

# Landscape Approaches to Climate Change Adaptation: Integration and Participation

Malcolm Childress, Paul Siegel, Mika Torhonen

World Bank

May 14, 2014



## **Landscape approaches**

A “landscape approach” (or “integrated landscape management”) means taking both a geographical and socio-economic approach to managing the land, water and forest resources that form the natural capital for meeting goals of food security and inclusive green growth under climate change.

By taking into account the inter-actions between these core elements of natural capital and the ecosystem services they produce, rather than considering them in isolation from one another, we are better able to increase productivity, improve livelihoods, and reduce negative environmental impacts, thus addressing climate change “adaptation deficits.”

## Classic example: China's Loess Plateau




China's Loess Plateau before and after an integrated landscape approach.  
*Photo Credits:* Till Niermann, Wikimedia Commons (CC BY-SA 3.0), Erick Fernandes/World Bank.

## **The Five Elements of Integrated Landscape Management**

- 1. Shared or agreed management objectives that encompass multiple benefits (the full range of goods and services needed) from the landscape.**
- 2. Field, farm and forest practices are designed to contribute to multiple objectives, including human well-being, food and fiber production, climate change mitigation, and conservation of biodiversity and ecosystem services.**
- 3. Ecological, social, and economic interactions among different parts of the landscape are managed to realize positive synergies among interests and actors or to mitigate negative trade-offs**
- 4. Collaborative, community-engaged processes for dialogue, planning, negotiating and monitoring decisions are in place**
- 5. Markets, public policies and land management tools are shaped to achieve the diverse set of landscape objectives and institutional requirements**



An aerial photograph of a mountainous region. A river flows through the lower left. The landscape is a mix of dense green forests, cleared agricultural fields, and some rocky, degraded slopes. Dashed white lines connect five text boxes to specific areas of the landscape: one to a forested slope, one to a degraded rocky slope, one to a large cleared field, one to a smaller field with trees, and one to a field with rows of trees.

### Protect Natural Habitats

Incentives to protect natural forests and grasslands include certification, payment for climate services, securing land tenure rights, and community fire control.

### Restore Degraded Watersheds and Rangelands

Degradation costs livelihood assets and essential watershed functions; restoration can be a win-win strategy for addressing climate change, rural poverty, and water scarcity.

### Enrich Soil Carbon

Agricultural soils can be managed to reduce emissions by minimizing tillage, reducing the use of nitrogen fertilizers, preventing erosion, increasing organic matter content, and adding biochar.

### Climate-Friendly Livestock Systems

Climate-friendly livestock production requires rotational grazing systems, manure management, methane capture, improved feeds, as well as an overall reduction in livestock numbers.

### Farm with Perennials

Perennial crops, like grasses, palms, and trees, maintain and develop their root system, capture carbon, increase water infiltration, and reduce erosion.

- Consider people as central elements of the landscape;
- Take an integrated, spatial approach to the management of land, water and vegetation within a particular geographical area, taking account of upstream and downstream impacts;
- Combine measures to support sustainable intensification on the most fertile land with landscape restoration and soil and water conservation on degraded land;
- Within these principles, adapt the focus of support measures to the particular geography;
- Aim to instill a balance of environmental, social, and economic benefits from the use of land, water, forests and trees within a broader pattern of land and water use; and
- Monitor impact and take into account lessons learned.



## **Institutional and Data Issues for Landscape Approach:**

- Clarification of property rights and management authority
- Planning at multiple scales—village, watershed, basin
- Community involvement in assessment and planning
- Community involvement in integrated resource management—water, rangeland, forest, arable land;
- Adaptive agricultural/forestry/livestock research for diversification, intensification and resilience
- Geospatial data infrastructure
- Total economic valuation
- Monitoring at multiple scales



Thank you for your attention and interest!

[mchildress@worldbank.org](mailto:mchildress@worldbank.org)