

NOTES

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Moving Toward a Sustainable Landscape Approach to Development

BACKGROUND AND RATIONALE FOR A SUSTAINABLE LANDSCAPE APPROACH

Increasing food and nutrition insecurity and increasing poverty in the face of a rapidly changing climate and a degrading natural capital base are daunting challenges for agriculture, livestock, forests, and fisheries. To address these challenges, the World Bank's client countries are increasingly seeking support to move toward a more

The **Loess Plateau Watershed Rehabilitation** project in China is an example of an integrated landscape approach. Centuries of overuse and overgrazing in the Plateau led to one of the highest erosion rates in the world and widespread poverty. The project set out to return this poor part of China to an area of sustainable agricultural production. Through the project, more than 2.5 million people were lifted out of poverty. Agricultural production improved from generating a narrow range of food and low-value grain commodities to high-value products with per capita grain output increasing from 365 kg to 591 kg per year. Project households' incomes more than doubled from about US\$70 per year per person to about US\$200 through agricultural productivity enhancement and diversification. The employment rate increased from 70 percent to 87 percent, and employment opportunities for women increased significantly. The project also encouraged natural regeneration of grasslands, tree, and shrub cover on previously cultivated sloped lands—replanting and grazing control allowed the perennial vegetation cover to increase from 17 to 34 percent. Flow of sediment from the Plateau into the Yellow River has been reduced by more than 100 million tons each year, while better sediment control has also reduced the risks of flooding. The project's principles have been adopted and replicated widely, and it is estimated that over 20 million people have benefited from the replication of the landscape approach throughout China. Some associated television documentaries produced on the project's integrated approach illustrate its impacts.



Erick C.M. Fernandes

Rehabilitated landscape in the Loess Plateau.

integrated approach to managing competing demands for land, water and other natural resources. This comes out of simple recognition that it is the most efficient thing to do given the complex interlinkages among the different components of natural capital and, most importantly, it is essential for the communities that live in a reality in which all is connected: that is, in the landscape.

Traditional development approaches have typically focused on one sector and/or one resource decision maker at a time, and also tended to consider short timeframes. This individualistic approach in terms of decision making has struggled to produce lasting results. Even recent policy innovations such as REDD, CSA, and PES do not go far enough in their cross-sectoral and multiple decision-maker outreach. Problem diagnosis, assessment of resource use alternatives, intervention implementation, and tracking results are all improved when conducted at spatial and temporal scales that capture the sector and stakeholder interconnectedness.

Landscape approaches all help to promote sustainable intensification of food production. When agriculture



is viewed in relation to the other land uses within the broader landscape, the need for more “crop per drop” or crop per acre of land becomes apparent. It thus creates demand for production systems that target sustainable intensification. Taking a landscape view on productive activities can also lead to better risk management. Opportunities for income diversification and risk pooling between the different stakeholders will become more visible and thus more feasible.

DEFINING THE SUSTAINABLE LANDSCAPE APPROACH

The term “sustainable landscape approach” is defined here in terms of taking a spatial, ecological, and socio-economic approach to managing land, water, and forest resources, and forms the foundation—the natural capital—for meeting countries’ goals of food security and inclusive green growth. A landscape approach describes interventions at spatial scales that attempt to optimize the spatial relations and interactions among a range of land cover types, institutions, and human activities in an area of interest. A sustainable landscape approach also has a time dimension: it aims at reaching sustainable landscapes in the long term, and through inclusive stakeholder consultations, maintaining and enhancing them and the services they provide. Hence, a sustainable landscape approach is a dynamic process.

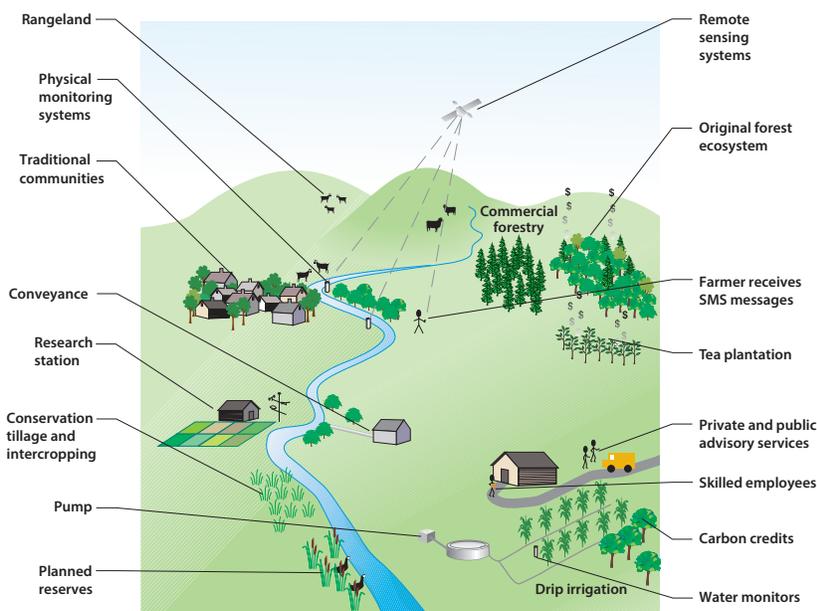
The sustainable landscape approach builds on a wealth of accumulated experience. Approaches similar in many respects to a strong sustainable landscape approach have been developed over the past decades; integrated watershed management projects have been implemented in many developing countries. Similarly “territorial approaches” have been developed in some West African

and Latin American countries. Another approach is Community Driven Development which gives control over planning and decision making for investments to local communities of a particular area. The concept of “ecosystem approach” has been developed in order to mainstream biodiversity into productive landscapes.

While each of these concepts puts some emphasis on a particular element of natural capital or on the governance of natural resources at the community (or larger) level, a full-fledged landscape approach will consider both natural resources and communities. Protecting natural resources can only be successful if it provides tangible benefits to the individual households and communities through enhanced agricultural productivity, food security, and income while sustaining and improving the natural capital base of the landscape. This in turn implies the possibility of operationalizing income transfers among different agents already operating in the landscape, as those who have a negative impact on others’ activities would, in effect, now need to pay for it.

A landscape approach should not be limited to optimizing the interactions only within the geographical zone of interest. Many important drivers that influence activities within the landscape are found outside the landscape (for example, land tenure, price of agricultural and energy products, energy subsidies, water pricing, subsidies for adoption of green technologies, trade agreements, and consumer demand); thus a broader approach is needed.

Developing a sustainable landscape approach revolves around three dimensions: (i) horizontal—spatially optimizing across different decision makers the management of various activities that depend on natural capital: agriculture, livestock, forests, and



Source: World Development Report 2010 (Climate Change and Development).

fisheries to ensure that synergies among them are captured and tradeoffs minimized across space; (ii) vertical—taking into account the external drivers (higher-level institutions, policies, political economy constraints, markets, climate, and technology) that continuously shape the diverse activities within the landscape and might alter the relationships among them, but also provide opportunities; and (iii) time—ensuring that dynamic sustainability is achieved through built-in, inclusive, well-informed decision-making processes that will respond quickly to internal and external changes to the landscape.

Most importantly, a “climate-smart” lens needs to be systematically applied to projects/strategies/policies related to landscapes, meaning, to what extent can the contemplated intervention achieve the triple win of enhanced productivity, increased



resilience/adaptation, and reduced GHG emissions? This is achieved through climate-smart practices at the field and farm scale, diversification of land use across the landscape to provide resilience, and management of land use interactions at landscape scale to minimize trade-offs and achieve positive social, economic, and ecological impacts.

While many of the practices that are considered to be essential to achieving the triple win are not new, power and positive outcomes will flow from embracing practices that jointly incorporate the three goals. As is known, and being increasingly seen, interventions solely targeted at delivering productivity gains do so at high risk if they are not applying practices to increase the resilience and adaptive capacity to climate change—their sustainability in a +2°C, let alone +4°C, world would be fragile at best. Equally, reducing emissions from more efficient fertilizer use not only provides public goods, but also makes sense for the farmer from an economic perspective—a situation where both public and private goods come together. The use of plants with deeper, more extensive root systems not only helps farmers manage climate risks, but also results in storing more carbon in the soil than previously. Harvesting and storing water enables farmers to become more resilient to periods of insufficient and/or unpredictable rainfall, but also saves energy that would otherwise be required to pump water from either above or below ground.

Good governance is also crucial to the effectiveness of a landscape approach. This poses additional challenges in terms of how governance across multiple sectors—particularly land, water, and forests—and across different decision makers, can be mediated.

In Rwanda, agriculture is challenged by uneven rainfall, production variability, small land holdings, limited commercialization, and land constraint due to population growth. The **Land Husbandry, Water Harvesting and Hillside Irrigation** project addresses these challenges through a landscape approach by providing infrastructure for land husbandry (for example, terracing and downstream reservoir protection), water harvesting (valley dams and reservoirs), and hillside irrigation (water distributions piping, fittings and field application for basin and furrow irrigation). In addition, the project provides training for farmers, supports farmer organizations, and enhances marketing and financing activities. As a result, the productivity in rain-fed areas has tripled; small farmers now have access to improved farming methods, more land is protected against soil erosion, and the share of commercialized agricultural products has increased. At the national level, Government adopted a program for “border-to-border” landscape restoration, and intends to adopt an ecosystems approach for implementation.

Landscape approaches in large watersheds may have a different emphasis in the “upper” and “lower” river basin. In Kazakhstan the **Syr Darya/Northern Aral Sea Control** program has supported a range of measures to restore natural flooding regimes and improve land and water management. The results have included restoration of grazing lands, improved reliability of irrigation and drinking water, wetland ecosystems restoration, and recovery of the Northern Aral Sea (with partial recovery of its fisheries). Further up the watershed in the Ferghana Valley in Uzbekistan the focus is on improved groundwater and irrigation management, while in the hilly areas of Tajikistan the focus is on community watershed management, which includes water harvesting and erosion control measures.

A landscape approach looks very different depending on regional and country circumstances. For Latin America countries, one of the biggest challenges is tackling the drivers of deforestation. For Middle East and North America, optimizing the management of water resources to ensure food security is likely to be at the top of their agenda. While for Africa, addressing land degradation to sustain food production is essential.

HOW DO WE GET THERE?

To be effective, it is necessary to move toward a jointly agreed development agenda by all the stakeholders in a landscape—public, private, and civil society. As landscapes often involve waterways, protected areas, farm land, and forests, as well as human-made infrastructures for transport and industry, there will be a need to embrace the expertise and experience from different ministries and institutions to strive for synergies and effective coordination. Local governments (district and municipal) are likely to play an increasingly important role in planning and implementing landscape approaches. The challenge of implementing a landscape approach depends crucially on the existence of institutions that are able to both move across sectoral boundaries and to influence different segments of the local population.

A landscape approach can be seen as a mixture of art and science, with some generic constants. First, there is the need to define the boundaries of the landscape, considering the strength of inter-linkages between land uses and livelihoods in the geographical area of interest, and also the existence of relevant institutions to deal with problems at the scale being considered. Second, define a long-term, shared vision for the landscape through an inclusive and participatory process. Third, set specific goals and expected outcomes for the short- and medium-term that are linked to this vision. Fourth, devise an inclusive monitoring and evaluation

The **Karnataka Watershed Development** project—also known as Sujala—increased the availability of water in seven drought-prone districts of northern Karnataka. The project pioneered a holistic approach, based on participatory watershed planning that involved both communities and technical teams, and was facilitated by a highly qualified NGO. The resulting Sujala Watershed Action Plans reflected a shared vision by all stakeholders and guided subsequent soil and water conservation investments. Treatments on the upper and lower reaches of watersheds helped raise water tables, brought degraded lands under cultivation, enabled farmers to diversify into higher value crops and horticulture, and raised agricultural productivity. State of the art remote sensing and GIS were used to help monitor project performance and impacts. The project also integrated a livelihood component to improve equity between landed farmers, the landless, and women. Household incomes increased significantly, especially among poorer groups in the communities.

framework of landscape interventions to ensure that the implementation of the vision is on the right track, and to allow periodic adaptation of the trajectory to changing conditions within or outside the landscape.

Building trust among all stakeholders is key to a successful landscape approach, which calls for open and transparent processes. In the World Bank's work it has been found essential that: (i) all the stakeholders are given a space to voice their views and desires for developing the landscape; (ii) a framework is developed to enable negotiations between stakeholders who have different views on desirable landscape-scale outcomes; (iii) a multidisciplinary team is needed to tackle complex, inter-sectoral landscape-scale problems; and (iv) investments

are mobilized to make transformational changes in the ways landscapes are used.

Landscapes are also influenced by the larger institutional and regulatory environment. Two ingredients are key in this respect: (i) secure land tenure and water rights and rights to use and access trees and forests provide strong incentives for individual farmers, households, and communities to invest in improved land and water management and to protect natural pastures, trees, and forests; and similarly; (ii) appropriate pricing regimes and regulatory frameworks encourage sustainable use of scarce resources.

One critical element for building trust is to have all the stakeholders speak from the same, jointly agreed, evidence base. This evidence can be derived from both formal and local knowledge. It can also use technological advances in Geographical Information Systems (GIS) to integrate satellite imagery with other data (for example, socioeconomic data including population density, road infrastructure, administrative boundaries, and service availability) to open new ways to synthesize complex and diverse geographic data sets. Finally, there should be open access to this data, and enhanced communication, via ICTs where feasible, to help all stakeholders participate in the process and to enable open discussion and innovation.

In conclusion, the landscape approach is a social process operating in a larger political economy that continuously makes choices on the protection, use, and development of its natural capital. In such dynamic contexts, continuous learning and robust decision making through iterative stakeholder consultations and appraisals of available strategies lead the way toward dynamically sustainable landscapes and thriving communities.



Sujala Watershed Project, Karnataka.

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