MODELLING REDD+ IN THE DEMOCRATIC REPUBLIC OF THE CONGO

SUMMARY OF THE ANALYSIS USING THE T21 MODEL

EXECUTIVE SUMMARY

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This study reviews four policy scenarios using the 'Threshold 21' (T21) simulation model for the Democratic Republic of the Congo (DRC) in order to evaluate their potential to meet the country's REDD+ and sustainable development goals by 2035. The results show that a 'green economy' scenario, spear-headed by the implementation of the REDD+ national strategy and which combines governance improvements[1] and the promotion of ecosystem services achieves the most effective social, economic and environmental outcomes.

INTRODUCTION

The DRC has invested heavily in its preparation to Reducing Emissions from Deforestation and Forest Degradation (REDD+), as a contribution to climate change mitigation efforts, as an element of sustainable development and progress towards a green economy. The success of REDD+ in DRC has both national relevance as well as regional and global significance. Nationally, the DRC faces continuing deforestation and forest degradation in addition to high poverty rates, both of which can be addressed through effective REDD+. The DRC contains about 10% of the world's tropical forests as well as 60% of the forests within the Congo Basin, which are disappeaing at an increasing rate.

Ongoing deforestation in the DRC amounted to about 400,000 hectare (ha) per year during the period 2005-2010 while degradation rates during the same period were around 0.12%[2] per year. The main driver of deforestation is agricultural expansion. Key drivers of degradation are fuelwood harvesting as well as the forestry and mining sectors. This loss of forest cover and degradation of standing forests threatens the approximately 24.5 gigatons of carbon stored in above-ground and below-ground biomass and soil in the DRC. It is estimated that in each hectare of forest in the DRC contains an estimated 160 tonnes of carbon.

PURPOSE OF THE STUDY

This study uses the model T21-DRC to evaluate the potential of different policy scenarios in the DRC, among them a "REDD+/green economy scenario", and assesses the likelihood and conditions required to achieve the goals and objectives of the national REDD+ strategy. The process of gathering the necessary data and elaborating the scenarios it can help to:

- Facilitate the mobilization of partners around a common vision for development;
- Identifying sustainable development strategies based on a number of policy options;
- Improve understanding by decision-makers of the uncertainties around future scenarios and the challenges that presents for policy choices;
- Support decision-makers in the development of creative and comprehensive policy and governance options.

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1   In this study governance includes the elements of the world governance indicator (citizen voice and participation, political stability and the absence of violence, effectiveness of government agencies, quality of regulation and the rights of law and control of corruption) as well as family planning and the land tenure system.
2   Ministère de l›Environnement, Conservation de la Nature et Tourisme (2013). Stratégie-Cadre Nationale REDD+ de la République Démocratique du Congo.

WHAT IS THRESHOLD-21? PURPOSE OF THE MODEL

Threshold-21 is a simulation model that is built to support integrated and comprehensive medium to long-term planning processes. It is a tool to support comparative analysis of different policy options, in order to identify the set of policies that may best achieve the stated goals within a distinct timespan. The model has been developed and field-tested for more than twelve years in a wide variety of locations and has now been adapted to the national circumstances of DRC. It has the following key characteristics:

- It integrates economic, environmental and social elements using a systems-dynamics approach (including consideration of delays and feedbacks);
- It helps create sustainable development strategies and policies by simulating possible impacts of a range of potential policy choices and strategic options;
- Its easy-to-understand interface facilitates transparency, participation, and consensus-building by encouraging open discussion between diverse stakeholders and external development partners
- It is flexible and can be customized to address the unique needs of individual countries through the use of a modular design whereby existing economic sectors can be modified and new economic sectors can be added.

In addition to the economic, social and environmental factors considered in the general structure of the model (such as poverty, economic growth and energy supply and demand), specific additional factors relating to deforestation in the national context of DRC were selected, in part, based on the work of a group of over 100 experts participating in a national workshop:

Deforestation increases as a result of:

- Population growth
- Agricultural expansion

Deforestation can be combated through:

- Application of sustainable agricultural techniques
- Sustainable forest management
- Efforts to reduce illegal logging
- Greater accessibility of renewable energy
- Improved efficiency of fuelwood use

The resulting T21-DRC model allows for the consideration of a variety of policy options based on the national REDD+ strategy (Stratégie-cadre nationale REDD de la RDC) that address agriculture, energy, forests, governance, demography, land management and financing.
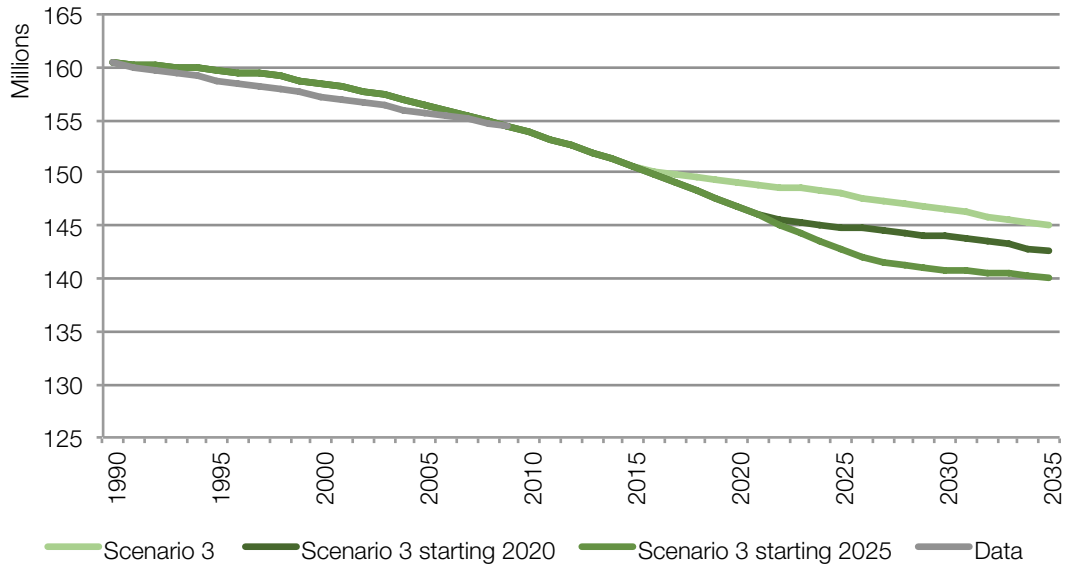
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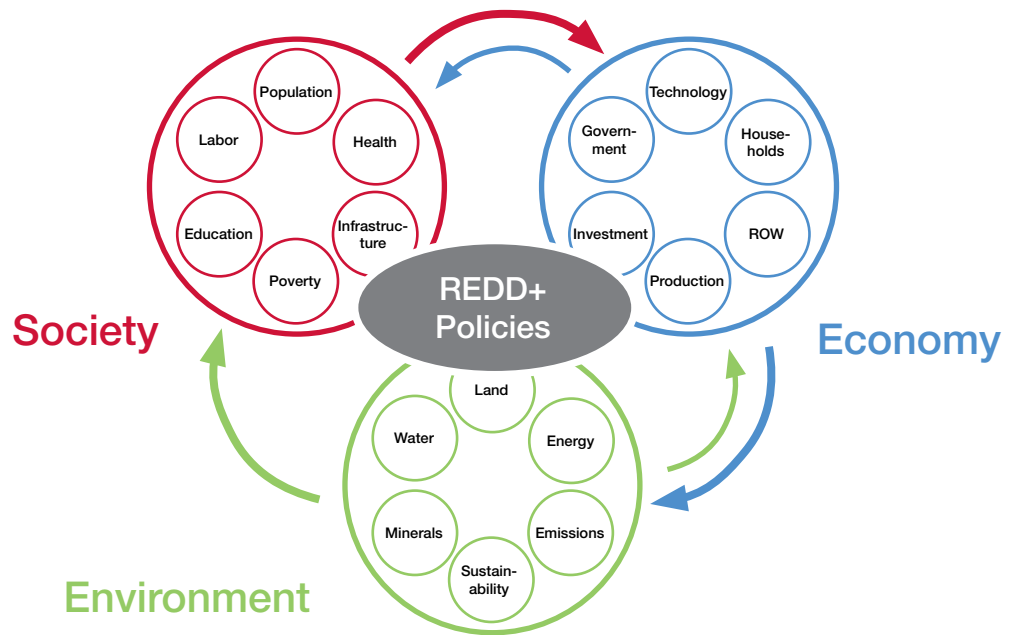
The scenarios analysed in this study are built around two axes, weak versus strong governance and absence versus presence of the promotion of ecosystem services. The "REDD+ and green economy" scenario combines strong governance with the promotion of ecosystem services.
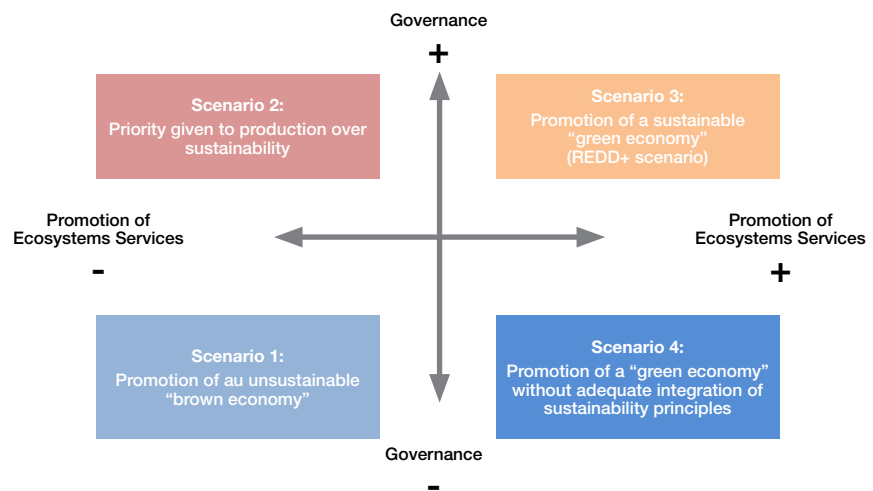
RESULTS

The comparison of model results for different scenarios reveals that strong governance is key to achieving many of social and economic outcomes. However, improved performance on environmental indicators requires the promotion of ecosystem services. The most important finding, however, is that the combination of strong governance with the promotion of ecosystem services (the 'green economy' scenario) leads to the best results for all indicators, as the successful implementation of both dimensions creates synergies. For most policy goals, results from the 'green economy' scenario score higher than the sum of improvements in each of scenarios taken individually.

The analysis also shows that the positive results for Scenario 2 are mainly due to governance improvements, except for the environmental indicators, where the promotion of ES is the most important variable. It is likely that these improvements would be counteracted if the economic focus was placed on extractive industries. Research on the concept of the "resource curse" has found that an over-reliance on these sectors can have a detrimental impact on attempts to improve governance.[3] Finally, the scenario results indicate that a delay in implementation decreases the positive impact of the policies significantly.

Forest area (ha) in relation to delays in the implementation of policies

The figure below visualizes the results of the simulation showing the performance of each scenario against 12 different policy goals at the year 2035. The figure shows, for example, that GDP in scenario 3 is 250% higher than in scenario 1, while the poverty rate is over 40% lower and the rate of deforestation is more than 70% lower than scenario 1. Assessing the impact on different sectors the following results can be summarized:

- Strong efforts in family planning programs are projected to slow the rate of population growth, and to reduce the **total population** in 2035 by 14% in scenarios 2 and 3 compared to scenario I.

- **Life expectancy** is also positively impacted by the policies with an additional year added as a result of strong governance.

- **Unemployment rates** in the DRC are projected to reach as much as 60% in 2035 in the absence of strong governance and the promotion of ecosystem services. Alternatively, the 'REDD+ and green economy' scenario (scenario 3) is projected by the model to reduce the unemployment rate to 41% by 2035. With a focus on production (scenario 2) the model projects that the unemployment rate would drop to 43%.

- The **Human Development Index (HDI)** is projected only to improve significantly with strengthened governance. Under the REDD+ scenario the HDI is expected to increase to 0.374 by 2035, an improvement of 31% compared to the value achieved in scenario 1 (0.29). Under scenario 2 it increases to 0.366.

- Strong governance can increase **GDP** significantly, from a projected real $US[4] 12.5 billion in 2035 for scenario 1 to a projected real $US[4] 29 billion for scenario

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3   United Nations (2001).Report of the panel of experts on the illegal exploitation of natural resources and other forms of wealth of the Democratic Republic of the Congo. United Nations. Montague, D. (2002). Stolen goods: coltan and conflict in the Democratic Republic of Congo. sais Review, 22(1), 103-118
4   Standardized USD value at year 2001

2. Adding mechanisms to promote ecosystem services increases this growth even further, to an estimated real $US[4] 31 billion.

- Strong governance can reduce the **poverty rate** to 53.5% by the year 2035 with an additional 5% reduction achieved through the promotion of ecosystem services. In the absence of strong governance and the promotion of ecosystem services, on the other hand, the poverty rate is expected to reach 83%.

- Both strong governance and promotion of ecosystem services are required to achieve the national REDD+ strategy goal of stabilizing forest cover above 140 million ha. In fact, the REDD+ scenario is projected to maintain **forest cover** at around 145 million ha until 2035 and reduce the **deforestation rate** to 0.21% by 2035. However it is important to note that whilst the REDD+ scenario does achieve a significant reduction in the deforestation rate, it does not achieve a stabilization of the deforestation rate. However, in the absence of strong governance and promotion of ecosystem services, forest cover is expected to decrease to 133 million ha over the same period with the rate for deforestation reaching 0.7%.

- In 2013, carbon stocks in the DRC were estimated to be 24.3 gigatons. Under all projections, **carbon stocks** are expected to decrease, however the rate of decrease varies significantly. In the absence of any strengthening of governance or promotion of ecosystem services, carbon stocks are expected to decrease by 3.1 gigatons from 2013 until 2035 while the REDD+ scenario limits the projected reduction to only 1.1 gigatons.
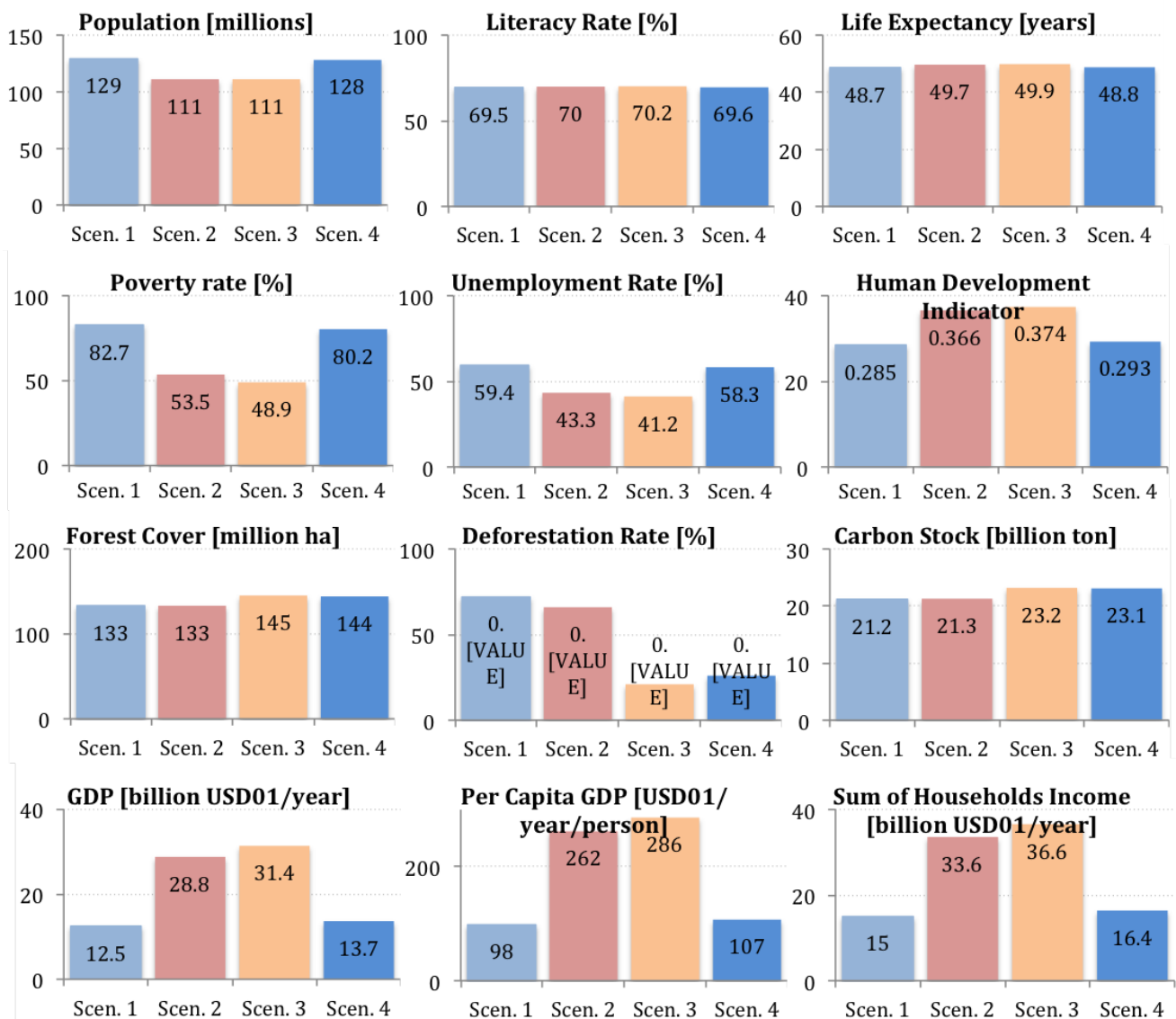
CONCLUSION AND POLICY IMPLICATIONS

- Though the DRC national REDD+ strategy is ambitious in its goals and expected achievements, the model shows that these goals may be achievable by the year 2035.

- As the DRC continues to improve its governance following years of political unrest, promoting the sustainable use of forest resources, forest-based livelihoods and the national REDD+ programme can deliver social, economic and environmental benefits and contribute to the realization of a green economy.

- REDD+ could be instrumental in the country's progress on a "green development" pathway that emphasizes both strong governance and the promotion of ecosystem services. Without the former, the benefits will be limited to environmental indicators only. Without the latter, patterns of deforestation, poverty, and biodiversity loss can be expected to continue, and development indicators are reduced to an extent as well. Furthermore, the focus on a 'brown economy', including a dependence on extractive industries, is likely to counteract efforts to improve governance consequently hindering possible positive trends across all development (and environment) indicators.

- Delays in policy implementation decrease the potential for positive impact significantly. Policies implemented in the near future will deliver greater development outcomes for the same amount of money.

- Some of the ambitious objectives outlined in the national REDD+ strategy are unlikely to be met even through the improvements to governance and the promotion of ecosystem services that could be delivered through REDD+. For instance, the results from the T21 model predict that the goal of achieving a zero net deforestation rate by 2035 cannot be achieved even under the REDD+ and green economy scenario. Furthermore, the model findings predict that the complete eradication of poverty is also unlikely in that time period.

- If all of the goals of the national REDD+ strategy are to be met, significant additional efforts will be required to create an enabling environment, especially in terms of governance improvements. Such efforts must be designed and implemented in collaboration with a broad range of stakeholders across multiple sectors.

- As such, it is clear that continued investment in REDD+ in the DRC can deliver important outcomes for sustainable development. As the DRC moves through the REDD+ readiness phase, collaboration across stakeholders to coordinate social, economic and environmental aspects of sustainable development will be a key determinant of success.

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