FOREST ECOSYSTEM VALUATION STUDY

Indonesia

EXECUTIVE SUMMARY

"In addition to their ecological, cultural and spiritual value, forests play a critical role in sustaining national economies and supporting livelihoods through the ecosystem services and employment opportunities they provide." - Achim Steiner, UN Under-Secretary-General and Executive Director of the UN Environment Programme (UNEP)

Over the last few years, Indonesia has demonstrated considerable leadership in recognising the value of its natural capital. With the third largest area of tropical forest in the world, Indonesia's forests play a significant role in climate mitigation at the national and global level. They are also critical for economic growth and the welfare of people. Therefore, recognising, capturing and demonstrating the benefits provided by forests and their ecosystems in Indonesia can significantly assist the country in transitioning towards a green economy. This can result in equitable growth, stable economic development and the preservation of Indonesia's natural assets for its future generations.

The Forest Ecosystem Valuation Study (FEVS), undertaken by the United Nations Office for REDD+ Coordination in Indonesia (UNORCID) with funding support from the United Nations Environment Programme (UNEP) aims to highlight the significance of the contributions provided by Indonesia's forests and their ecosystem services, which are often not accounted for in mainstream decision-making, but nonetheless critical in their immense socio-economic value. By providing quantitative evidence on the values provided by nature, the FEVS seeks to significantly increase investments in forest ecosystems and promote the sustainable management of these natural resources, leading to higher social equity and sustained long-term economic growth.

The FEVS draws its conceptual and methodological framework from internationally recognised assessments such as The Economics of Ecosystems and Biodiversity (TEEB) study, which go beyond traditional measures of growth and support policy reforms that effectively follow the principles of a green economy. The economic valuations provided throughout the FEVS seek to provide a "snapshot" of the substantial contributions from forests to Indonesia's national and sub-national economies. The study lays the groundwork for more comprehensive and deeper assessments of Indonesia's forests to enable a more widespread recognition of the role that natural resources can play in enhancing the livelihoods of the rural poor in Indonesia and in assisting an overall green economy transition.

Importance of forests and forest services for a green economy transition

By valuing the benefits of forests and their services, the Government of Indonesia can promote a shift towards the recognition of the critical interdependencies between socio-economic development and forest conservation. There is already evidence of this green growth oriented thinking in Indonesia reflected through Indonesia's deep engagement with the REDD+ mechanism and through the involvement of communities in forest management, which is demonstrated by the Community Plantation Forest (CPF) programme. A valuation of natural capital can enhance the knowledge and ability to set priorities for programmes, policies, and actions so that new jobs in sustainable sectors are created, green industrial activities are identified and new and innovative economic expansion opportunities based in the natural capacities of a region are designed.

REDD+ technical support and financial investments further have a role to play in the pursuit of a green economy transition for Indonesia. Increasing local participation in forest management and promoting strategies for widespread private and public participation in conservation could lead to more effective protection of forest cover and Indonesia's biodiversity. Such approaches based in better management of natural resources then have the capacity to generate diverse opportunities for additional economic revenues, which could have beneficial impacts for growth and for poverty alleviation. They could also support Indonesia in achieving the proposed Sustainable Development Goals (SDGs), as 13 out of 17 of the proposed SDG targets are directly or indirectly reliant on the condition of natural resources.

Significance for poverty alleviation and social equity

Indonesia's forests, through Non Timber Forest Products (NTFPs) play an important role in the livelihoods of poor rural communities. For example, on average across Central Kalimantan, 76 percent of the incomes of rural households are derived from forests and ecosystem services. A development strategy seeking to alleviate poverty would be more effective if it recognises exactly which natural resources support the well-being of the poor on an everyday basis.

Across Indonesia, more than 74 percent of the poor depend on ecosystem services for their basic livelihoods. Depletion of these services would thus, have dramatic effects on the livelihoods of the poor, whilst widening the national inequality gap. For instance, in East Nusa Tenggara, bearing in mind that 80 percent of the population is involved in the agricultural sector, a continued degradation of forests will deplete key regulating services for agriculture, which could particularly affect the rural poor within this province and reduce their resilience to any unexpected climate change impacts.

The FEVS underlines how these environmental, social and economic issues are deeply interlinked. While valuation of forestry ecosystem services demonstrates the role of forests in promoting multiple branches of the economy, it also emphasizes the strong social implications of forest degradation and deforestation. As one domain affects the other, the FEVS seeks to highlight the intertwined dimensions to enable policy-makers to make more informed decisions.
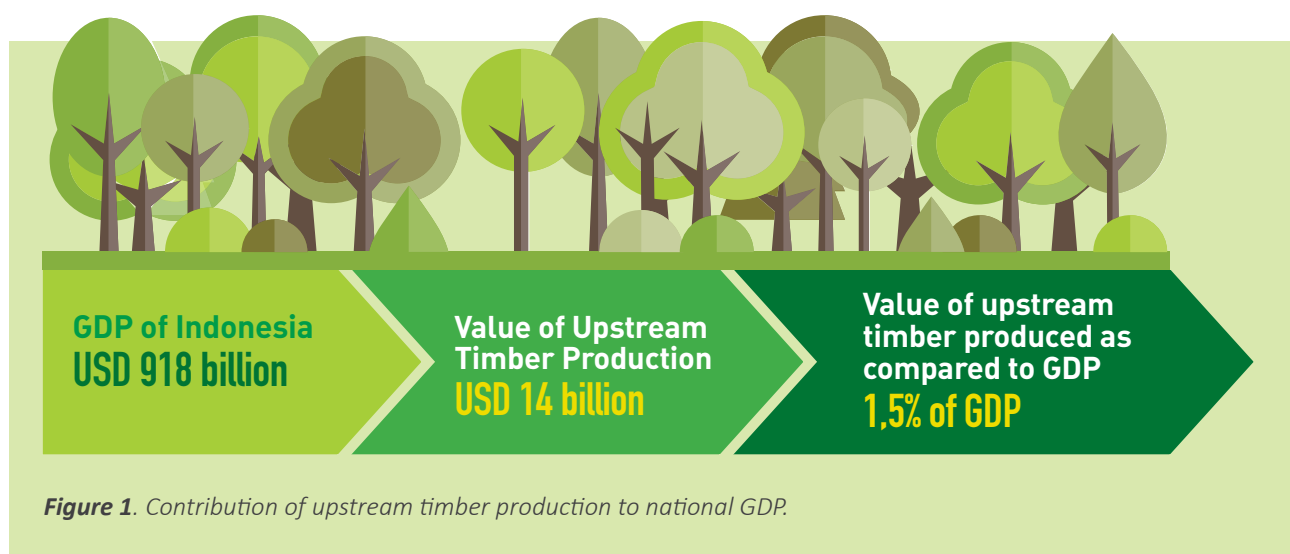

GDP of Indonesia
USD 918 billion

Value of Upstream Timber Production
USD 14 billion

Value of upstream timber produced as compared to GDP
1,5% of GDP

Figure 1. Contribution of upstream timber production to national GDP.

KEY FINDINGS

- The upstream timber industry added more than USD 14 billion to the Indonesian economy (in 2012 - see Figure 1, below). This estimation excludes timber from illegal sources and could thus be seen as an underestimation of the true value of timber production. Not only would a further degradation of forest areas contribute to a decrease in this crucial source of income - without even mentioning the equally important employment dimension - but this would also engender a significant loss in tax revenue for the Indonesian economy. For example, in 2010, total forestry taxes amounted to IDR 2.7 trillion. In order to ensure an increase, or simply maintain these important economic contributions, sustainable management of forests is necessary.

- NTFPs have significant economic potential for Indonesia as their production has considerably increased over the past decade. Overall, the medicinal plants industry and the essential oil industry are strongly anchored throughout the country. Indeed, whilst in 2011, the medicinal plants industry produced more than USD 1 billion worth of products, Indonesia is now the world's biggest producer of 8 types of essential oils. These economic contributions have the promising capability of developing in the near future, but this is subject to the state of Indonesian forests, and how well they will be protected.

- Forestry regulating services are vital for the socio-economic well-being of many of Indonesia's provinces. For example, in Central Sulawesi, the FEVS shows that one hectare of forest prevents soil erosion equivalent to 6,538 kg/ha/year, which, also considering soil nutrient loss due to surface run-off, translates to an avoided costs of approximately USD 30 per hectare of forest in a year. This 'avoided cost' provides a significant argument in favour of increasing investments in forest protection, as failing to do so will diminish soil quality and considerably reduce agricultural yields. Specifically, this would not be coherent with the Regional Medium-Term Development Plan (RPJMD) which has the main objective of increasing economic growth through pro-poor economy schemes, based on the extensive utilisation of natural resources and agriculture. Overall, these valuations of regulating services applied to five key provinces, reveal that the economic value of soil erosion prevention in the provinces ranged from USD 2 million to 81 million per year; the economic value of carbon sequestration and storage ranged from USD 17 million to 97 million and USD 1.2 to 19 billion per year, respectively; and the economic value of water augmentation ranged from USD 435 million to 2.4 billion per year. Generally speaking, sustainable management of forests would conserve the value of these assets, reducing administrative and fiscal costs at provincial levels, which could be required if these natural services are degraded and substitutes need to be instituted.
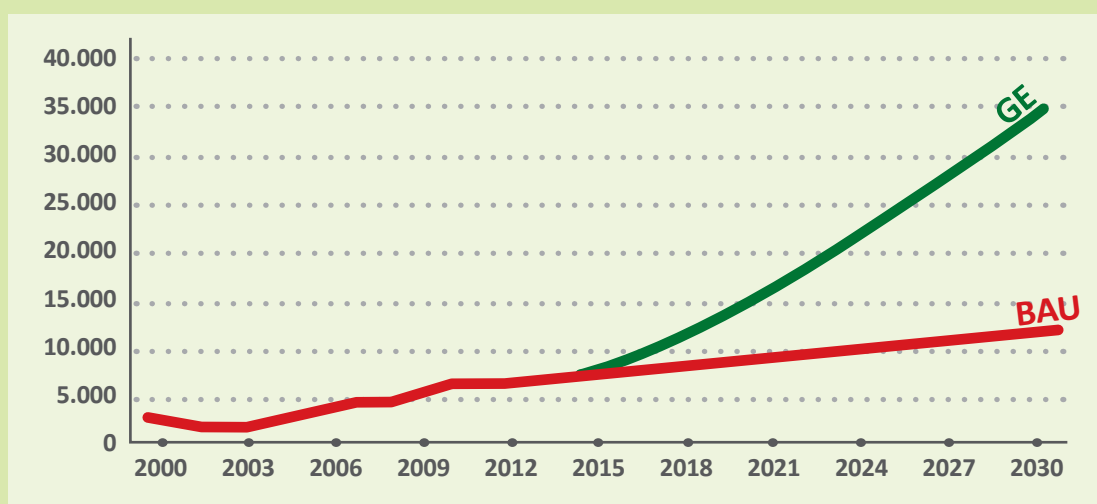

Figure 2*. Annual timber value added in IDR billion under BAU and GE scenarios.*

- A green economy (GE) route, rather than 'Business as Usual' (BAU), would lead to a better management of forests that would ultimately translates into an increase in production and revenues from the forestry sector, as shown in the example represented by Figure 2.

Impacts Under GE versus BAU Approaches

The graphs below summarise the main outcomes of green economy modelling accounting for forest cover, timber production of forest, employment in the forestry sector, and CO_2 emissions. The BAU simulation assumes a continuation of historical trends while the GE scenario simulates offsetting deforestation through afforestation and reforestation of secondary forest.

	Unit	BAU	GE
Total forest cover in 2030	Thousand Km²	750	861
Cumulative annual CO_2 emissions 2015-2030	Million TCO₂	2.484	689
Total employment in the forestry sector in 2030	People	193.774	247.945
Timber production in 2030	Thousand m³	47.788	64.068

Figure 3. Total forest cover in 2030 for BAU and GE scenario simulations.
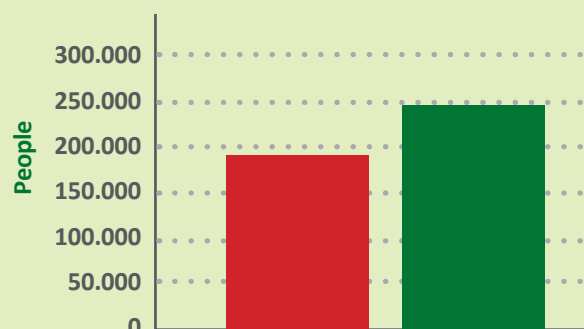
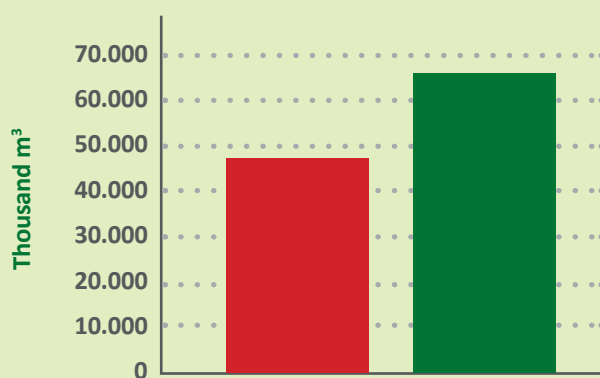**Figure 5**. Total number of people employed in the forestry sector in 2030 for BAU and GE scenario simulations.

Figure 4. Total timber production of forests in 2030 for BAU and GE scenario simulations.
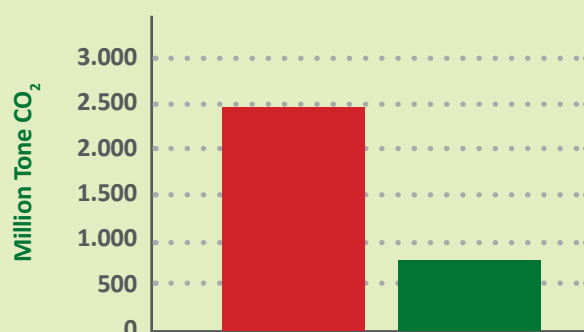
Figure 6. Cumulative annual CO_2 emissions for 2015-2030 from the forestry sector for BAU and GE scenario simulations.

BAU   GE

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