

Adapting forests and people to climate change

Conserving ecosystem services that reduce risk to the world's poorest

A framework proposal

The Center for International Forestry Research
February 2012



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CIFOR advances human wellbeing, environmental conservation and equity by conducting research to inform policies and practices that affect forests in developing countries. CIFOR is a CGIAR Consortium Research Center. CIFOR's headquarters are in Bogor, Indonesia and it also has offices in Asia, Africa and South America.

Contents

Executive Summary	iv
1 Background and rationale	1
2 Objectives	3
2.1 Specific objectives	3
3 Geographical target areas	4
3.1 Southeast Asia	4
3.2 Central America	5
3.3 West, East and Central Africa	5
4 Impacts	8
4.1 Impact pathway 1: Forest managers, project developers	8
4.2 Impact pathway 2: National policymakers	9
4.3 Impact pathway 3: Negotiators for multilateral environmental agreements	9
4.4 Impact pathway 4: Scientists	9
4.5 Impact pathway 5: International adaptation funding	9
4.6 Impact pathway 6: REDD+ funding and carbon markets	9
5 Project design and implementation	10
5.1 Project components	10
6 Why CIFOR?	15
6.1 Our team	15
6.2 Timeframe and management	16
7 Budget	18
Annex I. Impact pathways	19

Executive Summary

Climate change is expected to trigger more frequent and more fierce storms, floods, landslides, forest fires, temperature extremes and droughts, and developing countries will bear the brunt of these blows. These countries are home to poor populations who live and work in floodplains, mountainsides and deltas. When disaster strikes, they lose their homes, crops and livelihoods.

Most countries have adaptation plans to shore up the resilience of communities, but they fail to make forests part of the equation. Forests must be part of adaptation plans because they, too, are vulnerable, and they play a key role in reducing society's vulnerability to losses from climate change. More than a billion people depend on forests for some part of their livelihoods, and CIFOR research has revealed that households in and around forests derive an average of 24% of their income from forests.

Forests provide basic needs such as food and building materials, as well as spiritual nourishment through recreation and indigenous traditions. Forests also save lives by storing clean water, preventing landslides in the mountains, and protecting against storms on coasts. However, the levels of tropical deforestation and forest degradation is driving the loss of biological diversity and impairing ecosystem function. With growing populations' needs for food and income, poorly managed harvesting and gathering of timber and other products from forests can exacerbate the problem.

CIFOR has designed a five-year initiative of research and action to reduce climate change-related risks through improved forest management, and to exploit the synergies between forest-based adaptation and mitigation strategies. The initiative would link policy analysis, vulnerability assessment, adaptation planning, research support to local initiatives, and knowledge dissemination to contribute to the inclusion of forests in adaptation policies and plans.

Activities would focus on Southeast Asia, Central America, and Sub-Saharan Africa. Impacts would be achieved through influencing the decisions of forest managers, project developers, national policymakers, negotiators, scientists, and financiers.

Healthy, diverse forests and adaptive institutions to manage them can ensure that landscapes and the people who depend on them for their livelihoods are more fit to survive fluctuations in rainfall and temperatures and to evolve and thrive in a new climate.



1 Background and rationale

The Earth has warmed by 0.7°C over the past century, brewing a more turbulent blend of storms, floods, landslides, temperature extremes and droughts¹, and developing countries – from drought-stricken East Africa to tropical storm-plagued Asia Pacific – are bearing the brunt of the misfortune. In 2011, natural disasters caused a record US\$380 billion in economic losses. The most expensive devastation was from the earthquakes in Japan and New Zealand, but much of the ruin was from Africa’s drought, and floods in Thailand, Cambodia, Namibia and Brazil. With weak institutions and economic conditions, developing countries are home to the most vulnerable populations, who often live and work in impoverished and high-risk areas such as floodplains, mountainsides and deltas. When disaster strikes, they lose their homes, crops and livelihoods. They become malnourished and sick, with women, children and the disabled often the first to succumb.

One of the greatest challenges of this generation is to shore up the resilience of communities, ecosystems and sensitive sectors – namely water, agriculture and energy – to anticipate and weather these climate change-triggered blows, adapt to the new conditions, and thrive.

The Center for International Forestry Research (CIFOR) is developing adaptation solutions based on the intricate link between human and forest survival. Most countries already have adaptation plans and projects, but they fail to take forests into consideration. In a world where more than a billion people depend on forests for some portion of their livelihoods, this oversight is a grave mistake. Forests are critical to climate change adaptation policies and projects for two reasons: first, because they, too, are vulnerable, and second, because they play a key role in reducing society’s vulnerability to losses from climate change.

Our twin goals are to ensure that forestry policy and practice protect forest-dependent livelihoods from the adversities of climate change, and to ensure that adaptation strategies incorporate improved forest management so as to harness forest-based ecosystem services to enhance the resilience of other economically important sectors.

¹ IPCC. 2007. *Climate change 2007. Impacts, adaptation and vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. M.L. Parry et al. (eds.). Cambridge University Press, Cambridge, UK

Forests provide basic needs such as food, firewood and building materials, as well as spiritual nourishment for humanity through tourism and recreation, education and indigenous traditions². Forests also save lives by storing clean water, preventing erosion and landslides in the mountains, and protecting against storms and waves on coasts. However, the levels of deforestation and forest degradation across most tropical countries is driving the loss of biological diversity and impairing ecosystem function. With growing populations' needs for food and income, poorly managed harvesting and gathering of timber and other products from forests can exacerbate the problem.

The concept of managing forests so that they can continue to provide services – for which the term “ecosystem-based adaptation” has been coined – remains relatively new, and while it has the potential to strengthen adaptation strategies, more research is needed to understand when, where and for what problems such an approach would be most effective and efficient. Healthy, diverse forests ensure that landscapes and the people who depend on them for their livelihoods are more fit to survive fluctuations in rainfall and temperatures and to evolve and thrive in a new climate.

2 Millennium Ecosystem Assessment 2003. *People and ecosystems: a framework for assessment and action*. Island Press, Washington, DC

2 Objectives

CIFOR aims to contribute to the appropriate inclusion of forests in local, national and international plans and policies for climate change adaptation in developing countries. Our research emphasizes sustainable use and management of the forest as a means of reducing disaster and climate change-related risks, alleviating poverty and improving human well-being. It also recognizes and makes the most of any benefits from linking adaptation strategies with climate change mitigation.

2.1 Specific objectives

1. Policy analysis: To analyze national and international policies on climate change adaptation and forests, and the roles and interests of various stakeholders at the national level;
2. Vulnerability assessment: To assess the current and future vulnerability of communities in selected sites, with a focus on the links between forests and the reduction of social vulnerability;
3. Adaptation planning: To assess ecosystem-based approaches to adaptation and the synergies between adaptation and mitigation in local initiatives and national policies;
4. Action and support: To support, with scientific research, the implementation of local initiatives and the development of policies for climate change adaptation, recognizing the benefits of linking adaptation and mitigation; and
5. Communications: To disseminate knowledge, build capacity and strengthen networks of the stakeholders involved in climate change adaptation and forest management.

3 Geographical target areas

The project will be conducted in Southeast Asia, Central America and West, East and Central Africa.

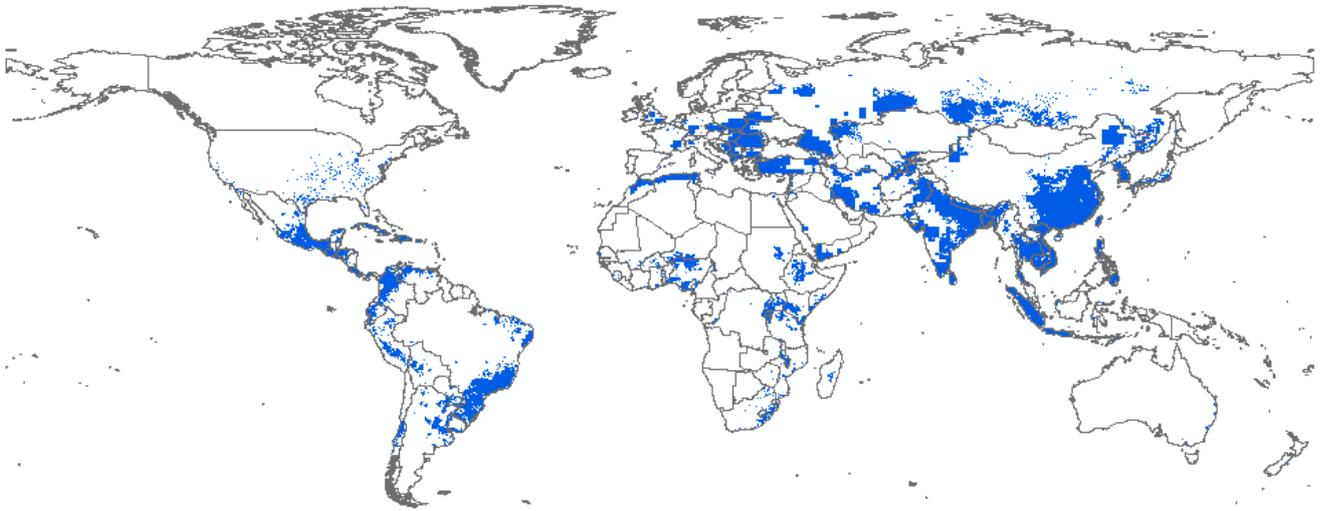


Figure 1. Areas most affected by flooding, in terms of mortality or economic losses³

3.1 Southeast Asia

Southeast Asia has suffered immensely from climate change-related disasters (Figure 1), with developing countries’ small islands and low-lying coastal areas – where population density is high and capacity to adapt is low – being particularly susceptible to storms, waves and rising sea levels.

In Indonesia, half of the population lives along the coast, and in the Philippines, that figure rises to 60% of the population. The impacts of climate change on coasts are exacerbated by manmade pressures, such as the degradation of wetlands and coral reefs. According to the Intergovernmental Panel on Climate Change, land use changes in catchments are also increasing social vulnerability in coastal areas.

Our research in Southeast Asia will focus on the vulnerability of coastal areas and the role of ecosystem services in adaptation and disaster risk reduction.

Target countries: Indonesia and the Philippines.

³ *Natural Disaster Hotspots - A Global Risk Analysis* (raster data set downloaded from: <http://www.ideo.columbia.edu/chrr/research/hotspots/coredata.html>)

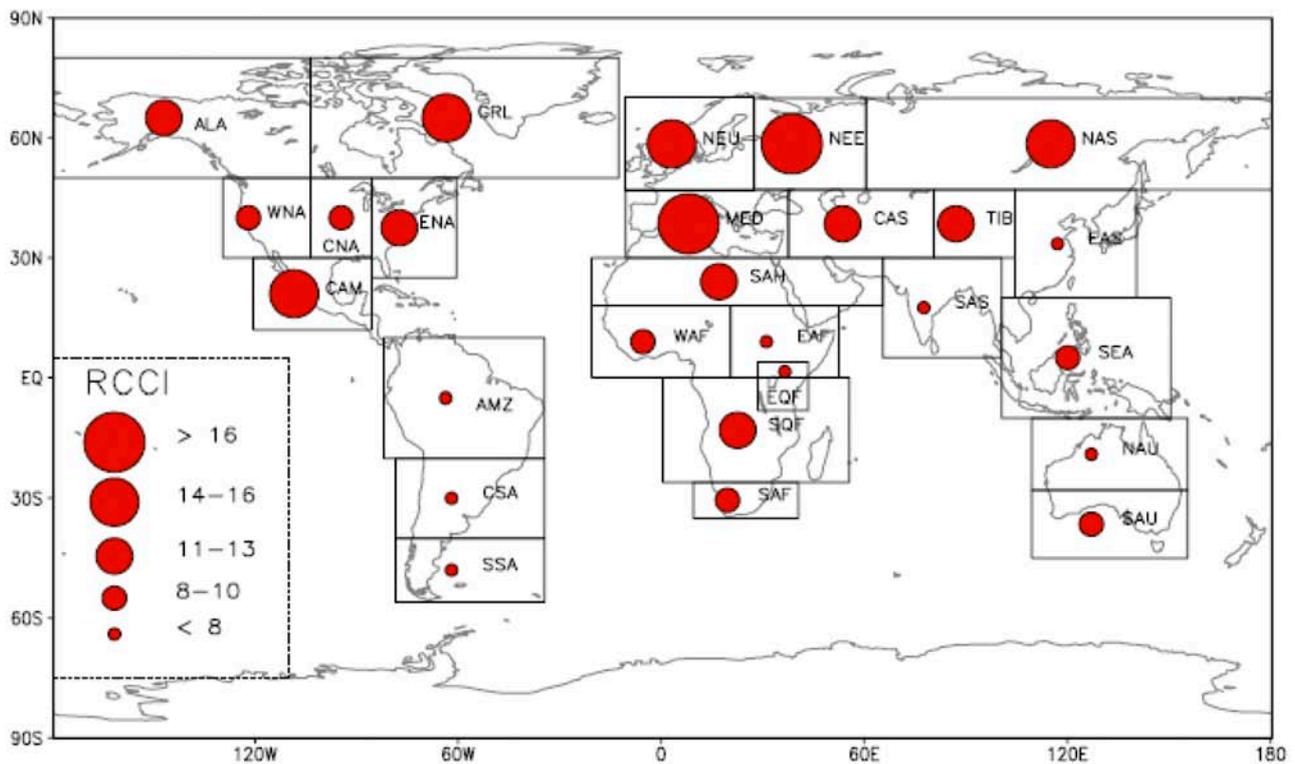


Figure 2. Regional Climate Change Index (RCCI) over land regions of the World calculated from 20 climate models and 3 emission scenarios⁴

3.2 Central America

The forecast for Central America – a hotspot for tropical climate change – is a combination of less and more unpredictable rainfall (Figure 2). Most economic sectors in the region – agriculture, energy and infrastructure – are highly sensitive to water supply problems. Research here will home in on the vulnerability of communities to water issues and the role of watershed ecosystem services in adaptation. The vulnerability of forests to climate change and adaptation measures for forests will also be a research priority for this region. Many Central American countries have implemented policies and innovative mechanisms for environmental conservation, such as payments for environmental services. Governments, regional bodies (such as the Central American Commission for Environment and Development, CCAD) and civil society organizations have shown great interest in including adaptation in their conservation agendas.

Target countries: Costa Rica, Honduras and Nicaragua.

3.3 West, East and Central Africa

Africa has long suffered and learned coping strategies to deal with compounded hardships – poverty, political instability and climate change crises such as drought (Figures 3 and 4). Many of those strategies are based on ecosystems – for example, CIFOR scientists in Malawi found that forests are important for “reactive coping,”⁵ providing non-timber edible products for poor households and livestock when crops fail and pastures are parched. They also bolster incomes through non-timber forest products, such as charcoal production.

⁴ Giorgi, F., 2006. Climate change hot-spots. *Geophysical Research Letters* 33(8), L08707

⁵ Fisher M., Chaudhury M., McCusker B., 2010. Do Forests Help Rural Households Adapt to Climate Variability? Evidence from Southern Malawi. *World Development* 38(9): 1241–1250

However, the use of forests as a safety net has put growing pressure on forests during dry years⁶, according to a CIFOR study from Mali, pointing to a growing need for improved forest governance to harness the potential of forests for adaptation.

Central Africa is a key region for climate change mitigation opportunities (Figure 5). Furthermore, high levels of poverty and a medium level of vulnerability to climate change justify action on adaptation (Figure 3). For this reason, our research here will focus on the synergies between adaptation and mitigation.

Target countries: Mali and Burkina Faso in West Africa; Uganda and Tanzania in East Africa; and Cameroon, Central African Republic, Democratic Republic of Congo, Congo, and Gabon in Central Africa.

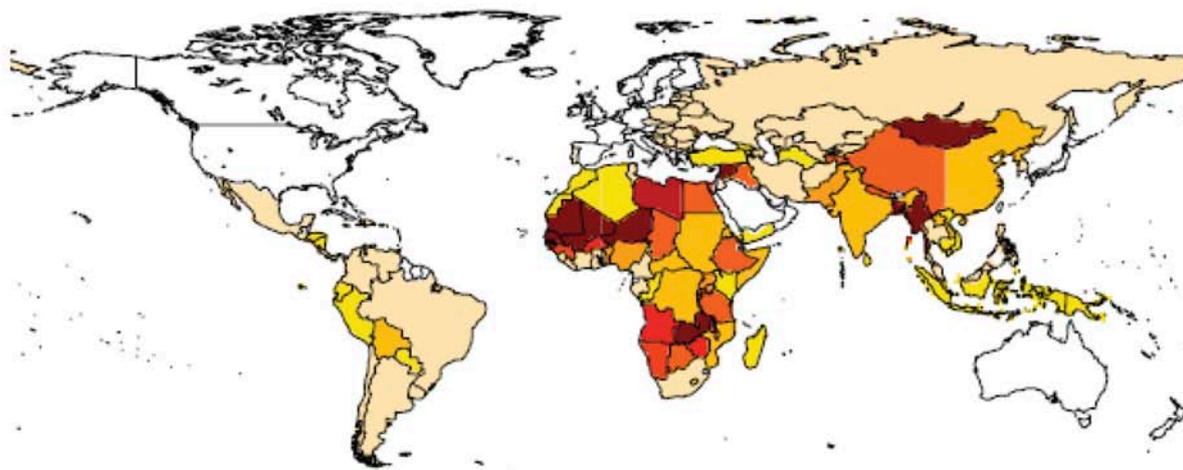


Figure 3. National climate poverty density index⁷

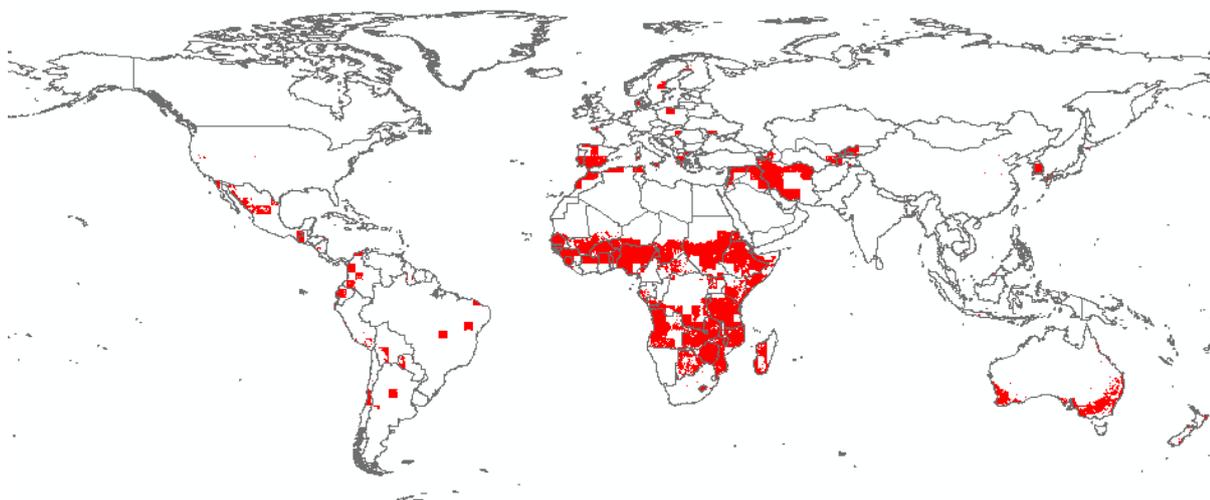


Figure 4. Areas most affected by drought, in terms of mortality or economic losses⁸

6 Djoudi H., Brockhaus M., Locatelli B., forthcoming. Vulnerability to climate variability and change among communities depending on livestock and forest in Northern Mali: a multi-level analysis. Submitted to: *Regional Environmental Change*

7 The climate poverty density index aggregates the national climate change index with the percentage of each nation's population living on less than two international dollars per day (from Diffenbaugh, N.S. et al. 2007. Indicators of 21st century socioclimatic exposure. *Proceedings of the National Academy of Sciences USA* 104(51): 20195–20198)

8 *Natural Disaster Hotspots - A Global Risk Analysis* (raster data set downloaded from: <http://www.ideo.columbia.edu/chrr/research/hotspots/coredata.html>)

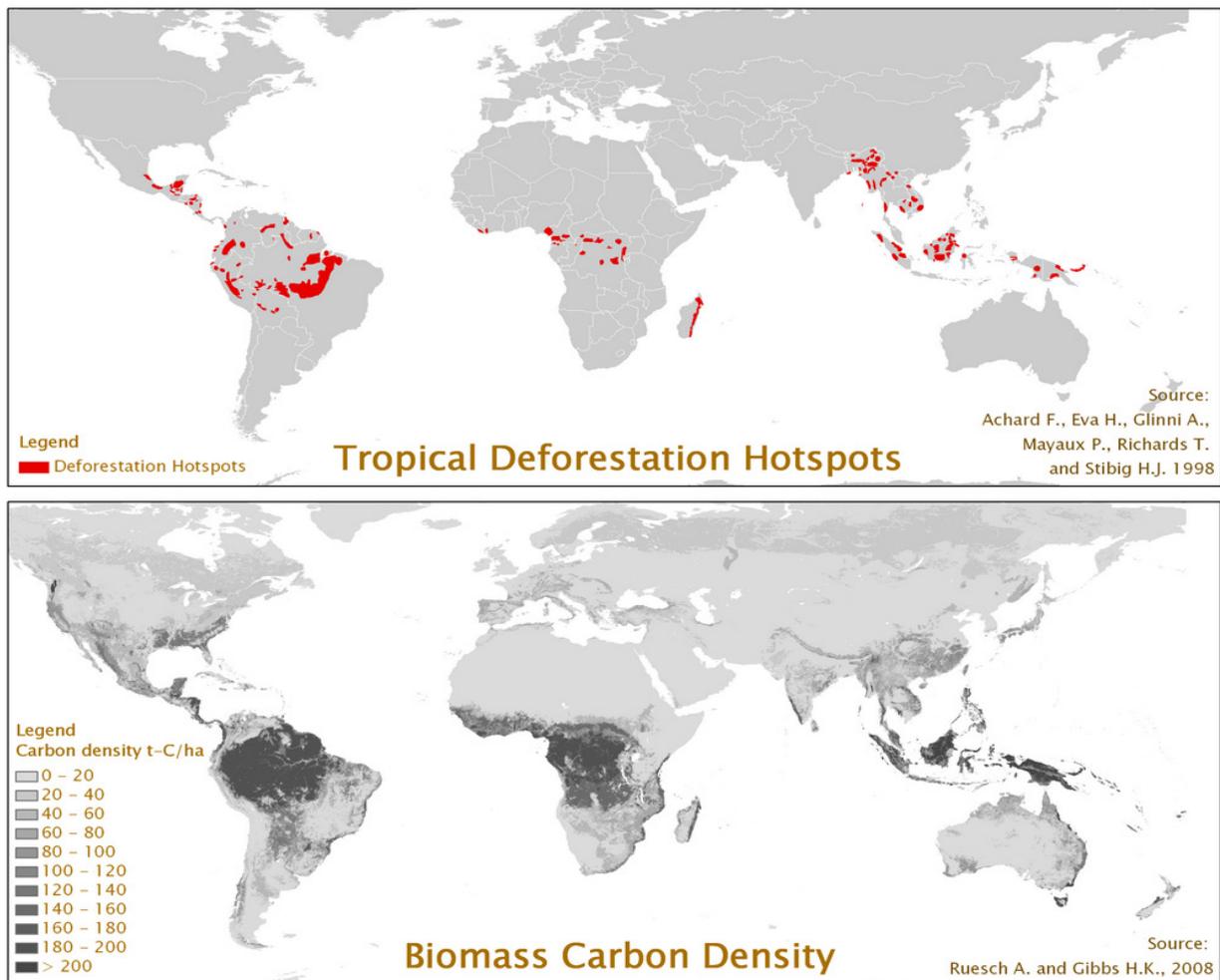


Figure 5. Mitigation opportunities (tropical deforestation hotspots⁹ and carbon density¹⁰)

9 Achard, F., Eva, H., Glinni, A., Mayaux, P., Richards, T., Stibig, H.J., 1998. *Identification of deforestation hot spot areas in the humid tropics*. TREES publications series B, n°4, European Commission, Luxembourg

10 Ruesch, A., Gibbs, H.K., 2008. *New IPCC Tier-1 global biomass carbon map for the year 2000*. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, Oak Ridge, TN



4 Impacts

As climate change triggers ever more storms, disasters and crises around the world, it is urgent that scientists find solutions that can guide and influence decision makers and societies toward sustainable, resilient development.

CIFOR aims to delve into these issues, and generate relevant scientific knowledge that we will share with a broad array of partners – public, private, nongovernmental and academic – working with forests and climate change, as well as new institutions charged with improving governance and investment in the forest and related sectors. Our research intends to affect global and national policies and practices on the ground to benefit forests and the people living with them (Annex I).

It will contribute to reducing deforestation and forest degradation, improving livelihood benefits from forests, and increasing the resilience of society and ecosystems to climate change. The livelihoods of poor, rural forest-dependent communities will become improved and resilient. Countries will benefit from ecosystem services and improved governance. And people and forests around the world will be more resilient, increasing global security.

Every year, countries around the world are being hit by a growing number of disasters of previously unimaginable proportions. Nations and governments are now looking for solutions and ways to save lives. Our research team will work with key stakeholders to move toward achieving these goals.

4.1 Impact pathway 1: Forest managers, project developers

Our research results are intended for stakeholders from public, private, non-governmental and community-based agencies that manage forests or develop adaptation or mitigation projects. Our work will help them design effective, efficient and equitable ecosystem-based adaptation projects.

4.2 Impact pathway 2: National policymakers

Government ministries and agencies – particularly those involved in forests, climate change mitigation and adaptation, and governance – can use our research to shape their decisions. Our research will support and inform policymakers to formulate, implement and evaluate mitigation and adaptation policies.

4.3 Impact pathway 3: Negotiators for multilateral environmental agreements

Negotiators and policymakers involved in forest- and climate change-related multilateral environmental agreements need the right information on how to include ecosystem-based adaptation. A policy–science dialogue will enable our team to anticipate the challenges of forthcoming negotiations and provide policymakers with helpful and timely information.

4.4 Impact pathway 4: Scientists

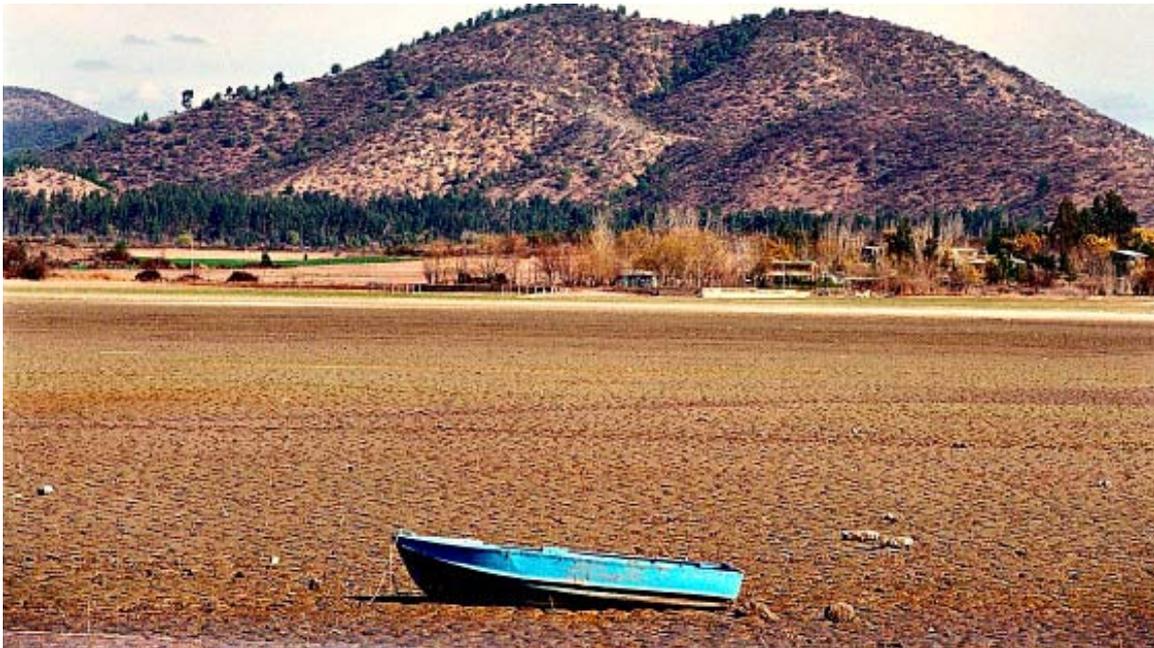
Our research is useful for scientists and international panels – such as the Intergovernmental Panel on Climate Change (IPCC) and the future Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) – that consolidate or synthesize findings for regional and global reports.

4.5 Impact pathway 5: International adaptation funding

Foundations, donors, and development banks that support adaptation will use our work to inform their decisions on funding for adaptation projects in the forestry sector, and ecosystem-based adaptation projects that benefit communities, countries and the local and global environments.

4.6 Impact pathway 6: REDD+ funding and carbon markets

Our research can inform managers of funds supporting REDD+, carbon, forestry and agriculture; those who regulate and develop international standards for carbon markets and projects; and private sector buyers of carbon credits. Our research will help them understand the challenges of adaptation and will facilitate the implementation of adaptation-mitigation projects.



5 Project design and implementation

This project is multi-disciplinary, analyzing interactions between social systems and ecosystems through the lenses of natural, social and political sciences. The multi-disciplinary approach will allow for a holistic analysis of livelihood activities (forestry, agriculture, livestock and fisheries) and ecosystems (forests, mangroves and agroforestry systems). Cross-sectoral linkages are crucial because ecosystem-based adaptation will require integrating various sectors, for example those that manage ecosystems and those that benefit from ecosystem services. Where relevant (for example in coastal areas), disaster risk reduction and adaptation policies will be interlinked, a pairing up that is mutually beneficial but that has rarely been done thus far.

5.1 Project components

The above objectives correspond to five project components (PC), as shown in Figure 6. Scientific activities are included in PC1, PC2, and PC3. Under PC4, the project will support selected adaptation initiatives at the local level and policy processes at the national level. We will conduct capacity building and communications under PC5. After posting a call for initiatives, we will select development or conservation projects that include adaptation activities and contribute to the synergies between adaptation and mitigation. We will provide the selected initiatives with technical, scientific and financial support.

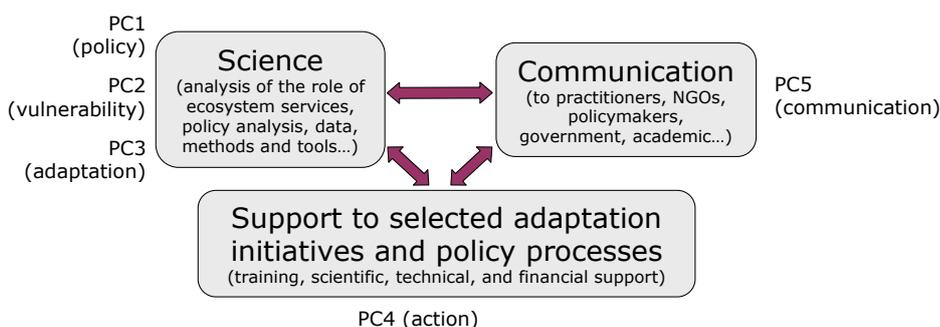


Figure 6. Project components

The PCs have been designed to ensure we achieve the expected overall objectives and impacts. For instance, the policy analysis component (PC1) will identify the specific needs of key stakeholders and policy processes and these will inform the other PCs. The results of the first three project components will be transferred to stakeholders through PC4 and to a larger audience through PC5. Capacity building and communication (PC5) are crucial in this project and will involve a large range of stakeholders.

The project will encompass a sequence of activities from policy analysis to vulnerability assessment and adaptation planning (Figure 7). First, policy analyses will identify key policy processes and stakeholders at the national and sub-national level (PC1). Then we will assess the vulnerabilities of people and ecosystems to climate change in selected sites (PC2), with a focus on the links between social and ecological systems. This will be followed by adaptation planning at the local level (PC3), and the development of strategic adaptation plans and policy recommendations. These strategic plans will include vulnerability monitoring and mid-course adjustment (PC4).

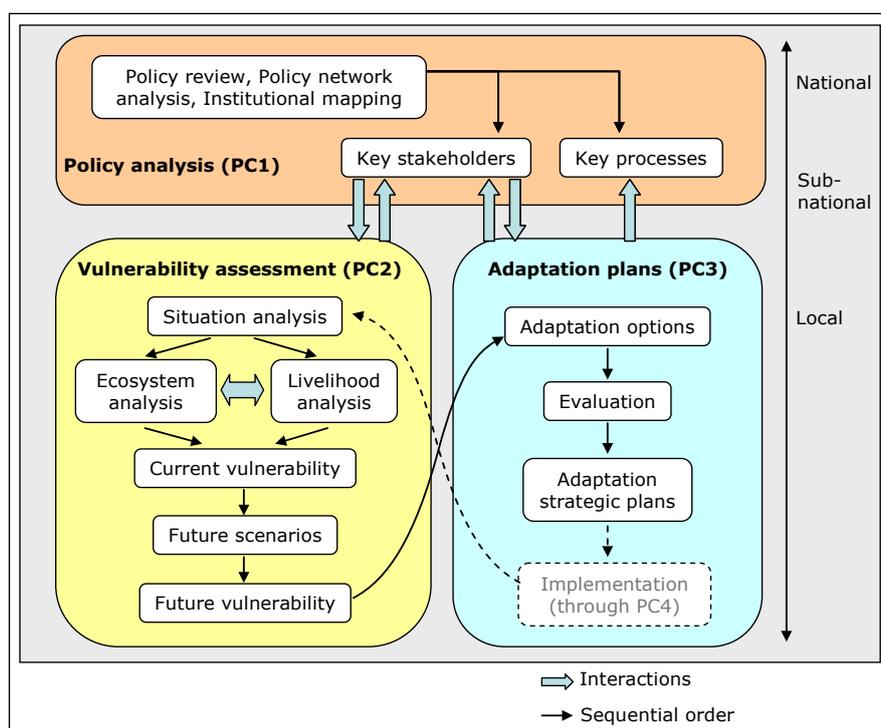


Figure 7. Relationships between activities in PC1, 2 and 3

The project approach is participatory and oriented to the needs of local and national stakeholders. The early identification of key policy processes and stakeholders, and analysis of stakeholder needs will facilitate a policy-science dialogue and ensure that the project outputs are relevant to the stakeholders.

Each part of the project will also give special attention to women, who suffer disproportionately from climate change, and have an important role to play in adaptation. Despite a wealth of studies demonstrating women’s crucial role in managing forests and community or household resources, their contributions remain undervalued and underappreciated. From women’s participation and representation, to gender inequalities and vulnerabilities, we will analyze their role and include them in the strategies, policies and initiatives.

Below are details of the research activities and the questions to be addressed.

PC1. Policy analysis

Broad research questions	Methods	Examples of outputs
How can international and national policies and funding mechanisms facilitate the design and implementation of adaptation initiatives that reduce the vulnerability of people and ecosystems?	Stakeholder analysis Discourse analysis Network analysis Institutional mapping	Analysis of the effects of international decisions on adaptation and funding modalities and their effectiveness, equity and efficiency; Comparative analysis of the effects of national policies and processes (e.g., decentralization, tenure reform, agricultural policies, energy policies, trade and investment) on the vulnerability of people and ecosystems to climate change.
What governance mechanisms are most effective in enhancing the adaptive capacity of socio-ecological systems?		Guidelines for improving national policies to strengthen local adaptive capacity in different contexts; Guidelines on incorporating adaptation into forest policies and forests into adaptation policies.
What are the opportunities and modalities for linking mitigation and adaptation in international and national policies?		Assessment of the political economy of mitigation and adaptation trade-offs; Recommendations of institutional and financial mechanisms for fostering the synergies between mitigation and adaptation (e.g., through pro-poor payments for multiple ecosystem services).

PC2. Vulnerability assessment

Broad research questions	Methods	Examples of outputs
What is the vulnerability of forest-dependent people to climate change in relation to other drivers of change?	Livelihoods analysis; Participatory methods (such as historical timelines) and life stories, participatory diagnosis ¹¹ , other tools and methods proposed by the Adaptation Policy Framework developed by UNDP.	Comparative assessment of past and current local adaptive strategies and coping responses of local communities to climate variability and change, in interaction with other socioeconomic and political drivers of vulnerability; Comparative analysis of how local and national institutions affect the adaptive capacity of local communities.
What is the role of ecosystem services in reducing social vulnerability?	Analysis of livelihoods, life stories and coping strategies during shocks; Participatory mapping and ecological field surveys for assessing ecosystem services; Tools for modeling the interactions between ecosystems and socio-economic systems (causal models and Bayesian belief networks).	Comparative analysis of the role of ecosystems in reducing the vulnerability of local communities and the broader society to climate change; Best practices for studying the coupled dynamics of social and ecological systems and integrating knowledge from different disciplines and stakeholders (e.g., knowledge-based modeling, linking advanced simulation models with cognitive maps, agent-based modeling).
How will climate change affect forests, the biodiversity they contain and the ecosystem services they provide?	Modeling with climate scenarios and ecosystem models (e.g. SVAT models: Soil Vegetation Atmosphere Transfers), and data mining.	Assessments of climate change impacts on ecosystems (e.g., increases in forest fires and storms, shifts in pests and diseases, changes in ecosystem composition); Assessment of the resilience of forest ecosystems to climate change, taking into account the combined effect of other threats (e.g., over-harvesting, landscape fragmentation, exotic species, pathogens).

11 Mills et al., 2009 Vulnerability in African small-scale fishing communities. *Journal of International Development* 26: 1-6

PC3. Adaptation planning

Broad research questions	Methods	Examples of outputs
<p>What institutional and technical measures (e.g., institutional reforms, technical measures and ecosystem management) can be designed for reducing social vulnerability?</p>	<p>Scenario development using a participatory backcasting approach,¹² whereby stakeholders identify what steps are necessary to avoid undesirable futures or to enable desirable ones;</p> <p>Analysis of scenarios in terms of their effectiveness (e.g., for vulnerability reduction, achievement of human well-being and poverty alleviation), efficiency, equity, sustainability and co-benefits (including carbon sequestration, as these co-benefits may represent an opportunity for funding ecosystem-based measures);</p> <p>Analysis of trade-offs;</p> <p>Multi-criteria analysis of adaptation options;</p> <p>Cost-benefit assessment of adaptation options.</p>	<p>Analysis of the trade-offs between different adaptation options (ecosystem-based and other measures) and between different land uses for social adaptation</p> <p>Recommendations on how to design societal adaptation with ecosystem-based measures and other measures</p> <p>Assessment of the current and future costs and benefits of different adaptation options.</p>
<p>What measures can be designed for reducing ecosystem vulnerability?</p>	<p>Biophysical modeling;</p> <p>Cross-scale and participatory assessment of the feasibility of the proposed measures.</p>	<p>Decision support tools for managing ecosystem services in ecosystem-based adaptation;</p> <p>Guidelines for identifying and implementing adaptation options for forests, including landscape-scale measures (e.g., biological corridors) or forest management measures (e.g., improved planting or harvesting techniques);</p> <p>Methods for assessing the effectiveness of adaptation measures for ecosystems (e.g., assessing the effect of biological corridors to facilitate species migration).</p>
<p>How can the synergies between mitigation and adaptation in sub-national initiatives be increased?</p>	<p>Best practices (e.g., combining agent-based modeling and participatory assessment) to define and analyze future scenarios and pathways for mitigation and adaptation under different climate, policy and socioeconomic conditions and identify the measures necessary to avoid undesirable outcomes or enable desirable ones.</p>	<p>Recommendations on how to include adaptation in REDD+ initiatives for increasing social and ecological resilience;</p> <p>Guidelines for assessing the contribution of ecosystem-based adaptation measures to mitigation and facilitating access of ecosystem-based adaptation projects to funding for mitigation;</p> <p>Global synthesis of findings on the trade-offs and synergies between mitigation and adaptation in forest-related sub-national and local initiatives;</p> <p>Guidelines to improve the design of mitigation and adaptation initiatives, in terms of institutions (e.g., funding and local governance arrangements) and techniques.</p>

PC4. Action and support

The project will identify local partners (such as development NGOs with field experience) that have ongoing programs and the interest and capacity to develop adaptation activities with technical and financial support from our team. This partnership will enable us to have an impact in the field and facilitate access to research sites. It will also boost partners' technical and scientific skills, and provide them and their project with financial support from adaptation or mitigation funding.

¹² Carlsson-Kanyama A., et al., 2008. Participative backcasting: a tool for involving stakeholders in local sustainability planning. *Futures* 40: 34-46

Climate change adaptation policies and initiatives are relatively new and evolving rapidly, so capacity building is built into our project.

At the local level, building the capacity of stakeholders managing forests or designing and implementing development and climate change projects will facilitate the development of adaptation initiatives. These include people from the public and private sectors, civil society organizations, and communities. At the national level, we will provide support and train policymakers involved in forests and climate change, as well as negotiators of multilateral environmental agreements.

In many developing countries, scientists face barriers – such as a lack of access to climate data – to effectively managing and using relevant information, methods and data on climate change. We will organize workshops in the field about ecosystem services, climate change, adaptation and disaster risk reduction. Practitioners, academics and graduate students will learn methods and tools to carry out vulnerability assessments and adaptation planning.

PC5. Communications

Effective and targeted communications are key to the success of the project. Accordingly, a significant proportion of the budget has been allocated to this task. We will disseminate knowledge and results, and build networks of stakeholders to ensure the visibility of the project as a means to amplify its impact. The project will develop a dynamic and interactive multilingual Internet platform on ecosystem-based adaptation, linked to the sites of other organizations working on adaptation issues in order to enable the site to be updated rapidly, interactively, and dynamically as knowledge evolves. The platform will utilize Listserv, blogs and Wiki tools. All project participants – including trainees – will be involved in developing the platform. Forums will be established to enable cross-country interactions and exchanges of experience, and will be open to interested people beyond the target countries for the project.

We aim to share information about the project and the issues of adaptation, ecosystem services and human well-being. An audience analysis will be conducted at the beginning of the project with support from local and international partners. Information packages in a variety of formats and tailored to target audiences will include policy briefs, information briefs, scientific publications, displays and side events at international scientific events, adaptation ‘stories’, video, radio, and web reports.

Recognizing the central role that mass media plays in setting the policy agenda, reporting progress and holding policy makers to account, we will work directly with the media in target countries and more widely. We will invite journalists to learn about and report key issues through workshops with technical experts and media field trips. A media tool kit on adaptation to climate change will be developed, and will include print, photo, video and audio resources. We will seek partnerships with major media for development organizations (such as Panos, Television Trust for the Environment, BBC World Service Trust, and the EC Futuris TV magazine) to explore opportunities for using mainstream broadcasting networks to disseminate project results and messages.

We will also organize workshops and information campaigns with local schools, assemblies and civil society organizations using appropriate media, such as games, drama and posters. The information campaigns will be participatory: local people will be taught how to create their own information strategies and tools, enabling them to become agents of change in their community.



6 Why CIFOR?

6.1 Our team

CIFOR will coordinate a group of research organizations, which will offer the following advantages:

- Track record: CIFOR is known for credible, high-quality analysis, independent thinking, tackling difficult and controversial issues, and an ability to reach and convene diverse actors and stakeholders.
- Quality of staff: CIFOR's team is diverse, with broad experience in policy development, sociology, ecology, economics, and interdisciplinary work that combines these fields of expertise.
- Partnerships: CIFOR has access to the skills and networks of a wide range of partners operating at local, national, regional and global levels.
- Global mandate, local relevance: CIFOR addresses global issues and engages in international and national forums to illuminate broader issues in specific locations.
- Distinctive perspective: CIFOR has an interdisciplinary, global perspective informed by multiple stakeholders and a commitment to examining and understanding issues from the perspective of poor people and natural resource users in the tropics.
- Participation in official international processes related to climate change: CIFOR is accredited by the United Nations Framework Convention on Climate Change (UNFCCC) as an intergovernmental observer organization. CIFOR has taken a leadership role in organizing Forest Day each year at the UNFCCC Conference of Parties since 2007.

This project comes under the umbrella of Consortium Research Programme 6 (CRP6) on *Forests, Trees and Agroforestry: Livelihoods, Landscapes and Governance*. CRP6 is implemented for the Consultative Group on International Agricultural Research (CGIAR) by CIFOR, the World Agroforestry Centre (ICRAF), International Center for Tropical Agriculture (CIAT) and Bioversity International. Its component on climate change includes mitigation and adaptation, and the links between the two. This project will involve CRP6 partners for advocacy, practical management, capacity building for communities and policymakers, and public and media outreach (Table 2).

Table 2. Partners

Approaches to impacts ^a	Role of CIFOR	Role of Partners ^b	Examples of CRP6 partners
Applied research and knowledge generation (e.g., data, tools and methods that create the case for intervention and underpin policy development)	***	***	ICRAF (World Agroforestry Center), CIAT (International Center for Tropical Agriculture), Bioversity International, CIRAD (Coopération Internationale en Recherche Agronomique pour le Développement, France), CATIE (Centro Agronomico Tropical de Investigacion y Enseñanza, Costa Rica), SEI (Stockholm Environmental Institute, UK), University of East Anglia (UK), WorldFish (Malaysia)
Advocacy (making the case for intervention/change directly to decision-makers)	*	***	WWF, Conservation International (CI)
Practical management (e.g., designing, validating, financing and managing mitigation and adaptation projects, demonstrating new models, and developing new methodologies).		***	WWF, CI, CCBA (Climate Community Biodiversity Alliance), local NGOs, selected initiatives
Community capacity building (e.g., supporting and mobilizing forest communities through the dissemination of information, creation of platform for exchanges between communities and scientists or policymakers).	*	***	Oxfam, RECOFTC, local NGOs
Policymaker capacity building (e.g., through side events, policy briefs, capacity-building toolkits and events, direct contributions to specific policy formulation)	**	**	Central African Forest Commission (COMIFAC), UNFCCC Nairobi Work Programme (NPC), World Bank
Public/media outreach (e.g., using media to raise awareness and recruit public support).	**	**	BBC World Service Trust, Panos, national media

^a Typology adapted from Williams, H. and Cracknell, J. 2010. Saving the rainforests: civil society mapping. A project for the UK environmental funders network. JMG Foundation, Environmental Funders Network, UK.

^b Level of engagement: * indicates low level of engagement, ** medium, *** high.

6.2 Timeframe and management

Project duration. This proposal is for a long-term research project, in line with the strategy of CRP6. Activities are expected to be implemented in each region over a 5-year timeframe.

Project monitoring and evaluation. The activities and the results will be monitored by CIFOR, with support by the partners involved in site-specific activities.

Impact monitoring and evaluation. The project will begin by drawing up a plan for monitoring and evaluating impacts. The plan will include “Outcome Mapping” and “Most Significant Change” methods, as well as a baseline assessment of Knowledge, Attitude and Skills (KAS) of stakeholders.

Outcome Mapping¹³ is a method for planning, monitoring and evaluating actions that aim to bring about social or political change. It enables the understanding of processes of change, improves the likelihood of achieving results and promotes realistic and accountable reporting. Impacts will be measured in terms of changes in behavior, actions or relationships influenced by the project.

Most Significant Change¹⁴ is a tool for identifying significant and/or critical changes – both positive and negative – that relate to key objectives. From a monitoring and evaluation perspective, this method can help track changes that are not always easy to quantify, such as “capacity strengthening” or “gender equity.” It can also detect unintended consequences, both negative and positive.

13 Description taken from <http://www.cgiar-ilac.org/content/outcome-mapping>

14 Description taken from <http://www.cgiar-ilac.org/content/most-significant-change>

External evaluation. External reviewers will evaluate project outputs and impacts after three years. At the end of the project, a final review will assess the final results, sustainability and applicability of project recommendations for follow up and endorsement by policymakers, local organizations and communities. CIFOR is audited on an annual basis by external auditors.

7 Budget

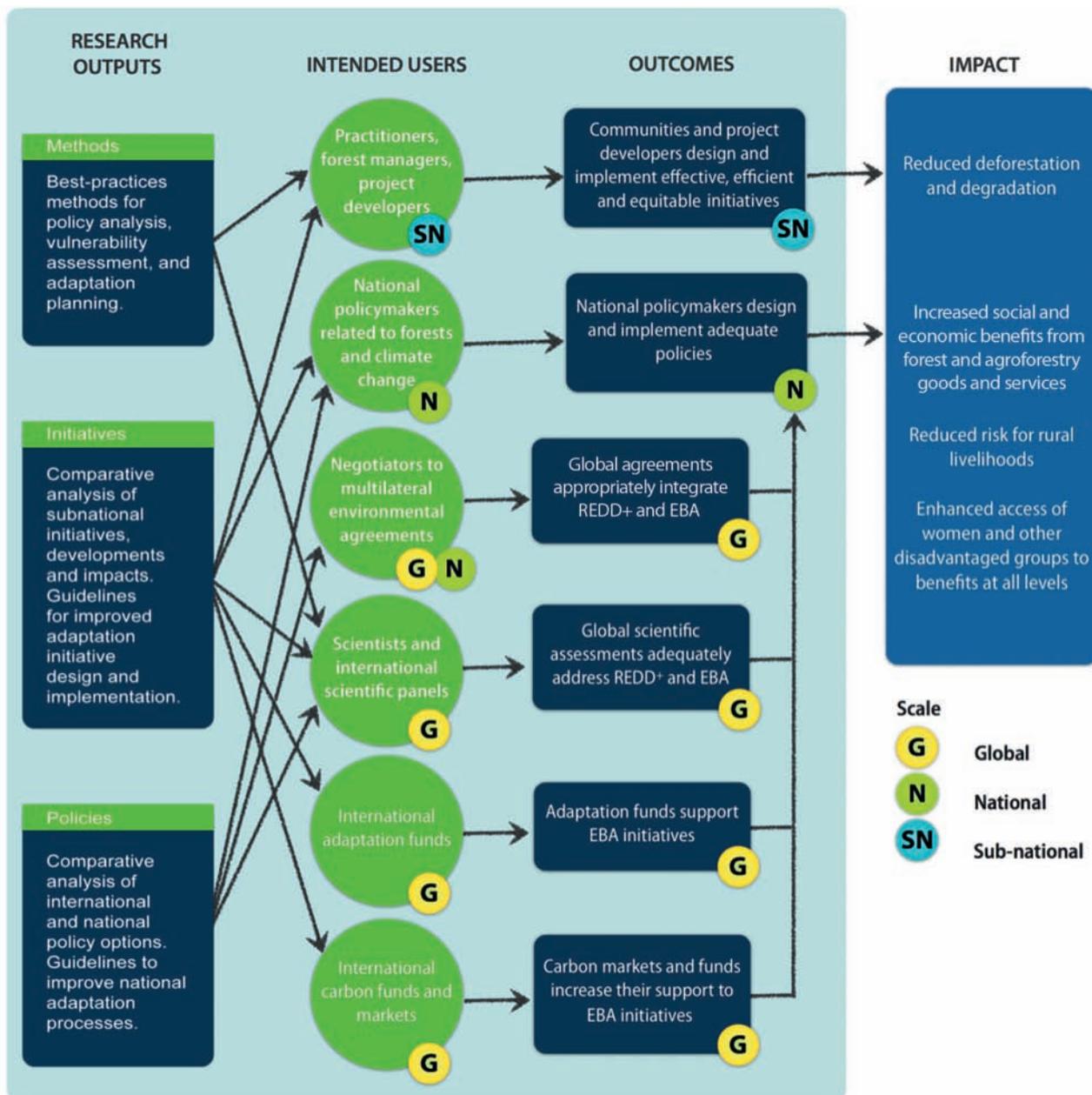
Three budget scenarios are presented:

- Low budget scenario: Research in Central and West Africa will focus on vulnerability assessments, adaptation planning, some policy analysis (PC1, PC2 and PC3) and links between adaptation and mitigation. Our team is primarily livelihood oriented. Communications have a regional focus. Global outreach piggybacks on other events.
- Medium budget scenario. Additional funds will enable us to expand activities into one or two other regions (East Africa, Central America, or Southeast Asia). We will recruit additional scientists with skills for cross-regional activities (e.g., political scientists, ecological modeler). Regional cooperation will allow for comparative analyses and joint outputs. Communications will range from local to global, and outreach will be stronger.
- High budget scenario. We will work in all priority regions and recruit additional scientists with skills for cross-regional activities. Global communication events will be organized around adaptation and forests. The synergies between adaptation and mitigation will be fully explored in all sites. In line with CRP6, our research will also focus on “sentinel landscapes” – that is, the collection of long-term data sets in order to understand the drivers of land use change.

Table 3. Budget in the 1,000 USD/year

	Low	Medium	High
Staff costs	583	1,956	2,534
Partnerships	333	1,118	1,448
Travel	97	135	180
Supplies and services	333	506	633
Overhead	403	178	238
TOTAL	1,750	3,893	5,032
Difference from the low budget scenario	-	2,143	3,282

Annex I. Impact pathways



This research was carried out as part of the CGIAR Research Programme, 'Forests, Trees and Agroforestry: Livelihoods, Landscapes and Governance'. The Programme aims to enhance management and use of forests, agroforestry and tree genetic resources across the landscape from forests to farms. The Center for International Forestry Research leads the collaborative Programme in partnership with Bioversity International, the International Center for Tropical Agriculture and the World Agroforestry Centre.

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CIFOR advances human wellbeing, environmental conservation and equity by conducting research to inform policies and practices that affect forests in developing countries. CIFOR is a CGIAR Consortium Research Center. CIFOR's headquarters are in Bogor, Indonesia. It also has offices in Asia, Africa and South America.

