

Policy Brief

Restoring Forest Landscapes A “Win-Win” for People, Nature and Climate



Coverphoto: Increasing human populations in many regions of the world require intensive soil conservation and vegetation management in order to maintain and restore ecosystem health and productivity (Example: Central Highlands in Vietnam. photo © Michael Kleine).

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Foreword

In the past 20 years, global environmental conventions have promoted conservation of the world's ecosystems. Although the extent of protected areas has significantly increased in all regions, the degradation of forest landscapes and other terrestrial ecosystems still continues at alarming rates. The negative consequences for people, the environment and climate are increasingly evident. In response, global environmental policy processes have increasingly called for more active interventions and investments beyond just nature conservation, by promoting sustainable land management systems including sustainable forest management and forest landscape restoration.

Actions to conserve, sustainably manage, and restore forests can contribute to economic growth, poverty alleviation, rule of law, food security, climate resilience, and biodiversity conservation. Forest landscape restoration plays a role in climate change mitigation and adaptation by increasing productivity of landscapes, enhancing the resilience of forest ecosystems, and reducing the vulnerability of forest-dependent communities.

Due to the fact that forest landscape restoration projects on the ground are complex, the multi-fold benefits, including those related to climate change mitigation and adaptation, are long-term and not always easy to understand. Therefore, IUFRO scientists undertook a review of the state-of-the-art scientific knowledge through analysis of literature and restoration case studies from various regions of the world and developed a framework to demonstrate how FLR can contribute to climate change mitigation and adaptation.

The present policy brief outlines eight key messages for policy makers synthesising the major lessons learnt from the study. Following the recently concluded "Paris

Agreement" of the United Nations Framework Convention on Climate Change (UNFCCC), the policy brief also highlights the increasing importance of forest landscape restoration for generating sustained public welfare and income in rural areas. It contributes to broadening the concept of REDD+ towards comprehensive ecosystem conservation, restoration and management.

The authors hope that this booklet will be useful for policy makers and will help them to shape an enabling policy framework and institutional environment that is conducive to the implementation of forest landscape restoration, so as to better enable people in the long-term to cope with the challenges of a changing climate.

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Introduction

Land degradation is a threat to global sustainability with an estimated 25% of the world's land area already degraded according to the FAO. The global forest area has been reduced by approximately 50% with concomitant levels of carbon loss and emissions into the atmosphere. Besides the direct effects on the hydrology and food, fibre, fuel and timber production, both land degradation and forest loss also have manifold impacts on climate with carbon emissions from changing land use impacting on the climate system in the same way as those from fossil fuel combustion.

The international community has responded to environmental degradation with several policy initiatives, such as for example the 2010 Strategic Plan of the United Nations Convention on Biological Diversity (CBD) and its Aichi Target 15 which specifically calls for countries to restore at least 15% of degraded lands by 2020. Similarly, the Bonn Challenge global policy initiative aims at restoring 150 million ha of forest landscapes and seeks to speed up the implementation of existing international commitments on forest restoration across the world.

The opportunity for restoring forests and trees in the landscape has been estimated at 2.2 billion ha of degraded land. Responding to this scale of restoration will be most effective if undertaken at the landscape level, which means integrating forests with other land uses.

As part of a collaborative project entitled “Inspire, Support, and Mobilize Forest and Landscape Restoration” between the World Resources Institute (WRI) and the International Union of Forest Research Organizations (IUFRO), forest scientists have developed a framework to demonstrate how forest landscape restoration (FLR) can contribute to climate change mitigation and adaptation, improve understanding of the relationship between them and the reciprocal ways

that mitigation and adaptation objectives can add value to FLR activities. The framework published in IUFRO World Series 34 titled “Forest Landscape Restoration as a Key Component of Climate Change Mitigation and Adaptation” also includes a communication tool to help decision-makers and FLR implementers to understand how climate objectives can be addressed through FLR and to design, build and evaluate resilient landscapes.

The key messages highlighted in this policy brief are intended to support more informed and inclusive decision-making on FLR and climate mitigation and adaptation.

Forest landscape restoration contributes significantly to mitigating climate change and helping ecosystems and societies adapt to climate change

Forest loss releases carbon dioxide into the atmosphere impacting on the climate system in the same way as fossil fuel emissions. Conversely, reversing the process of forest loss by conserving and sustainably managing forests and/or returning trees to the landscape leads to increased carbon absorption or sequestration. Several standard forest management and agroforestry practices that can be applied in the context of FLR contribute to this process include selecting more productive species or longer-lived species, increasing stem density, using nurse trees, improved planting material, or lengthening the rotation or cutting cycle in production forests. It is also important to consider the role of trees in climate mitigation beyond the forest sector; for example,

sustainably produced wood is one of the most climate friendly alternatives that can substitute several energy intensive materials such as steel, concrete, aluminium and plastic. Forest and grassland soils also hold carbon, and various management approaches such as introducing species with greater rooting depth, adding biochar, reducing losses by implementing conservation measures in management practices or by establishing windbreaks to counter wind erosion all contribute to mitigating climate change. By increasing productivity of landscapes, enhancing the resilience of forest ecosystems and landscapes, and reducing the vulnerability of forest-dependent communities, forest landscape restoration also contributes to social and ecosystem adaptation.

Photos: Restored forests and landscapes in Denmark with multiple objectives: timber production, landscape aesthetics, and nature conservation within a cultural landscape. Functions are separated at the management unit level but integrated at the landscape. One hundred years after the process was initiated, 2nd and 3rd generations of trees can be found across the landscape in various mixtures and structures (photos © Palle Madsen).



Enhanced locally-important ecosystem goods and services that flow from restored landscapes increase the economic and social adaptation capacity of local communities

Forest landscape restoration helps to restore ecosystem services such as water and soil protection and biodiversity as well as goods, such as nutritious foods, medicines and oils. It can also contribute to climate change adaptation by increasing productivity of landscapes, enhancing the resilience of forest ecosystems, and reducing the vulnerability of forest-dependent communities. For example, planting indigenous fruit trees can be a component of an FLR process, sequestering carbon and providing a source of vitamin-rich foods to rural communities, reducing their vulnerability to malnutrition and possibly increasing their income. Equally,

planting indigenous cork oak in the cultural landscape of the Mediterranean can provide many ecosystem services as well as an important source of income.



Left photo: Cork oak landscape in Sardinia, Italy (photo © Stephanie Mansourian). Right photo: Mixed landscape with tobacco plantations in Cuba (photo © PJ Stephenson).



Adaptation can be at different levels: incremental, anticipatory or transformational

Incremental adaptation is often characterized as a “no regrets” approach where the benefits are realized under current climatic conditions, as well as providing adaptation to future conditions. Such approaches involve extensions of current practices to respond to variations in climate and extreme events which could also reduce vulnerability or avoid loss under current conditions. Anticipatory approaches may use many of the same techniques as incremental approaches but with an eye toward adaptation to future climate thereby tolerating more ecological novelty. Restoration focused on resilient forests under future climate conditions aims to maintain ecological function and capac-

ity for change, rather than specific species composition or habitat conditions for particular animals. Transformational adaptation anticipates larger shifts in climate that may require significant changes to management objectives or production systems in the longer term. It may arise spontaneously as novel ecosystems emerge or it may be intentionally planned.

Left photo: Natural tropical forest management (Sabah, Malaysia) maintains species and structural diversity of forest stands thus reduces vulnerability to variations in climate and to extreme events (photo © Michael Kleine).

Right photo: Novel urban tree vegetation in Singapore serving densely populated areas through amelioration of the micro-climate and protection from extreme weather events (e.g. torrential rainfalls in tropical environments) (photo © Michael Kleine).

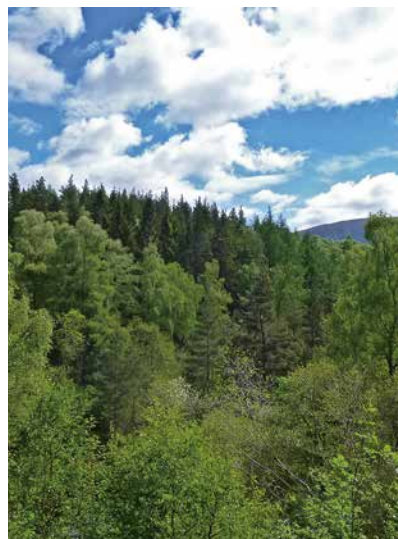
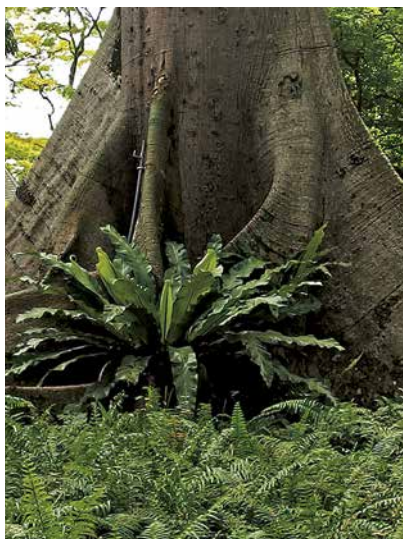


Forest landscape restoration can help to build synergies between globally important mitigation and locally important adaptation objectives

Explicitly focusing on linkages between mitigation and adaptation, and integrating them into FLR, provides opportunities to address climate change risks while at the same time, restoring sustainable flows of environmental goods and services from forests to support adaptation. Mitigation has been seen as primarily an international issue with the benefits accruing globally, over the long-term because of the nature of the climate system. Narrowly-focused mitigation actions potentially can increase the vulnerability of forests and forest-dependent communities but this can be avoided by incorporating adaptation practices into mitigation. For example, whereas restoring forest with a focus

exclusively on mitigation may tend to favour fast growing species, the inclusion of adaptation measures provides other benefits - such as wildlife corridors, water and soil conservation - without greatly reducing the amount of carbon storage (e.g., combining fast-growing nurse crops with slower growing but longer-living species). Adaptation focuses on the impacts of climate change and is local in nature, with short-term effects on vulnerability of natural and social systems. Optimizing mitigation and adaptation strategies must recognize diverse ecological conditions as well as challenging governance and complex socio-cultural contexts.

Left photo: a landscape in Singapore made up of diverse vegetation is more resilient to threats from changing environmental conditions such as climate (photo © Michael Kleine). Centre photo: intensively managed forest plantations; e.g. planted bamboo forests, are part of a productive landscape in Damyang, Republic of Korea (photo © Susanne Lucas). Right photo: whereas by 1500 forests had nearly all but disappeared in Scotland, today a concerted effort is being made by the Scottish Forestry Commission to encourage restoration of the country's diverse native forests home to much of Great Britain's biodiversity (photo © Stephanie Mansourian).



Forest landscape restoration contributes to several global environmental commitments

Forest landscape restoration contributes to all three Rio-Conventions: the UNFCCC, the CBD and the UN Convention to Combat Desertification (UNCCD). Since the 2007 UNFCCC Bali Conference, “Reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks” or “REDD+” has evolved as a tool for global climate change mitigation strategies in the land use sector. However, its expansion towards more inclusive and comprehensive forest landscape restoration has been recognised in the recently concluded Paris Agreement.

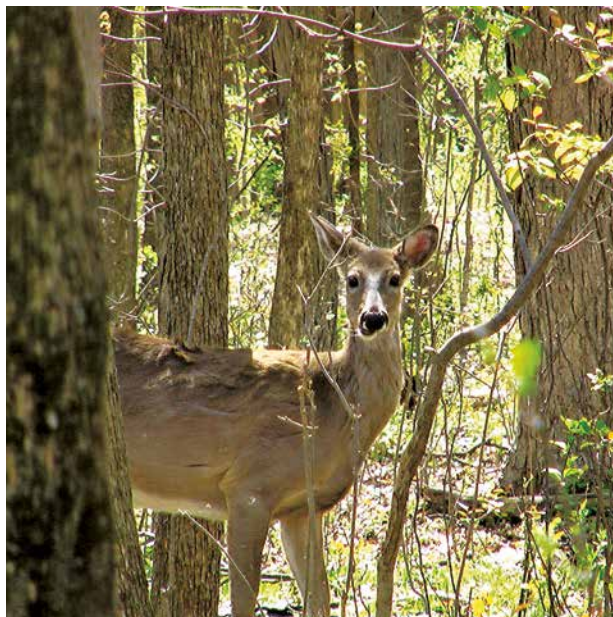
To this end, the Paris Agreement requires countries to take action to conserve and enhance sinks and reservoirs of greenhouse gases including forests. It places special emphasis on the implementation of REDD+ in line with earlier UNFCCC decisions with enhanced financial support of developed countries. Forest landscape restoration fits well with the concept of REDD+ and can provide the building blocks of national and sub-national REDD+ strategies. It can be integrated in REDD+ with suitable modifications wherever required while ensuring that the UNFCCC-mandated ecological, economic and social safeguards are strictly adhered to.

Under the CBD, contracting Parties commit specifically to “rehabilitate and restore degraded ecosystems, and promote the recovery of threatened species” (art. 8 (f)) and Aichi target 15 also specifically calls for the “restoration of at least 15 per cent of degraded ecosystems”. Forest landscape restoration provides an effective and comprehensive means of meeting these objectives

Similarly, the UNCCD promotes on the one hand the prevention of land and forest degradation through sustainable management practices and on the other, the restoration of

already degraded land and forests. Under the UNCCD, the Changwon Initiative aims to reach land degradation neutrality (LDN) by 2030. Achieving this will involve significant investments in restoration.

Photos from upper left to bottom right : Restoring and managing forests with site-adapted species that can accumulate carbon as well as produce large quantities of wood to substitute energy intensive materials and/or fossil fuels contributes to climate mitigation (photo © Palle Madsen). *Nepenthes* species mark highly bio-diverse forests with usually poor soil conditions – thus, these ecosystems require adequate protection for their survival (photo © Michael Kleine). Combating desertification in the West Pokot District, Kenya requires intensive site preparation and irrigation, in order to re-establish forests in dryland areas (photos © Oscar Eyog-Matig). Sustainable protection and restoration of habitat is a pre-condition for conserving a diverse array of wildlife species (photo © Al Seeger).



There is a two-way link between FLR and climate-related policy: FLR can support achievement of climate-related commitments, and climate policies, tools and funds can accelerate implementation of FLR

Forest landscape restoration provides opportunities for synergies at various levels: among the conventions, on forest-related work, on climate-related work and for Parties to optimise their work to meet commitments under several conventions. Different tools and methodologies being developed under multilateral environmental agreements provide useful support to those intending to implement FLR whilst at the same time FLR provides an important means for countries to fulfil their commitments under these conventions, notably UNFCCC, CBD and UNCCD. Funding being channelled towards activities under the conventions can also be an important resource for implementing

FLR and contributing to achieving the SDGs. Fostering closer collaboration between the conventions around FLR with the aim to promote climate mitigation and adaptation can offer an effective means of accelerating national policy alignment and action not only for restoration and climate action, but also for joint work under all three conventions.

Photos: Investing in the landscape in Offinso District, Ghana, to – inter alia – provide job opportunities and strengthen local socio-economic development (photos © Ernest Foli).



Several operational, policy and governance aspects need to be in place for a landscape to contribute to climate mitigation and adaptation

For many rural populations in developing countries forest landscape restoration is often as much a question of governance, equity, and rights as it is a technical question of planting trees. Institutions to guide and implement are often weak and their technical and operational capacities limited. A supportive policy environment is needed for long-term sustainability of FLR projects, for example to avoid situations where stakeholders cannot agree on the allocation or division of rights and benefits within a given landscape. Policies and strategies that promote successful FLR include a secure legal foundation, supportive national and sub-national policies, and effective enforcement of

the laws governing use of natural resources. Critical legal aspects that affect restoration as well as mitigation activities such as REDD+ include tenure and use rights, and participation by those affected (including Free Prior and Informed Consent). Unclear tenure is one of the stumbling blocks to lasting restoration but so are under-resourced government agencies, lack of sectoral integration and poor enforcement. Because FLR is a long term process, effective implementation will also require structural changes.

Left photo: Community consultations in Zambia constitute an integral component of a forest landscape restoration project (photo © John A. Stanturf).
Right photo: Equitable benefit sharing and community monitoring in Vietnam support effective law enforcement, which is particularly important in countries with limited institutional capacity (photo © Michael Kleine).



Potential benefits of restoration need to be identified and clearly communicated to decision-makers, local communities and society at large, so that concrete initiatives to transform landscapes can be implemented

IUFRO scientists designed a spotlight tool that can be used to answer the questions: (i) where are we in terms of the status of implementing an activity (current implementation level)? and/or (ii) where do we want to go with a certain FLR activity? The spotlight tool provides a framework to engage stakeholders for participatory planning and designing of FLR projects. Ultimately, the spotlight tool serves three purposes: 1. to inform decision-makers and other stakeholders of the role of FLR in climate change

mitigation/adaptation among other benefits; 2. participatory planning of FLR projects involving many different stakeholders; and 3. evaluating FLR projects against pre-defined criteria and implementation standards.

The tool can be seen as a necessary complement to the Rapid Restoration Diagnostic Tool developed by IUCN and WRI. It is intended to inspire and motivate potential actors to pursue FLR processes and activities.



The FLR spotlight tool to communicate and evaluate objectives, activities and outcomes of FLR initiatives (photo © IUFRO). The benefits of trees to society are well known since centuries (here in the Atlas Mountains, Morocco) – expanding the extent of tree cover more often than not requires adjustments in land management practices and local economies (photo © Alexander Buck).

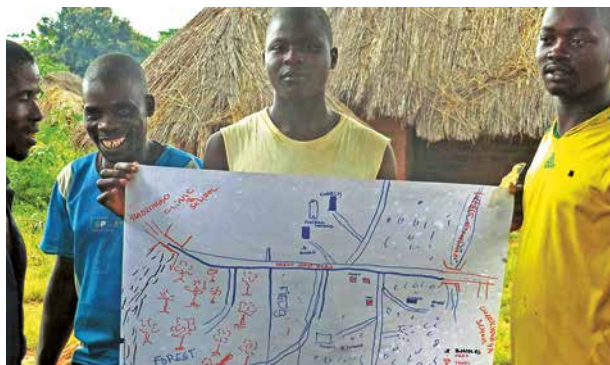


Concluding words

Successful implementation of FLR depends on many motivated actors at different levels. Achieving this requires a better understanding of the value of restoration by all stakeholders, as well as, in many cases, improved capacity. There is still a gap in this respect. Simple ways of visualising and understanding the various FLR aspects and their relevance to climate change objectives, as intended by the

“stoplight” tool, are useful to engage all stakeholders and to enhance understanding of the complex mix of factors for successful implementation of FLR.

Photos: Extensive consultations in Ghana (left photo © Ernest Foli) and participatory planning processes in Zambia (right photo © John A. Stanturf) involving all relevant stakeholders in a local context are pre-conditions for successful FLR implementation.



Acknowledgements

This policy brief is based on an ongoing synthesis initiative by a group of IUFRO scientists looking at forest landscape restoration as a means of generating benefits to society with a special focus on climate change mitigation and adaptation.

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