# UN-REDD
## PROGRAMME
## POLICY BRIEF

# REDD+ Beyond Carbon: Supporting Decisions on Safeguards and Multiple Benefits

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## 1. Introduction

It is increasingly recognized that REDD+ can contribute to a range of policy goals in addition to climate change mitigation. It can promote biodiversity conservation and secure the provision of ecosystem services including water regulation, timber production, erosion control and the supply of non-timber forest products[1]. Social benefits, such as improved livelihoods (including from carbon payments), clarification of land tenure, and stronger governance, may also arise from implementing REDD+.  It is also widely acknowledged that REDD+ carries certain social and environmental risks. Many of these risks are addressed by the UNFCCC's Cancun Safeguards and the related measures adopted by multilateral and other REDD+ initiatives[2]. Some of these safeguards also call for action to enhance the benefits from REDD+.

What has been less widely accepted is that avoiding significant risks and securing additional benefits may be the key to the overall success of REDD+. By securing benefits beyond carbon, REDD+ has the potential to: draw on broader constituencies of social and political support; demonstrate it is realising a broader range of values; and even generate additional income. Given that REDD+ is proving to be more challenging to implement than some had originally hoped, these additional benefits may encourage countries to implement this voluntary mechanism. A carbon-only approach to REDD+ misses an opportunity to win broader support amongst stakeholders. It is more likely that the necessary high-level political support for implementing REDD+ can be maintained if REDD+ is clearly linked to wider environmental and societal benefits, and to broader sustainable development goals.

Nevertheless, some concerns have been raised about this broader perspective on REDD+. It is sometimes suggested that, having started as a relatively simple mechanism focused solely on mitigating climate change, REDD+ has become over-burdened with additional requirements and goals and that this is undermining its viability[3].

This objection deserves a response. It is not enough to make large rhetorical claims about the benefits that will flow from REDD+. For governments and other stakeholders to adopt a broader approach to REDD+, there is a need for strong evidence that additional bene-fits will indeed be achieved, and will contribute to national and local priorities.

To provide this evidence on possible benefits and risks, it is necessary to consider not only whether REDD+ is implemented, but how and where it is implemented. REDD+, with its five different activities, has become a complex policy instrument, which can be implemented in a variety of ways. Evidence is needed on the identity and magnitude of the risks and benefits of different REDD+ activities and on the likely costs of achieving benefits and avoiding risks.

After discussing REDD+ safeguards this paper outlines a series of analytical approaches that can help provide an evidence base to inform REDD+ decisions. It focuses on addressing environmental risks and benefits, and provides examples of where countries are already using these approaches.

## 2. Safeguards

Countries have agreed to 'promote and support' a set of safeguards for REDD+ under the UNFCCC negotiations, in recognition that social and environmental risks and benefits are important[4] . The Cancun Safeguards include the stipulation that REDD+ activities 'are consistent with the conservation of natural forests and biological diversity, ensuring that the actions [...] are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits'[5] .

The formulation of this and the other safeguards is necessarily general. Countries will need to work out how they will be applied in their own contexts. The UN-REDD Programme has developed a set of Social and Environmental Principles and Criteria[6], intended to assist countries in developing their own national approach to safeguards, together with a Benefits and Risks Tool[7] designed to help think through social and environmental issues when designing a national REDD+ strategy or programme (see the Nigeria box below).

[a] UNEP-WCMC
[b] UNEP

REDD+ countries have also agreed to develop a system for providing information on how the Cancun Safeguards are being addressed and respected[9]. Monitoring of the positive and negative environmental impacts of REDD+ could supply data to this system, and would also support adaptive management of REDD+ activities to ensure that broader environmental goals are met.

The adoption of safeguards for REDD+ by the international community represents an important step, and many countries are likely to approach the issue of risks and benefits from REDD+ through the application of safeguards. But the safeguards themselves will not fully determine how those social and environmental issues are to be addressed.

## 3. Decision support on multiple benefits

Different kinds of information and analyses can be combined to support decision-makers in planning and implementing a REDD+ programme that respects safeguards and delivers multiple benefits. First, since potential risks and benefits are distributed unevenly across space (for example, not only do forests differ in their carbon density, they also vary in their importance for regulating water flows), information on the spatial distribution of the biodiversity and ecosystem services associated with forests is vital. Second, different ways of implementing REDD+ will have different costs (including different opportunity costs). Decision-makers will need estimates of the comparative costs of different options. Third, information on costs needs to be supplemented, wherever possible, with quantitative information on the non-carbon benefits and their importance. If this quantification can take the

form of monetary valuation, it both facilitates comparison between benefits and potentially makes it possible to include their values in more comprehensive cost-benefit analyses. It should also be noted that the distribution of these values across different stakeholders will also influence decision-making: a small monetary value is more relevant to poorer stakeholders than richer ones.

All three kinds of information can be used to support REDD+ planning. Such analyses can provide a snapshot of conditions at a single point in time, or may be dynamic, allowing exploration of the potential impacts and trade–offs resulting from different policy options and even using scenario analysis to assess how these may differ in the future.

### 3.1 Mapping ecosystems: Identifying areas important for ecosystem services and biodiversity

By locating areas of interest such as high-carbon forest, natural forest or important areas for biodiversity and ecosystem services, maps can be used to identify the possibilities for attaining multiple benefits. Where quantitative information about the level of biodiversity and ecosystem services is difficult to get, it may be more practical to use more easily measurable proxy variables that are correlated with such services. For example, biodiversity is often highest in intact natural forests, whilst soil erosion control benefits are greatest on steep slopes with exposure to extreme rainfall and with urban settlements or hydrological projects downstream.

Maps that overlay information on carbon and other benefits can be used to explore the implications of the Cancun Safeguards for the location of REDD+ activities and the likely synergies and trade-offs between different goals. Land-use options can have different outcomes for different ecosystem services. A timber plantation may increase soil stability, harm some native species, and benefit others. Thus, maps can illustrate where REDD+ could best secure biodiversity benefits in addition to maintaining carbon stocks; identify areas of natural forest which should not be converted by REDD+ activities; present the distribution of carbon stocks in relation to existing land designations; and highlight where areas of importance for REDD+ and multiple benefits may be under pressure.[10]

The use of mapping will need to reflect both the specific aims of the country in question, and the available data and time. A 'priority setting toolkit' has been developed in Indonesia's Central Sulawesi province, which includes a set of maps visualizing areas that might be suitable for different REDD+ measures (see the Indonesia box below).

## Indonesia: Informing REDD+ planning at a sub-national level

In Indonesia, much REDD+ planning will be undertaken at the sub-national level, including by provincial and district governments. For example, the National Action Plan for Greenhouse Gas Emissions Reduction (RAN-GRK) requests provincial governments to develop Regional Action Plans (RAD-GRK) that will set out actions for greenhouse gas emissions reduction from the provincial, district and city levels in each region. Work on the Regional Action Plans is currently underway.

The Plans will cover climate change mitigation in a number of sectors including the management of forests, peatlands and agricultural land and are thus highly relevant to the implementation of REDD+. Indonesia is also placing strong emphasis on the involvement of local stakeholders and civil society in planning for REDD+. Therefore, information on the potential of REDD+ to provide social and environmental benefits is needed in a form that is accessible to a wide range of audiences, including persons with little or no background in environmental sciences.

Various materials are being prepared to help build the capacity of Provincial government staff and other stakeholders in Indonesia to design REDD+ actions in a way that achieves multiple benefits. These include a guide to the multitude of available decision-support tools and guidance on the possible impacts of different REDD+ actions, such as forest conservation, reduced-impact logging or fire control, on a range of benefits. These benefits include the maintenance and enhancement of carbon stocks, biodiversity, soil and water quality, non-timber forest products and livelihood opportunities.

The guide is complemented by a set of maps, some of which show areas where different REDD+ activities would be legally and practically feasible in Central Sulawesi, taking into account factors like current land cover, land use, carbon stock and designated forest functions. Parallel training sessions will familiarize REDD+ actors from the provincial and district level with the materials and their possible use in a planning context.

## 3.2   Costing: Identifying cost-effective solutions

The cost of securing multiple benefits depends on where and how REDD+ activities are implemented. The overall costs of REDD+ are determined by the foregone benefits from non-REDD+ options, such as revenues from logging, agriculture or mining (opportunity costs), costs of implementing the REDD+ actions required (implementation costs) and the costs of establishing and operating a national REDD+ programme (transaction costs).

As a result of the importance of costs in guiding spatial decisions on REDD+, there are well-developed frameworks[11] and tools, such as the "REDD+ abacus" software[12] available for their analysis and in use by countries.

In planning for multiple benefits, it may be useful to estimate whether and by how much these costs would be changed by targeting areas that are not only important for carbon emission reductions but also play an important role for ecosystem services and biodiversity (see the Panama box below).

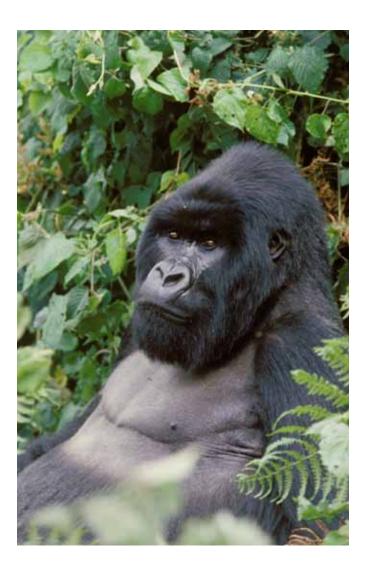<div style="border:1px solid">

### Panama: Supporting decision making on REDD+

As in other countries, the development of a REDD+ strategy in Panama will involve reconciling the many different demands for land. This requires an understanding of present patterns of land use, how these are likely to change in future, and the costs and benefits of different REDD+ options. Therefore, Panama is exploring likely future patterns of land-use change (through scenario analysis and land-use modelling) and the costs associated with changing these to achieve REDD+ objectives.

As in Ecuador, spatial analyses of potential additional benefits from REDD+, including biodiversity conservation, soil erosion control, and hydrological functions, are also being undertaken. Panama has globally important biodiversity and derives a significant proportion of GDP from both the Panama Canal and effective provision of hydroelectric power. For several Panamanian local-scale case studies, the economic values of selected ecosystem services will be assessed to quantify and raise awareness of the importance of forest-based land uses.

In addition, map-based analyses will identify areas where maintenance and enhancement of forest carbon stocks may yield the greatest benefits for biodiversity and ecosystem services.

The results will be combined with the results of the cost assessments and land-use change scenarios to explore the cost implications of targeting REDD+ interventions in areas important for multiple benefits. This combined spatial-economic analysis will help decision-makers in Panama to consider a wider range of issues in prioritising areas for REDD+ intervention.

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In addition to possible differences to implementation and opportunity costs resulting from the selection of different REDD+ measures or locations, the monitoring of impacts on ecosystem services and biodiversity may increase the transaction costs of REDD+.

As both the potential for multiple benefits, and the likely cost of REDD+, can be very unevenly distributed across space, it is particularly helpful for an assessment of REDD+ options to be spatially explicit. Marxan[13], originally designed as a conservation-planning tool, can be used to identify cost-effective spatial solutions that attain a number of targets (such as reducing carbon emissions, conserving biodiversity and protecting or restoring areas important for ecosystem services).

A Marxan analysis can include opportunity and implementation costs of undertaking specific actions in different locations (see the DRC box below). The objective is to provide a range of 'best' possible or 'efficient' solutions to inform decisions.

## The DRC: Incorporating multiple benefits in REDD+ planning

The Democratic Republic of Congo (DRC) is preparing a REDD+ strategy which seeks to address social and environmental risks and benefits. National Social and Environmental Standards have already been formulated using a participatory approach, which has boosted confidence amongst Congolese stakeholders on the potential of REDD+ to deliver multiple benefits.

The DRC is also using spatial analysis to inform decisions on where and how to implement REDD+ activities to realize environmental benefits. Carbon stocks, important areas for biodiversity and ecosystem services, land-use designations and threats to forests are being mapped. This work is carried out in collaboration between the Directorate of Inventory and Forest Management (DIAF) of the DRC's Ministry of Environment, Nature Conservation and Tourism, the Central African Forest Satellite Observatory (OSFAC) and UNEP-WCMC. It is closely linked to complementary initiatives that are modelling the impacts of REDD+ policies under different scenarios, to inform strategic REDD+ decisions towards a green economy.

A first report, launched in July 2012[14], confirms that there is great potential to realize benefits for biodiversity from REDD+. Areas that store large amounts of biomass carbon overlap with areas of importance for biodiversity. The report highlights that effective and sustainable management of existing land designations, such as protected areas, forest and mining concessions, will be needed to reduce environmental harm and secure multiple benefits from REDD+.

The next phase of analysis, started in July 2012, broadens the scope of assessment to include economic aspects, and non-carbon ecosystem services such as soil conservation and water flow regulation. The potential economic values of selected multiple benefits are being assessed using benefit-transfer methods, based on estimates from case studies.

As well as improving available information, a key objective is to enhance the capacity for spatial REDD+ planning in DRC. Currently, Marxan, a spatial decision support software tool, is being trialled as a means of identifying possible priority locations for securing multiple benefits of different REDD+ activities. The aim is to simultaneously meet multiple quantitative targets for greenhouse gas emission reductions, biodiversity and other ecosystem services at the lowest cost, while also taking into account indicative development targets. A range of possible solutions that meet the objectives at low cost with minimal trade-offs are mapped.

These combined economic and spatial analyses are a potentially powerful means for helping countries to assess REDD+ options by identifying least-cost options of achieving a number of goals. This type of cost effectiveness assessment can play an important decision-support role if countries have committed to comply with a number of targets, as for example through national implementation of the Convention of Biological Diversity (CBD) or the REDD+ safeguards themselves. It is easier to choose between options if the overall balance of benefits associated with each option can be quantified. Where this involves economic valuation, cost-benefit analyses of REDD+ options become possible.

### 3.3 Valuation: Establishing the economic values of multiple benefits

An economic valuation of the impacts of available REDD+ options on ecosystem services and biodiversity can inform land use choices. Some tools for quantifying, mapping and valuing the benefits provided by ecosystems are becoming available, such as the Integrated Valuation of Ecosystem Services and Tradeoffs (InVEST)[15] and the Artificial Intelligence for Ecosystem Services (ARIES)[16] software. Ecosystem services and forest biodiversity are often highly valuable in economic terms, and are typically measured using a variety of units.

Expressing potential REDD+ impacts on biodiversity and ecosystem services in monetary terms can facilitate the comparison of different land use options with respect to their full costs and benefits, and could change decisions about what REDD+ options are pursued. For instance, in some areas with high agricultural productivity, carbon payments may not be able to compete with the financial incentives for converting tropical forests. Demonstrating the monetary value of ecosystem services and biodiversity could make a difference: while identifying a value is not the same as deriving a direct monetary benefit, it can still influence land-use decisions.

However, as the biodiversity and ecosystem services of interest often include those for which monetary valuation is not possible or too costly and time-consuming or politically contested, it may be more practical to include a mixture of monetary and non-monetary information in spatial decision-support. Marxan, described above, offers one such multi-criteria analysis approach.

Often simply identifying the ecosystem services and biodiversity affected by land use change and linking these to economic activities or cultural traditions provides a way of recognising the value of ecosystem services and biodiversity for human-well being[17].

In this context, non-monetary valuation techniques can be applied to identify important areas: for example, using participatory consultation workshops that score different locations. Even if a full understanding of the underlying ecological processes is lacking, this can demonstrate ecosystem value, and may help to include social values, rights and equity in REDD+ land use planning.

## 3.4 Scenarios: Assessing REDD+ impacts in a complex and changing future

The analytical approaches described above can help to identify locations and options for REDD+ action to achieve multiple benefits, based on conditions at a fixed point in time. Fully informed decisions also require insights on the likely effectiveness of these actions over the longer term, and on their potential impacts on other national priorities. For example, it will be important to understand how future changes in land use may affect the long term success of REDD+ actions. Similarly, REDD+ actions may have impacts on land use that affect the achievement of other national goals.

These interactions are complex and depend on a wide range of factors that are outside the immediate remits of REDD+ decision makers, and are themselves influenced by other processes and factors. Scenario analyses can help to address some of this complexity by exploring a range of potential developments and outcomes, in order to help visualise possible patterns of land-use change and their impacts over time. Scenario analysis offers a set of storylines about different possible futures, often incorporating simulations based on mathematical models.

These are not intended to predict the future, but rather to help people to grasp the likely risks and possibilities entailed in particular courses of action, by testing strategies and decisions against a series of possible futures.

In REDD+ planning, scenario techniques can be used to explore the impact of particular options in the context of a range of possible future changes in economic and other drivers of land use change. When incorporating land-use modelling, such scenarios could be used to explore the risks, benefits and trade-offs associated with particular ways of implementing REDD+. For example, scenarios could explore the possible impacts of focussing REDD+ action on areas of importance for biodiversity in terms of land use patterns, associated delivery of ecosystem services, or economic outcomes (see the GLOBIOM box below).

They could also explore the outcomes of different approaches to safeguards and standards, as well as the potential impacts of changing economic conditions on REDD+ implementation and outcomes in relation to the safeguards. A range of initiatives are contributing valuable tools to enable this kind of analysis[18].



### Land-use change scenarios under different REDD+ policies

A global land use model (GLOBIOM)[19], is being used to support high-resolution REDD+ planning through scenario analysis. GLOBIOM is an economic model developed by the International Institute for Applied Systems Analysis (IIASA). It projects land-use interactions by modelling supply and demand for competing agricultural, bioenergy and forest commodities through space and time. It is being applied in regional-scale scenario analyses of land-use changes under different REDD+ policies, with a focus on Brazil and on the member countries of the Central African Forests Commission (COMIFAC), in the Congo Basin.

Regional partners are working with IIASA and UNEP-WCMC to adapt and validate GLOBIOM using existing regional data on historical land-use change. They aim to explore the influence of particular REDD+ policy options (including examples that incorporate biodiversity priorities into REDD+ planning) within a series of plausible economic scenarios. By considering regional land-use change in the context of global economic drivers, this approach makes it possible to look at the influence of external factors and the wider implications of national policy options.

The results will be used to assess the economic and biodiversity impacts of different REDD+ policy options, and their potential role in contributing to progress towards specific goals, such as the CBD's Aichi Targets, economic growth or food security. Biodiversity impacts are assessed in terms of changes in ecosystem extent within priority areas for biodiversity conservation and the impacts these changes may have on species populations and distributions. This work aims to support the development of REDD+ policies that enhance sustainable economic development, and safeguard and enhance biodiversity and other ecosystem values and help countries to meet the objectives of the Convention on Biological Diversity (CBD).

## 4. REDD+ and development strategies

It has been argued here that securing benefits 'beyond carbon' from REDD+ can be critical to its success. Securing these benefits will require tools that can show how REDD+ can deliver on a range of policy objectives. Put differently, REDD+ strategies will be strengthened if they are integrated with broader development goals. A green economy strategy can be particularly helpful as a framework within which to pursue REDD+, since it emphasises the need to link economic development with environmental sustainability. Thus, the transition to a low-carbon, green economy and the implementation of REDD+ activities can be mutually beneficial. The outcome of Rio+20[20], which affirmed the commitment to a green economy transition in the context of sustainable development and poverty eradication, provides a supportive international policy context for this approach to REDD+.

## 5. Conclusions

The case for REDD+ can be strengthened by taking account of the social and environmental risks and benefits associated with its implementation. Making informed decisions in light of local and national priorities and international safeguards is a matter of social and political choice for countries. But there is also a technical challenge to be faced. Those involved in making the choices need an understanding of not only the consequences of implementing REDD+, but also of the consequences of implementing REDD+ in particular ways and particular places. Fully meeting this challenge requires that a number of linked spatial and economic analyses are undertaken. Ongoing REDD+ decision-making can further be supported by monitoring of the impacts of policy choices.

Some countries are already undertaking some or all of these analyses, and there is considerable scope to learn from these experiences. The UN REDD Programme seeks to promote this South-South learning and will continue to support countries to make informed choices about the multiple benefits of REDD+, the application of safeguards and the linkages to sustainable development goals.

## Acknowledgements

## Endnotes

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www.forestcarbonpartnership.org/fcp/node/310). The REDD+ Social & Environmental Standards initiative has also developed guidance for this purpose (http://www.redd-standards.org).

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