages) and vertically (e.g. across levels of government institutions) is an important element in nurturing a region's potential and achieving autonomous development (GIZ, 2012).

PROJECT EXAMPLE 1

Biosphere reserves – learning sites for sustainable development

Biosphere reserves are places that seek to reconcile conservation of biological and cultural diversity and economic and social development through partnerships between people and nature. They are established by countries and recognized under UNESCO's Man and the Biosphere (MAB) Programme. GIZ supports biosphere reserves in many countries, including in Côte d'Ivoire, Nicaragua, Brazil, Vietnam and South Africa (GIZ, 2011). Biosphere reserves aim to achieve sustainable management of land, water and living resources by putting in place bio-regional planning schemes that integrate conservation into development through appropriate zoning. They are typically designed around unique landscape elements that depend on human management, such as mountain or forest areas, lakes, or islands. Examples are the biosphere reserves of Mount Kenya or the delta of the Senegal River.

Funding instruments with relevance to Landscape Approaches

Generally, payment for ecosystem services (PES) could play an important role in Landscape Approaches. PES helps balance the local people's need to achieve income in the short term, against the long-term goal of maintaining ecosystem services, both locally and globally.

Innovative instruments that allow for direct payments to developing countries for proven reduction of carbon emissions via forest protection are currently being discussed at international level. One such instrument is Reducing Emissions from Deforestation and Degradation (REDD+), agreed upon by the Parties of the United Nations Framework Convention on Climate Change (UNFCCC) in December 2010 in Cancún, Mexico. The success of REDD+ depends on how well the interface between agriculture and forest is managed, and how well stakeholder interests are taken into account (GTZ, 2009).

Furthermore, the World Bank's BioCarbon Fund could also become an instrument for providing direct income to communities owning the land where carbon sequestration measures are being taken (World Bank, 2010). However, these instruments will have to be embedded in coherent national policy strategies, and evaluated continuously for their effectiveness in supporting the development goals of countries and communities.

The Landscape Approach in relation to other spatial approaches

Various spatial approaches, such as integrated watershed management, territorial or ecosystem-based approaches, or community-driven development approaches, have been successfully implemented by GIZ programmes and projects in the past. They all imply a change from a sectoral towards cross-sectoral and multi-level views on development that involve various stakeholders and perspectives. These spatial approaches not only focus on the landscape, but also consider other territorial units, including administrative, economic or ethnic boundaries.

Contact

Dr. Klaus Ackermann:
klaus.ackermann@giz.de

Ragna John:
ragna.john@giz.de

Tanja Pickardt:
tanja.pickardt@giz.de

Caroline Schaefer:
caroline.schaefer@giz.de



PROJECT EXAMPLE 2

Communal land use planning in Madagascar

In collaboration with the Malagasy Ministry for Land Use Planning, GIZ has developed a participatory approach to spatial development planning, and accompanies rural communities in the North-western Region of Boeny throughout the process. The land use plans allow for the different communal stakeholders to take stock of their natural resources and social and economic infrastructure and to determine the need and localization of future zones, such as for agriculture and residential areas, for the next 15 years. The planning process takes place at the local landscape level, and integrates the impacts of climate change on forests, water, agriculture and fishery. It brings together all sectors at the local and regional level, and thus facilitates a sustainable natural resource management ethos that takes into account the population's economic and social needs. So far, seven communities in Boeny have elaborated their land use plans, which are now used as a support reference to acquire private and public investments, and to implement communal projects such as reforestation.

By applying a multi-level approach it is very important for the stakeholders operating at different levels to recognize their respective role and assume their responsibility. Important to consider are the political and legal setting, institutional structures, the rural economic system, the protection and sustainable use of natural resources, and preservation of biodiversity, with the participation of as many sections of a region's population as possible. Experience shows that, especially in poor livelihood conditions, sustainable management and use of landscapes and natural resources can only be brought forward when linked to clear advantages for the resident population (i.e. work towards win-win situations).

Landscape Approaches, where found appropriate, should build on existing experience and good practices developed, and strive to integrate them into a sound concept of spatial planning that unites benefits for people and nature.





References

- CoP (2010): CoP 10 Decision X/2 – Strategic Plan for Biodiversity 2011–20 (including the Aichi Targets). 10th meeting of the Conference of the Parties (CoP) to the Convention on Biological Diversity, 18–29 October 2010, Nagoya, Japan.
- FAO (2012): Mainstreaming climate-smart agriculture into a broader landscape approach. Background Paper for the Second Global Conference on Agriculture, Food Security and Climate Change, Hanoi, Vietnam, 3–7 September 2012. FAO, Rome, Italy.
- Frison, E.A., Cherfas, J. & Hodgkin, T. (2011): Agricultural biodiversity is essential for a sustainable improvement in food and nutrition security. *Sustainability* 3(1): 238–253.
- GIZ (2011): Biosphere Reserves as Model Regions for a Green Economy. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Eschborn/Bonn, Germany.
- GIZ (2012): Rural Territorial Development. An approach to rural development. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Eschborn/Bonn, Germany.
- GTZ (2009): Making REDD work. A practitioners` guide for successful implementation of REDD (Reducing Emissions from Deforestation and Forest Degradation). GTZ, Eschborn, Germany.
- ITTO/IUCN (2005): Restoring Forest Landscapes. An introduction to the art and science of forest landscape restoration. ITTO Technical Series No. 23. International Tropical Timber Organization (ITTO), Yokohama, Japan & International Union for Conservation of Nature (IUCN), Gland, Switzerland.
- Millennium Ecosystem Assessment (2005): Ecosystems and Human Well-Being. A Framework for Assessment. Island Press, Washington D.C., USA.
- World Bank (2010): Turning it around: Greening Ethiopia's Great Rift Valley. Available at <http://www.worldbank.org/en/news/feature/2010/03/12/greening-ethiopia-rift-valley> Accessed

Published by	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH Registered offices Bonn and Eschborn, Germany Sector projects Rural Development; Sustainable Agriculture; Landmanagement; CCD; Forest Governance Dag-Hammarskjöld-Weg 1-5 65760 Eschborn, Germany T +49 61 96 79 - 6465 F +49 61 96 7980 - 6465 Rural.development@giz.de www.giz.de	On behalf of	Federal Ministry for Economic Cooperation and Development (BMZ)		
		Division	Special Unit "One World, No Hunger"		
		Addresses of the BMZ offices	<table border="0"> <tr> <td style="vertical-align: top;"> BMZ Bonn Dahlmannstraße 4 53113 Bonn, Germany T +49 (0)228 99 535-0 F +49 (0)228 99 535-3500 </td> <td style="vertical-align: top;"> BMZ Berlin Stresemannstraße 94 10963 Berlin, Germany T +49 (0)30 18 535-0 F +49 (0)30 18 535-2501 </td> </tr> </table>	BMZ Bonn Dahlmannstraße 4 53113 Bonn, Germany T +49 (0)228 99 535-0 F +49 (0)228 99 535-3500	BMZ Berlin Stresemannstraße 94 10963 Berlin, Germany T +49 (0)30 18 535-0 F +49 (0)30 18 535-2501
BMZ Bonn Dahlmannstraße 4 53113 Bonn, Germany T +49 (0)228 99 535-0 F +49 (0)228 99 535-3500	BMZ Berlin Stresemannstraße 94 10963 Berlin, Germany T +49 (0)30 18 535-0 F +49 (0)30 18 535-2501				
			poststelle@bmz.bund.de www.bmz.de		
Author(s)	Dr Anja Christinck				
Layout	GIZ				
As at	October 2014				

GIZ is responsible for the content of this publication.