

## Economics of timber production and carbon sequestration in Cameroon: Implications for Forest Conservation and Green Economy Development

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### INTRODUCTION

Cameroon's forest is part of the Congo basin. It is both a major source of the world's tropical timber and a reservoir for carbon. In 2007, over US\$ 450 million worth of forestry products, accounting for 12 percent of total exports. The significance of the logging industry in the country is seen in its 12 percent contribution of the total

export revenues, about 3 percent of GDP and the creation of more than 100,000 jobs. National data show 15% improvements in combined output volumes of logs, roundwood and sawnwood as well as for all primary timber. As shown in figure 1, in 2001, Cameroon exported 2 million cubic meters of tropical logs, roughly 8 percent of the global

total. Cameroon reformed its forest sector with new rules and taxes in 1994, which led to a subsequent decline in production (ITTO, 2005). However, since the year 2000, production of hardwood has been rising steadily (figure 1), but exports of such raw logs have declined in relative terms. This is as a result of increased processing of

wood exports (figure 2). Given the growth in hardwood production, Cameroon ranks among the world's top five tropical log exporters, and it is the second largest exporter of tropical logs within the Congo Basin.

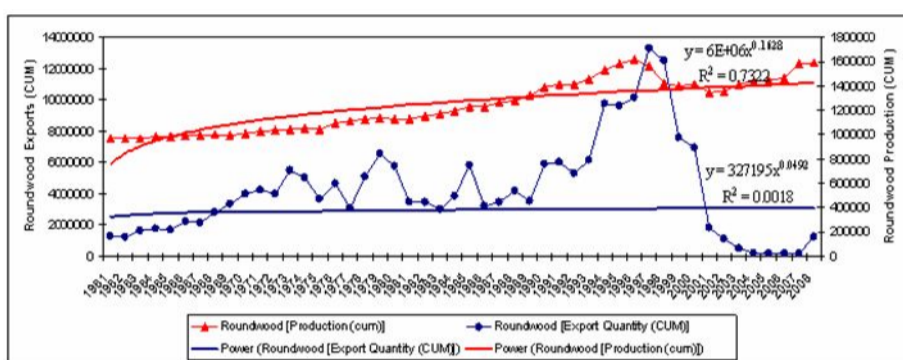


Figure 1: Trends of Roundwood Production and Export for Cameroon, 1960 - 2010  
(Authors' construction from FAOSTAT Database)

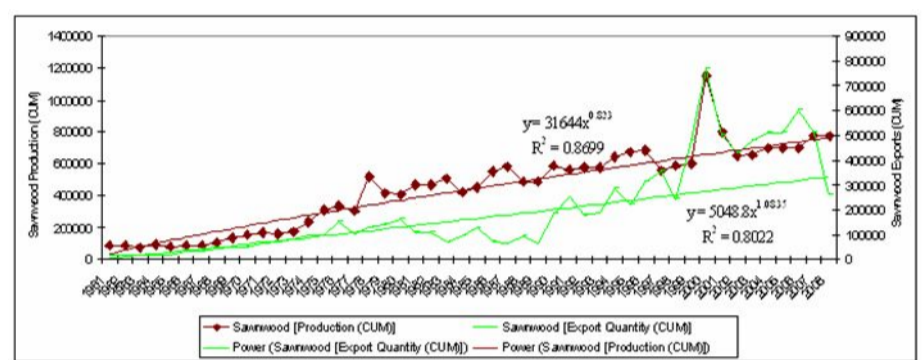


Figure 2: Trends of Sawnwood Production and Export for Cameroon, 1960 - 2010  
(Authors' construction from FAOSTAT Database)

The need to diversify the country's forest revenue is gaining currency in the advent of the Kyoto Protocol Clean Development Mechanism and recent climate-talks and consensus in the transfer of clean energy technologies. And this plays into the country's strategy to

combat climate change. Cameroon's commitment to controlling global warming is packaged in a series of efforts from the Presidential statement on the creation of a national climate observatory in July 2007 at the 62nd Annual General Assembly of

the United Nations on Climate Change, to the publication of the initial Climate Change National Communication, and other ongoing efforts to develop a National Adaptation Plan of Action, promotion of research efforts, and awareness creation and capacity

building. This research attempts to evaluate the plausibility of optimal joint production of timber and carbon sequestration in Cameroon, and assess the implications of forest management as a significant carbon sink.

### RESULTS AND DISCUSSION

The success of a viable carbon market will largely be influenced by the price carbon commands. Existing projections of the optimal share of carbon sequestration in an overall portfolio of greenhouse-gas mitigation strategies almost all assume the carbon price to be constant over time.

Figure 4 demonstrates the theoretical plausibility for an equilibrium ( $q^*$ ) in an optimal tradeoff in timber exploitation and carbon conversion through reduced deforestation and/or afforestation, as part of an economic and stabilization (mitigation and adaptation) strategy. The scenario has implications on timber harvests and prices; and on total forestland area. Initially, the sole exploitation of timber for economic gain provide for unsustainable forest management.

However, as timber is withheld from the market in order to provide relatively rapid forest carbon sequestration possibly through aging timber. And over time, more forests imply a larger supply of timber, with the plausibility of timber harvests increasing and significantly depended on the growth function, biomass expansion factors, and economic conditions such as prices and costs.

The margin  $q_t$  and  $q_c$  show not only the opportunity but also the policy costs with and without forestry management (e.g. thinning and afforestation) and the equilibrium effects of including forestry management as an abatement strategy. Before  $q_t$  and beyond  $q_c$  the deviation in prices and quantities of timber harvested and carbon sequestered in forests gradually shrink.

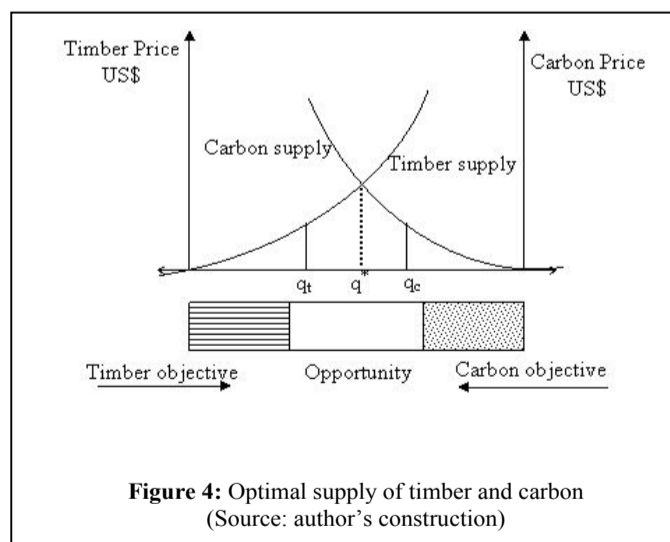


Figure 4: Optimal supply of timber and carbon  
(Source: author's construction)

As the market for carbon sequestration services develop, the financial returns to avoided deforestation and afforestation could therefore

improve substantially. Although this is a financial disadvantage in timber production, this characteristic could be positive as increased growth may occur in a later period when the carbon sequestration services may become more valuable. A significant amount of studies have demonstrated the plausibility of forests to sequester carbon for both ecological benefits and financial gains some noting that within twenty years and considering a carbon price of US\$50/tC, tree-planting activities could offset 1 year of global carbon emissions in the energy sector.

We therefore observe in figure 4 that as we move from a solely timber operation to a timber and carbon operation and as the price of carbon rises, the welfare space increases as the increased volumes of carbon in the later periods begin to offset the advantage of the earlier harvest. The figure thus demonstrates that in jointly producing timber and carbon the returns in properly regulated forest are likely to generate positive externality and net present values, producing an in-perpetuity flow of timber and maintaining a permanent stock of carbon and carbon credits; offering potential to promote sustainable economic development.

### CONCLUSION

Cameroon's Growth and Employment Strategy (GESP) hinges on thirteen pillars, amongst which are more efficient production systems with modernisation of production in the rural sector, mining, crafts and social economy and industry and services; ambitious and innovative trade initiative with regional integration and trade

diversification; and increasing descent employment opportunities (MINEPAT, 2011). The prospected growth faces increasing energy demand, fossil fuel-dependent growth generating significant amounts of greenhouse gas emissions and other pollutants. It is however possible that this growth both in quantity and quality could

cater for various social and environmental consequences of climate change and environmental sustainability and social equity.

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