

Modern land use allocation is plagued by market, policy and institutional failures and it does not fully capture the public goods nature provided by natural environments. Economic development and increased food production have often resulted in environmental degradation, loss of biodiversity and other socio-environmental costs.

To reconcile development with environmental sustainability, “landscape approaches” have gained prominence in the international discourses for some time, as a means to manage tradeoffs inherent in land use choices. Any landscape approach should not be understood as an engineered solution, but rather as a **people-centered framework** for priority setting among multiple land use objectives. And I want to stress this as a central concept of landscape approaches, they put people and people’s interests in the center of the priority setting framework. In the case of greenhouse gas emissions reductions, they allow stakeholders to negotiate integration of climate change mitigation into land use decisions.

To help clarify the concept, Jeff Sayer along with a number of my colleagues at CIFOR and other partners put together a list of 10 principles of a landscape approach.

Principle 1: Continual learning and adaptive management: Juggling different objectives among land uses and ecosystems in landscapes can lead to unforeseen interactions and outcomes. Adaptive management allows for learning and new understandings to serve as a basis for revising strategies.

Principle 2: Common concern entry point. The likelihood that all stakeholders have aligned objectives is small. Identifying immediate ways forward through addressing simpler short-term objectives can begin to build trust and understanding between stakeholders and help them move forward in a stepwise approach.

Principle 3: Multiple scales. Outcomes are determined by processes operating at different scales and there are feedbacks, interactions, and time lags that affect results. Explicitly accounting for higher and lower level processes can improve local interventions, inform policy, and help coordinate administrative entities.

Principle 4: Multi-functionality. Landscapes components serve multiple uses and needs, each of which is valued differently by different stakeholders. The landscape approach takes tradeoffs into account and addresses them in spatially explicit ways, integrating elements of ecosystem management.

Principle 5: Multiple stakeholders. Engagement with stakeholders needs to be done in an equitable manner during decision-making processes for more effective and more equitable outcomes. The process must allow for changes in stakeholders and in their concerns over time.

Principle 6: Negotiated and transparent change logic. Coordination of activities among diverse actors requires a shared vision and a broad consensus on goals, challenges, and concerns, as well as on options and opportunities. All stakeholders need to understand and accept the general logic, legitimacy, and justification for a course of action, and to be aware of the risks and uncertainties.

Principle 7: Clarification of rights and responsibilities. Clarification of conflicting claims will require changes, ideally negotiated, that may be legal or informal. When conflict arises, there needs to be an accepted legitimate system for arbitration, justice, and reconciliation.

Principle 8: Participatory and user-friendly monitoring. Systems should be put in place to generate information required to interpret activities, progress, and threats and this information needs to be shared widely to ensure transparency.

Principle 9: Resilience. Actions need to be promoted that address threats and allow recovery after shocks through improving capacity to respond.

Principle 10: Strengthened stakeholder capacity. The ability to participate effectively and to accept various roles and responsibilities presupposes certain skills and capacities (social, cultural, financial). Effective participation makes demands of stakeholders.

Having said this, applying landscape approaches in the real world requires transferring these concepts to the political landscape and, as I noted in the opening of my talk, keeping people in the center of the discussion. Experience shows that landscape approaches alone are not sufficient to achieve the transformational change required to reduce emissions and achieve development outcomes. Landscape approaches work well when accompanied by governance reform, improvements in monitoring, and enforcement. Dealing with entrenched interests, power differences, and economics are all necessary to set the stage for landscape approaches to be successful.

I have often been asked: what is new in landscape approaches? Many people see relationships with integrated land use planning, adaptive management in natural resource management, AFOLU approaches, multiple use forestry, and integrated conservation and development projects (ICDPs). It is not that landscape approaches are new, many approaches have been implemented in different forms over the past several decades. However, there has been an effort lately to draw spatially explicit lessons from the ICDPs and other similar experiences to synthesize them to provide guidance on how to implement activities successfully that achieve development and conservation benefits. These lessons about nature-human interaction, in space, are being formalized and labeled landscape approaches, to raise their visibility and help land managers and policy makers understand how to achieve multiple objectives. As a science agency, formalizing principles of landscape approaches allows us to formulate and test hypotheses to understand better what likely leads to successes and in what circumstances.

Several countries can be held up as success stories in reducing forest emissions using landscape approaches as part of the policy and measure mix.

**Brazil** is of course the international champion of emission reductions, having reduced emissions by 40% over the last decade. Deforestation in the Legal Amazon fell by 75% between 2004 and 2011 and has remained low. One analysis suggests that public policies and stagnating commodity prices (beef and soybean) both were about equally responsible for this reduction.

On the public policy side, Brazil achieved reduced forest emissions through governance reform:

1. The federal environment regulatory agency (IBAMA) improved monitoring and enforcement nationally.
2. Improved surveillance and enforcement was enabled when Brazil invested heavily in modernizing its satellite-based monitoring strategy in the early 2000s.
3. In Mato Grosso, the state government set up the Rural Property Environmental Licensing System to facilitate compliance with changes in the Forest Code,
4. Expansion of protected areas, indigenous reserves and sustainable use areas were also important and these areas now cover 46% of the territory of the humid forest biome of the Legal Amazon.
5. Industry moratoria on deforestation in the production of soy and cattle following international NGO pressure also contributed significantly to deforestation reductions.

The Forest Code was revised in 2012 and maintains previous requirements for areas where no deforestation can be undertaken, but it has greatly reduced the need for rehabilitation of illegally deforested areas. Regulations and the details of implementation mechanisms of the new forest code are still being negotiated, but the recent increase in deforestation in the Atlantic Forest, Cerrado and the Amazon is cause for concern.

**Costa Rica** had deforestation rates of 3-4% in the 1970s, and today it has almost no forest loss. Public policies and economic restructuring have been credited for this decrease. About 24% of the national territory is protected and the country has developed a vibrant ecotourism industry to support protection economically. Ecotourism revenues today exceed those of livestock exports during the rapid deforestation phase.

In Costa Rica, governance reform and enforcement measures were also part of the policy mix, though somewhat less prominently compared to Brazil.

I have been asked to keep my remarks to 5 minutes, but there are other cases that we could discuss – Mexico has had successes with expanding protected areas and improved enforcement, Indonesia is working through improved spatial planning and a concession moratorium to achieve emission reductions, Kenya has several community based initiatives near Tsavo and in W. Kenya – and we may have time in the discussion period to look at these. I want to make a few points in closing about these case studies which illustrate that policies to curb deforestation typically require cross-sector policy coordination involving multiple stakeholders and a blend of governance reform, improved enforcement and landscape approaches. But which enabling factors are key to replicating and scaling-up successful policies?

First, countries may learn from the Brazilian experience, where the capacity to properly monitor deforestation was a key factor in reducing deforestation.

Second, to achieve large-scale results, countries need **strong political commitment from the core of government and public support**. In both Costa Rica and Brazil, this provided the basis for developing and implementing comprehensive strategies across sectors and levels of government.

Third, protected areas generally have an important impact on conserving forests, but they can be even more effective if they are positioned near deforestation frontiers or areas liable to future threats.

Fourth, in Brazil, a sudden increase in enforcement of existing forestry laws triggered strong reactions from agricultural interests. To avoid a backlash, countries may want to combine enforcement with new legislation and institutions. Costa Rica's combination of incentives, disincentives and enabling measures is a noteworthy example of an easy-to-accept policy mix.

Fifth, well-defined land tenure can provide an incentive for better management practices and pave the way for economic incentives to achieve emissions reductions in the land use sector.

Finally, economy-wide policies can in some cases constitute underlying causes of deforestation. While some land clearing incentives, such as global commodity prices, are usually outside a particular government's control, others including taxes, subsidies, credit provision, and regulations, are not. Removing perverse national policy incentives may reduce both government budgets and forest pressures, resulting in a win-win situation.

It is noteworthy that changes in Brazilian and Costa Rican policies pre-dated the adoption of REDD+ policies under the UNFCCC. In Costa Rica, the main motivation was to support forest owners producing domestic environmental services (watershed protection and touristic landscape beauty). In Brazil, national and international public opinion exerted political pressure favoring protection of the Amazon, due to co-benefits linked to conservation. A focus on such benefits may thus also render climate change mitigation strategies more politically viable.

The lesson is that REDD and other emissions reductions programs can be achieved alongside other objectives and integrating landscapes approaches into national policies and measures can be instrumental in balancing multiple objectives and achieving effective outcomes.