THE FORESTRY SECTOR IN TANZANIA

Introduction

Implementation of trade liberalization policies has not been smooth in Tanzania, as they have had several positive and negative environmental, social and economic effects. This study attempts to identify and quantify the environmental impacts of trade liberalization in the forestry sector of Tanzania. Quantification of such effects has been difficult because of the lack of consistent and comprehensive data and the related economic variables in almost all sources of forest statistics.

Assessment of the environmental impacts of trade policies has become enormously popular in recent years. Governments, in collaboration with research institutes, universities, the private sector, NGOs, international organizations and other stakeholders have shown a keenness to identify and quantify these impacts. The motivation behind the collaboration and interest is due to the projections and empirical studies which reveal that apart from the possible gains from changes in trade policies, there are adverse effects which, if uncontrolled, may jeopardize not only the country’s trade position, but also pose a threat to sustainability both at national level and in some cases globally. This study is one such development in this area. With the financial and technical support of the United Nations Environment Programme (UNEP), the Centre for Environmental Economics and Development Research (CEDR) has undertaken an impact assessment of trade liberalization in the forestry sector of Tanzania.

The forestry sector has a very important role to play in Tanzania’s economy. Although in absolute terms, its contribution to total gross domestic product (GDP) is low, it has increased considerably during the past 10 years by about 35 per cent, from 2.6 to 3.4 per cent of GDP.1 Covering 37.8 per cent of the total landmass, which is about 33.5 million hectares, the country’s forests contain such a high level of biologically diverse resources that Tanzania is one of the richest countries in terms of biodiversity in the world and among the 12 most diverse countries. Tanzania has Africa's largest number of mammals, second largest number of plants (10,000 species), third largest number of birds (1,035 species), fourth largest number of amphibians (123 species) and fourth largest number of reptiles (245 species), all harboured by the country’s forests. In addition, the forests provide over 92 per cent of the energy resources, support the development of other important sectors (such as agriculture and tourism) through provision of water resources and catchments, maintain hydrological balance and soil protection, recycle atmospheric gases, provide construction materials, employment sources and others.

1 Due to methodological problems a large part of the activities within the sector are not reflected in GDP figures. Underestimation has been estimated at 35-60 per cent (see Bagachwa, 1992).
Employment is provided through forest industries, forest plantations, government forest administration and self-employment in forest-related activities. Trade in forest products has recently increased, and the sector’s contribution to total trade has more than doubled.

Like all economic sectors of Tanzania, the forestry sector has been influenced by trade liberalization policies introduced in 1987. Due encouragement has been provided to private sector participation in various activities in the sector. Increased export of forest products to boost the country’s overall export growth has been permitted through policy incentives. Some of the measures implemented in the course of trade liberalization have included: removal of trade distortions in the production and marketing of forest products to ensure effective market-determined prices, removal of fiscal and non-fiscal barriers in forest trade and promotion of forest-related sectors.

From the time when trade liberalization and other policy measures were introduced in the Tanzanian forestry sector, the following has been observed:

Growth in trade of forest products (both domestic and foreign trade) has been rapid, characterized by an increase in share of total trade. There has been increase in the production, distribution and marketing of forest products of Tanzania. Trade and investment liberalization policies in other sectors and a general change in economic activities have also influenced activities in the forestry sector. Construction activities in Tanzania depend upon significant amounts of forest products as input and materials. In recent years, such activities have increased, hence triggering further production of forest products and exerting pressure on forests.

In terms of usage, various estimates have indicated that fuel wood extraction represents the largest use of forest products (estimates average over 60 per cent). Nevertheless there is a need to assess the positive and negative environmental impacts of trade liberalization policies and multilateral trade rules on the Tanzanian forestry sector, while taking into account the social and economic benefits.

This study therefore elaborates country and sector specific methodologies to assess these impacts and suggests a long-term policy development process to address future trade-related environmental and social impacts of sectoral activity. The study also highlights a need to develop a policy package (a set of standards, voluntary private sector initiatives, regulations, economic instruments, or a single economic instrument), to correct the negative and enhance the positive environmental, social and economic impacts of trade liberalization in the forestry sector of Tanzania. It attempts a cost-benefit analysis for implementing the policy packages recommended by the study. It argues that there is a need to further support national capacity building in international trade policy research and strengthen human and institutional capacity in the selection, design and implementation of economic instruments to assist in addressing the negative impacts of trade liberalization policies in the sector. It also advocates enhancing
national stakeholders’ understanding of the implications of multilateral trade rules and trade liberalization on national sustainable development and the environment.

**Economic impacts of trade liberalization**

The analysis focuses on: product impacts, technology impacts, production, management and technology trends, and scale impacts. In undertaking product impacts assessment, changes in trade volumes of products related to the forestry sector were considered. The analysis reveals a positive product impact in the form of an increase in trade in forest products that are environmentally friendly. Prior to the adoption of trade liberalization measures, most forest product export was composed mainly of raw form products, particularly logs. Trade liberalization policies encourage domestic processing of the forest products before they are exported which adds value and discourages the quantity intensive harvesting that has been blamed for increased deforestation.

However, markets for forest products have been variable. According to the FAO report,\(^2\) global trade in primary forest products has risen substantially, reaching US$ 126,000 million in 1998. Forest products are among the few products that a developing country like Tanzania can produce at lower domestic cost and easily compete in international markets. The technological impact of trade liberalization can be indicated by the change in type of technology induced by the changes in trade policies. Trade liberalization has also resulted in the increased import of machinery for the forestry sector. However, these new machines have also resulted in increased wastage of wood.

Like in the furniture sector, trade liberalization in the forestry sector has resulted in an increase in the domestic price of fuel wood and charcoal, partly due to the export of such products. This should have led to a more rational use of these resources.

The impact of trade liberalization on production, management, and technology trends in the forestry sector of Tanzania is another important aspect of economic impacts considered. The analysis looks at the technology and management systems employed by the production units that have been carrying out trade and investment in the forestry sector. According to the study findings, the value added of the forestry sector of Tanzania has been positive and increasing from the time trade liberalization measures were adopted. Apart from the value added, the study also investigated the trends in productivity. Analysis of this trend reveals that labour productivity in the forestry sector has been increasing throughout the period investigated.

Trends in the value of the forestry sector as a percentage of contribution to total GDP is one of the crucial indicators of the change in degree of openness and tradability of forest products over time. This trend has been coupled with an increase in production and trade in forest products. This study reveals that the value of forest trade as a percentage of the sector contribution to GDP has shown a tremendous increase.

In analysing the scale impact of trade liberalization, economic growth, financial gains and the related aspects were considered. The analysis looked at the contribution of the forestry sector to Tanzania’s GDP, national employment and investment. The contribution of the forestry sector to total GDP, from the time trade liberalization was proposed in 1987 and its implementation era of the 1990s, indicates an impressive growth of about 35 per cent in overall contribution. However, in overall terms, the forestry sector’s contribution is only about 3.5 per cent, having increased from 2.6 per cent. Before the adoption of trade liberalization as well as other reform measures, the sector’s total contribution was small.

In analysing the scale effect of trade liberalization, trends in investment growth were considered. Since 1992, the Tanzania Investment Centre has been attracting and approving investment including forestry sector investment. There has been an increase in contribution to national employment due to the new investment growth in the sector. The statistics of the Tanzania Investment Centre reveal that new projects approved generated 883 jobs in 1995, and 1,707 jobs in 1996. In 1997, the new jobs created were 12,213.

It was revealed that forest rehabilitation is mainly carried out by central Government, or local governments depending on who owns the forests. For the forests open to the public there is no specialized agency for rehabilitating forests once damaged.

Structural impacts of trade liberalization measures on the forestry sector were also considered. Such impacts consist of microeconomic effects resulting from the trade liberalization measures. The intention was to analyse whether trade liberalization measures have promoted an efficient allocation of resources and efficient patterns of production and consumption within the forest. It was found that following transport sector liberalization, there are more investors who have joined the transport routes to the forested areas. The economic survey of 2000, reported that during 1999 about 9,104 licenses were issued for new cargo transporters including a number of operators in forest cargo transportation. The Tanzania Zambia Railway Authority currently operates special rail transportation for timber from the southern Tanzania to Dar es Salaam.

This study has confirmed that Tanzania has responded positively to the changed production sphere by adopting new policies and regulations for the forestry sector. The changes started with the National Investment Policy in 1997. The National Environmental Policy was also revised in 1997 to reflect the existing production environment. Apart from these changes, the Government of Tanzania has also adopted the new National Forestry Policy of 1998, which encourages private sector involvement and increased trade in forest products.

Environmental impacts of trade liberalization

Analysis has revealed significant environmental impacts of trade liberalization in the forestry sector that include increased rate of forest product extraction thereby
fuelling deforestation. Increasing deforestation has resulted in adverse impacts in the country. Both the consumption and production processes of forest products have resulted in increased atmospheric carbon dioxide, particularly through burning forest products for fuel or as a result of uncontrolled fires during the process of production. In areas surveyed it was found that following liberalization, trade in forest products including charcoal products has increased. The consequence has been increased forest destruction.

Like other forests in the world, the forests of Tanzania play an essential role in the maintenance of hydrological balance. Increased harvesting of forest products has resulted in the sharp decline of forest products in a given area. The survey has revealed that increased activities in the forest have badly affected forest biodiversity. It is indisputable that there is increased rate of deforestation as a result of increased production and trade of the forest products.

During the early 1990s, groups of people invaded the Kazimzumbwi forest reserve which is part of the ‘biodiversity rich’ coastal forests of Tanzania. These people established permanent settlements inside the forest and initiated various economic activities, mainly forest related activities including charcoal making, harvesting and selling of firewood, farming, hunting etc. Trade liberalization and the related policy changes in the sector have resulted in increased activities in the forests and settlers in the forests are increasingly contaminating the water sources near or within the forests.

The social organization impacts of trade liberalization in the forestry sector of Tanzania were also analysed. With the introduction of trade liberalization measures, an enabling environment for private sector involvement in forestry was created. This involves cooperation between forest administration and relevant private sector associations. Other measures being encouraged are; establishment of forest village reserves, community-based organizations for joint forest management, exchange of information and awareness raising.

**Valuation of the effects of trade liberalization**

To the extent that quantitative measures of the impacts of trade liberalization policies on the forestry sector can be generated, Tanzania can improve the attractiveness of returns on forest investment that has been encouraged by response to policy change. Specific thrust is given to valuation with a view to meeting the above mentioned objective. Economic, environmental and social valuation of activities in the forestry sector motivated by trade liberalization policies are thus undertaken.

**Estimating the value of trade liberalization impacts**

Value associated with forestry activities were classified into two categories: change in direct use values and change in indirect use values.

**Direct use values** include commercial and industrial market forest goods and services (fuel wood, timber, pulpwood, poles, fruits, animals, fodder, medicines etc.).
bio prospecting, and other research activities in the forests. **Indirect use values** of the forests considered are those involving environmental protection.

**Valuation of economic impacts**

In valuating economic impacts, both economic benefits and costs were analysed. The analysis attempted to provide a monetary value to the changes that have been induced by trade liberalization measures within the forestry sector.

**Economic benefits**

**Export impact**

The analysis entails an investigation of change in trade volume influenced by trade liberalization.

<table>
<thead>
<tr>
<th>Item</th>
<th>Ex ante annual trade value of wood and related products (in US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood products</td>
<td>1,544,400</td>
</tr>
<tr>
<td>Timber and its products</td>
<td>0</td>
</tr>
<tr>
<td>Processed wood products</td>
<td>0</td>
</tr>
</tbody>
</table>

*Data Source: Trade statistics and Economic Surveys.*

<table>
<thead>
<tr>
<th>Item</th>
<th>Ex post annual trade value of wood and related products Value (in US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood products</td>
<td>21,110,000</td>
</tr>
<tr>
<td>Timber and its products</td>
<td>8,000,000</td>
</tr>
<tr>
<td>Processed wood products</td>
<td>2,000,000</td>
</tr>
</tbody>
</table>

*Data source: Trade statistics and Economic Surveys.*

The net benefit of trade effect is US$ 41,026,870.

**Fiscal impact**

In valuating the fiscal effect of trade liberalization on the forestry sector, changes in the annual collection of two major sources of revenue are analysed. The first source is trade tax. Prior to trade liberalization, Tanzania levied an export tax of about 3 per cent, but as part of liberalization, export tax was abolished. Other sources are royalties collected by the central Government from forest products. The net *ex post* and *ex ante* export tax is estimated at US$ 2,800,042 by this study. The net benefit of fiscal effect is US$ 3,399,075.5.
The net total benefit

The analysis considered the *ex ante* and *ex post* quantity of forest products consumed in Tanzania. The major consumers of forest products were divided into *wood industries* (including makers of wood and its products, furniture and fixture, and the related products), *wood fuel consumers and construction industries*. The hypothesis behind the investigation was that trade liberalization is one of the policy changes that have triggered the expansion and or intensity of production of forest products, and this can be reflected by increased volume of production and marketing of such products.

While it is also acknowledged that there may be other factors than trade liberalization responsible for the increased volume of production and marketing of forest products, there is substantial evidence that liberalization of the forestry sector has greatly accelerated the production and marketing of various types of forest products.

**Wood products consumed by the construction industry**

In order to check whether the hypothesis that there has been an increased volume of production and marketing of forest products, the study thus compared the quantity of wood consumed by this sector before and after liberalization. The change in the quantity of wood consumed by the construction sector after trade liberalization is 459,000 m$^3$.

**Forest products consumed by the manufacturing sector, such as furniture & fixtures, wood products etc.**

The wood industry is part of the manufacturing sector mainly for processing and semi processing forest products. If there is really increased volume of production and marketing of forest products after trade liberalization, then trends in the amount of wood consumed can at least reflect such changes. The change in the quantity of wood consumed by the manufacturing sector after trade liberalization is 551,838 m$^3$.

**Fuel wood consumed**

Fuel wood consumption forms an important proportion of the forest products consumed in Tanzania. The change in production intensity and marketing of forest products can therefore partly be reflected by an increased volume of fuel wood consumed and marketed. The change in the quantity of the fuel wood consumed in Tanzania is estimated at 900,000 m$^3$. (The statistics for fuel wood are not reliable due partly to the lack of mechanisms to trace the scattered users in rural and urban areas, and the lack of a common unit of measurement. The figure included is thus based on projected commercially transacted fuel wood.)

**Analysis of environmental costs**

In assessing the environmental costs of trade liberalization, the analysis was based on estimating the opportunity cost of increased trade volume of wood and its products after trade liberalization was implemented. Change in the rate of deforestation was estimated by comparing the deforestation rate *ex ante* and *ex post*, and isolating
deforestation due to other activities such as clearing for agriculture and demand increase due to population increase. Estimation results in a conservative estimate of about 45,000 hectares of deforestation directly and indirectly attributed to trade liberalization.

**Economic value of environmental costs**

Estimation of the value of increased deforestation is arrived at using the standard established estimates of return per hectare. The total cost arrived at is about US$ 40,500,000. However, the deforestation due to increased exportation of timber and other wood related products is estimated at an annual total cost of about US$ 8 million.

**The net impact of trade liberalization on the forestry sector**

The impact of trade liberalization on the forestry sector on average indicates a significant positive economic benefit.

**Cost-benefit ratio, optimal level of trade liberalization and cost externalization**

Notwithstanding the possible negative environmental impacts, trade liberalization has had significant positive impacts, and countries including Tanzania would not be rational to discourage trade liberalization. This ratio has been used in various policy assessments to capture the potential impact of trade liberalization. Policy makers are thus encouraged to pursue trade liberalization until marginal environmental damage equals marginal benefit of trade liberalization. The policies proposed are those aimed at improving the environmental, economic, social and legal, as well as the institutional sphere under which the production and trade of forest products is undertaken.

**Policy implications**

Given the significant positive impact (estimated at over $100 million by this study) of trade liberalization on the forestry sector, there is a need to ensure that their use is economical and sustainable. Given the observation that there is a tendency of actors in the forestry sector to 'externalize' the environmental costs, policies for inducing 'internalization' of environmental costs in rapidly expanding forestry activities need be adopted. Innovation in such areas is absolutely crucial in order to mitigate pressure on forest products while encouraging sustainable production and consumption, vital for achieving optimal trade liberalization policy impact in the sector. Successful implementation of trade liberalization policy will depend on the laws governing land use and human settlement. It is also worth noting that the design and implementation of an effective environmental management policy framework for the forestry sector is crucial for attaining sustainable forest production. An effective legal and regulatory system is necessary for sustainable forest management that will enhance the positive impacts of trade liberalization and at the same time minimize the negative ones. For a long time now the Forest Ordinance, Cap. 389, has been the principal law safeguarding the forests of Tanzania. In total there has been rampant encroachment on the forests. This is one of the reasons why the new environmental policy and the
The Forestry Sector in Tanzania

forestry sector policy have specified the need to introduce other management approaches such as economic instruments and others.

Economic instruments in the forestry sector

The Forest Ordinance, Cap. 389 of 1957 empowers the ministry responsible for forest management to collect various revenues in the form of forest fees, penalties and forfeitures, hunting licenses, tour operator services and other related charges.

Design of the economic instruments for forestry sector management of Tanzania

In order for forest management to be in line with the existing production and ownership structure, economic instruments are proposed. In the design of such policy instruments, the environmental quality or desired forest quality standard should be defined.

Information requirement for determination of forest quality

- accurate marginal deforestation produced by economic activities in the forestry sector
- marginal benefit obtained from economic activities in the forestry sector
- type and number of activities involved in the forestry sector
- number of persons affected by the damage and those who benefit.

To arrive at an environmental tax in the forestry sector of Tanzania, it is proposed that the tax be based on the current marginal damage and benefit.

Implementation strategy for recommended policy packages

Given the nature of the institutional framework and the administrative structure in the forestry sector, a participatory approach is crucial for implementing any serious policy change for environmental management and sustainable production. It is also necessary to review various policy action proposals for forest management, including the economic instruments.

Advice on the design and implementation of the recommended policy instruments for forestry management

The Forestry Department is the key government institution in charge of forestry sector policy formulation, planning, monitoring, law enforcement and general management and administration. Since this department is mandated to manage forests including revenue collection in the form of royalties and fees, it is an important
implementing agent for this study's proposed plan and strategy for forestry sector management.

**Enforcement of the proposed policy instruments**

- Formulation of policy on environment
- Environmental planning
- Advising the Government on effective forest management based on the proposed implementation strategy.

**The major tasks of the private sector and actors in the sector**

The successful implementation of the proposed plan for forest management will depend on the participation of actors in the forestry sector, particularly traders, distributors, local government and manufacturers of forest and related products. Their role will be particularly crucial in promoting investment in environmentally sound production technology in the sector and in facilitating sustainable harvesting and utilization of forest products.

**Implementation plan**

The first crucial stage is to identify and define the environmental problems associated with trade liberalization policies and other trade-related measures, quantification of the problems and in the same way identify the positive environmental impacts of the same policies.

**Stakeholders**

Broadly, stakeholders (as defined in the National Forestry Policy) will include the forestry and beekeeping authorities, local communities, non-governmental organizations involved in forest management, the private sector (especially operators in the sector such as loggers, exporters, manufacturers of wood products etc.) specialized agencies, local government, and other relevant government institutions.

**The benefits of implementing the proposed policy actions**

In arriving at the community benefit of forest conservation, this study undertook a contingent valuation method. The method was used to estimate the value of the forests from the perspectives of the local communities around the forests where proper management is instituted. The individuals sampled were asked their maximum willingness to pay (WTP) for an increase in the quality of the forest through
sustainable management of the forest. Mean willingness to pay for the improved forest quality containing all the forest resources was US$ 16 annually per head.

**Benefit from realization of the market value of the forest products**

Well managed forest harvesting, sustainable production and marketing will allow the flow of products through the official market channels.

<table>
<thead>
<tr>
<th>Total Economic benefit</th>
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<tbody>
<tr>
<td>Community-based benefit</td>
<td>=</td>
<td>$ 21,608,176</td>
</tr>
<tr>
<td>Recovered market value of charcoal</td>
<td>=</td>
<td>$ 84,000,000</td>
</tr>
<tr>
<td>Recovered market value of timber products</td>
<td>=</td>
<td>$ 51,940,000</td>
</tr>
<tr>
<td><strong>Total market value</strong></td>
<td>=</td>
<td><strong>$157,548,176</strong></td>
</tr>
</tbody>
</table>

**Economic consequences and price elasticity of demand of wood products**

The economic and environmental impact of introducing economic policy instruments for forest management is estimated using the price elasticity of demand. The price elasticity of demand for forest products in Tanzania has been estimated in a few studies in this area. The value for the products estimated was between –0.1735 and 0.82. This shows that the price elasticity is very low and thus price increases would not result in decreases in consumption. This implies that while revenue generated can be increased by increasing prices, this will not lead to more rational use of forest resources. Thus it points to the limitations of the use of economic instruments, especially of price based incentives.

**Conclusions**

The implementation of trade liberalization policies in Tanzania has been marked by both positive and negative social and environmental impacts. On the positive side, trade liberalization policies in the forestry sector have encouraged the expansion of production and trade in forest products in Tanzania, thereby accelerating the macroeconomic contribution of the sector. Prior to trade liberalization for example, the sector’s contribution to total trade was 3 – 4 per cent of total exports, but after adoption of trade liberalization, the contribution has jumped to about 11 per cent of the total country’s exports. Other aspects of the positive results of implementing trade policy changes and the related measures are increased importation of inputs, growth in sector investment, value added increase, increase in GDP, and employment contribution.

The specific policy instruments that will ensure Tanzania’s successful implementation of trade liberalization are such instruments as; pollution control agreements, forest product charges, control of licenses given to operators in the forests, forest product certification, and other measures such as use of fines and penalties etc.
The field survey of this study has confirmed that the forestry sector needs a more coordinated institutional framework that will enable the implementation of policy management tools to ensure sustainable sector development. Forest access and ownership is also one of the factors in the adverse impacts of trade liberalization policies. The forest areas open to the public are like a common resource, and even in the reserved forests, mechanisms to control forest use is inadequate. Under valuation of forest products is another problem that perhaps causes less attention. There is a saying that the forest is the heart of Tanzania’s economy, because all the major economic sectors of the economy: agriculture, tourism and human resources very much depend on the forests. In sum, there are positive and negative impacts of implementing trade liberalization policies on the forestry sector of Tanzania. Given the existing institutional framework of the forestry sector, this study proposes that the Forestry Department with the technical guidance of UNEP, and a national stakeholders’ Task Force work should implement the policy packages and other recommended measures to ensure proper forest management.