

# Sierra Leonean Log Export Ban Policy: Balancing Sustainable Forest Management and the Economy

Mohamed John Kamara<sup>1</sup>, Lei Su<sup>2</sup>

<sup>1,2</sup>Northeast Forestry University, College of Economics and Management, 26 Hexing Road, Harbin, Heilongjiang 150040, China

<sup>1</sup>kamaramohamedjohn3[at]gmail.com

<sup>2</sup>24757211[at]qq.com

**Abstract:** *Protections of tropical forests have recently being a hot topic of debate among many scholars. This could be as a result of their important role in carbon sequestration, releasing of oxygen into the atmosphere and serving as home for biodiversity. The topic was selected because Sierra Leone in the past has implemented on and off log export bans (LEB) in order to protect its forests. However, the effectiveness of such policy and its implication for the country's economy has not been examined before. Moreover, with the global drive for the adoption of Sustainable forest management and the mounting pressure from environmental organisations for policy reforms, the Sierra Leonean government policy needs to be revisited to examine whether a LEB policy can achieve the goals of conservation and economic development. The Global forest product model (GFPM) was used to simulate and determine the impact of a LEB policy on the forest sector and the economy of Sierra Leone. The model uses data from the United Nations Food and agricultural organization to predict how the forest sector reacts to a change in trade policy. The results show that a LEB policy cannot achieve the twin goals of forest conservation and economic growth.*

**Keywords:** Sierra Leone, Log Export Ban, Forest Protection, Global Forest Product Model (GFPM)

## 1. Introduction

Sierra Leone like many other developing countries highly depends on forest resources for economic growth and development [1]. The country is considered one of the poorest in the world and is ranked 181 in the United Nations Human Development Index [2], placing it among the lowest ten countries. Sierra Leone heavily relies on the export of its natural resources for the provision of goods and services. Equally, the forestry sector has been very important in providing jobs for Sierra Leoneans.

Since Sierra Leone's independence from colonial rule, the Sierra Leonean government has enacted a few major forestry policies to ensure a steady and profitable timber trade. Initially, key government-owned sawmilling companies were set up to facilitate the production and export of timber in 1990 [3]. In 1988, the government passed the country's first forestry policy with timber production as its main goal. The Forestry Act of 2010 also demonstrates the value that the Sierra Leonean government places on timber production and export for revenue generation, making ownership and management of forests more centralised with the government as the main authority. According to the 2015 FAO Forestry Report, it is estimated that the forestry sector in 2015 contributed over US\$101 000 000 to the Sierra Leonean economy [2].

However, while it is imperative that Sierra Leone increase its GDP to improve and ensure the livelihoods of its people, this must be held alongside its responsibilities to protect its environment. Particularly in developing countries, economic and environmental performance must go hand in hand [4]. This is even more the case in Sierra Leone, which is listed as one of the most vulnerable countries in the world to the effects of climate change [5]. Due to inadequate legislative protection, there has been widespread, uncontrolled, illegal logging in the natural forests of Sierra Leone over a long-term

period. Deforestation has led to large scale land degradation, loss of biodiversity and diminished land productivity [6]. Between 1990 and 2005, Sierra Leone lost 9.5% of its total forest cover, around 290,000 hectares, and in the last decade, the country has lost nearly 800 000 hectares of forest cover [2]. The uncontrolled use of forests has had a negative impact on the environment and livelihoods of local communities, the most significant being the 2017 mudslide that displaced more than 300 000 people and killed over 300 [8].

In response to these adverse effects of deforestation, the government of Sierra Leone responded with a blanket log export ban. On 9 Apr 2018 the President of Sierra Leone, Madaa Bio, made an executive order stating that 'the export of all timber logs is suspended with immediate effect' [9]. This was not the first of Sierra Leone's log ban policies aimed at preserving its remaining forests. In 2001 to 2002, the country banned the export of timber logs in order to promote local processing and generate employment [10]. Similarly, in August 2007 the Government issued a ban on the felling, processing and export of timber. The goal of the ban was to "curb the overuse of forest resources and the loss of revenue caused by the expansion of illegal forest activities". The ban was lifted in 2008 and reinstated in 2011. The Government also adopted a set of guidelines in 2010 covering a wide range of forestry issues such as leasing of classified forest; issuance of logging permits; stumpage fees; including transportation of forest products; export permits; importation of chain saws and sawmills [11]. Under the new forest guidelines, forest rangers supervised the felling of trees for logs. Felling trees without a ranger present was forbidden. The new guidelines introduced a specific transport permit issued by the Ministry of Agriculture and Forestry for the transport of all Sierra Leonean logs and a new code identification system for all logs leaving the country.

With these various and changing forestry policies in Sierra Leone, it is important to evaluate the effectiveness of these policies to improve future policy formulation.

Volume 9 Issue 9, September 2020

[www.ijsr.net](http://www.ijsr.net)

Licensed Under Creative Commons Attribution CC BY

Moreover, in addition to domestic social, environmental and economic concerns, there is also mounting pressure from both domestic and international environmental organisations for Sierra Leone to adopt sustainable forestry management practices [12].

Therefore, a study of the effects of Sierra Leonean forest policies is timely. This study aims at evaluating the effectiveness of the log export ban policy of 2018 on the Sierra Leone government's dual aims of economic growth and environmental protection. The study will also propose potential policy recommendations for sustainable forestry management in Sierra Leone.

## 2. Research Background and Significance

### 2.1. Research background

The effectiveness and appropriateness of log export ban (LEB) policies have been extensively debated in the literature. The reasoning for and against is varied and ultimately the literature on this matter is divided. While some authors have argued in favour of log export ban, especially for developing countries, others have argued against it. In the literature, LEB policies are justified primarily on the basis that:

LEBs are good for revitalisation of local forest-based industries: Supporters of LEB policies suggest that an export ban leaves loggers with the only option to sell their logs directly to domestic processing mills thereby, leading to the creation of more jobs and the strengthening of the development of local industries. Furthermore, they believe that export-oriented, value-added products; increases the Gross domestic product of a country.

Another rationale put forward by those in favour of such policy is the argument that it increases the availability of logs on the domestic market. Proponents of this view suggest that because the LEB prevents roundwood (logs) from directly leaving the country, the domestic processing industry would not have to compete with foreign companies for access to local timber supply, which results in cheaper prices for logs [13]. The reduction in the price of logs is believed to induce local processing industries to expand.

LEB policy encourages domestic job creation: Another strong argument widely used in the literature surrounds job creation. It states that greater people can be hired in processing industries than in logging activities. Furthermore, export of unprocessed logs may additionally represent the export of employment which in any other case could have occurred in the domestic processing sector. [14].

In contrast, LEB policies are strongly criticised in the literature based on these major concerns:

LEBs cut off a major source of export revenue: Many scholars including Pam Zahongo have stated that developing countries need to trade more in order to increase their GDP growth so that they can provide services to improve the quality of life of their people [15]. Arnoldo Contreras-Hermosilla in his work "The Underlying Causes of

Forest Decline" stated that restrictive trade, in the form of log export ban, is more inclined to result in deforestation than liberalised trade. [16]. An export ban cuts off a major source of revenue for economies whose major comparative advantage depends on natural resources. It is suggested that GDP formation, employment and foreign earnings from timber trade have positive and significant effects on the long-term health of these countries' economies.

LEBs lead to a shortage of some forest products in international trade: Another major problem of LEB policy is that it leads to the unavailability of some timber products on the international market. A log export ban hinders the smooth free trade of goods and services from one place to the other.

LEBs discourage innovative ideas for sustainable forest management: Many are of the view that a LEB policy does not create room for consideration of more sustainable ways of harvesting timber or managing forests. Some scholars including Deacon et al 1995 have expressed doubt around whether a LEB policy can actually decrease the level of deforestation; they argued that the policy on logging exports will discourage the adoption of sustainable timber harvesting practices [17].

### 2.2. Significance of the study

Sierra Leone is globally recognized as a biodiversity hotspot being part of the Upper Guinea Rainforest. There is rich indigenous flora and fauna including important endemic species and internationally rare and threatened species [18]. Unfortunately, poor economic growth and environmental degradation mainly due to deforestation remain one of the major challenges for the country. One of the effects of environmental degradation has been frequent mudslides that have resulted in the loss of lives and property. It is therefore important for the country to ensure a balance between economic growth and environmental protection.

While data on the economic problems and impact are available, the level of deforestation in the country has not been measured sufficiently within the past nine years. According to FAO reports, in 1990 there was a total of 6.6 million m<sup>3</sup> of standing timber volume in all types of forests in the country. Based on the population forecast the country's population will be around 8.9 million in 2020 and based on the current per capita consumption of sawn timber, construction poles, firewood and charcoal of 0.07 m<sup>3</sup>, 0.012 m<sup>3</sup>, 0.52 m<sup>3</sup> and 0.11 m<sup>3</sup> respectively, Sierra Leone's wood supply and demand situation will probably soon be in deficit. [10].

Consequently, although it is significant that the Sierra Leonean government pursue policies that create jobs, increase GDP growth, and reduce unemployment; it should also implement policies that cater for the protection of its environment. Therefore, a study of the importance of balancing economic growth and forest conservation in Sierra Leone is not only timely, but necessary as a reference point for future government policy plan.

### 3. Overview of Sierra Leone forestry sector

#### 3.1 Forest exploitation and deforestation

According to past research work it is estimated that Sierra Leone was formerly covered by 70% of natural forest cover, but only less than 5% of the original forests currently remain intact [12]. Deforestation remains one of the major environmental challenges in Sierra Leone. It is estimated that the country experiences an annual deforestation rate of about 2% [10]. The main drivers of deforestation and land degradation in Sierra Leone have been identified and stated as follows:

**Colonialism:** Forest exploitation in the country dates as far back as in 1808 when British rule in the colony of Freetown began. This colony covered much of the western part of the country, including adjacent peninsulas and islands. The rate of forest exploitation significantly increased during this period. An Irish entrepreneur by the name of John McCormack began the first commercial exploitation of timber around the Bullom shores, Great Scarcies, and Port Loko in 1816 [19]. Most of the timber exploitation and deforestation during this period was centred on riverine areas. The level of timber exploitation and deforestation during the periods of 1816 to 1840 was especially significant.

**Civil war:** The civil war is believed to be another major contributor to the spate of deforestation in Sierra Leone. Research by Robin Burgers et al stated that “total forest cover in Sierra Leonean chiefdoms declined by an average of 9.6 percentage points, from 67.5 percent covered to 57.9 percent covered, across the period of the war”. [20].

**Timber export trade:** Commercial logging is also considered as one of the major drivers of deforestation in the country [21]. The sector is rife with corruption mainly due to the lack of strong oversight which enable unlicensed chain saw operators to cut down trees unnoticed and without any accountability.

**Land clearing for farming:** Agriculture plays a key role in the economy and livelihood of the people of Sierra Leone. According to FAO 2013 report, the agricultural sector of the country employs around 60% of the population and accounts for 49% of the country’s GDP. Due to the high percentage of people involved in this sector, it has resulted in pressure on the environment, especially forest areas as they are cut down and cleared for farming.

#### 3.2 Land tenure and forest policy

**Land tenure:** Sierra Leone has a dual land ownership system. Lands in the western area of the country are directly owned and managed by the government through the Ministry of Agriculture and Forestry, whereas lands outside Freetown all the way into the interior parts of the country are usually owned by chiefs and extended families. In a similar way ownership of forest lands in the country is divided along these same lines of land tenure system.

There are three kinds of forests in Sierra Leone they are as follows; public forests, community forests, and private

forests. Public forests are owned and managed by the government through the Ministry of Agriculture and Forestry. Community forests are jointly owned by the community, with the community chief acting as the custodian of the forests and the government. Private forests are usually owned by individuals.

**Forest policy:** The principal law guiding the use and management of forestry and forest reserves in Sierra Leone is the 1988 Forestry Act. Although it is the major legislation guiding forest management and regulation in the country it is believed that the Forestry policy has been inadequate in addressing contemporary issues in forestry governance and management [12].

Moreover, the policy mainly focuses on production and exploitation of forest resources. The act is also out dated and ineffective in ensuring sustainable use of forests. What has also exacerbated this problem is the lack of a national forestry inventory. The last national forestry inventory was compiled in 1986 [3]. National data on forest resources of Sierra Leone have been poorly gathered and managed; a majority of the records have not been secured and kept in a systematic fashion [12]. There is therefore an urgent need for a national forestry inventory to take stock of the country’s remaining forestry resources which is useful for effective policy formulation and implementation.

### 4. Policy Simulation Scenario

The simulation scenarios that were developed in order to examine the effects of the LEB policy on the Sierra Leonean economy are as follows:

**Base scenario:** The base scenario shows a prediction of what the economy would have been like without any policy changes. The base year for the base scenario is 2015, as with the alternative scenario. The base year, thus, makes a prediction of the economy from 2015 onwards without a LEB policy.

**Alternative Scenario:** This scenario simulates a situation in which Sierra Leone implements an indefinite log export ban policy starting in 2018. The alternative scenario therefore shows a prediction of what the economy would be like with a LEB policy in place, with the prediction also beginning from the base year, 2015.

### 5. Methodology

The Global Forests Product Model (GFPM) software was used to run the policy simulations of this research. “The Global Forest Product Model is a dynamic economic equilibrium model of global production, consumption and trade of forest products” [24]. The original formulation and several applications used in this work are described by Buongiorno et al (2003). The current version, including the software, data, and documentation, are available at: <http://labs.russell.wisc.edu/buongiorno/welcome/gfpm/>. The GFPM software predicts how, by what quantity, and when production, consumption, imports, exports and costs of forest products might change, depending on external or internal factors and policies like economic processes, world trade



liberalization, and new environmental policies governing either the utilization of forest products, or the management of forests.

The GFPM uses data from 180 countries (including Sierra Leone) and these countries' interaction through imports and exports. The software consists of 9 input data files that can be used to carry out a simulation: specification, demand, supply, forest resource, manufacture, capacity, recycling, transportation, and exogenous change data.

For this work an alternative scenario based on the assumption of a log export ban on forest resources in Sierra Leone was utilized. In order to determine the effects of this policy on the economy of Sierra Leone, the following were simulated: specification, demand, supply and exogenous change data. First, the experiment was set up by creating periods 2015 to 2018 – period 1, 2018 to 2019 – period 2, 2019 to 2020 – period 3, 2020 to 2021 - period 4, and until 2030, with one per period. An export ban was added by limiting trade of the two commodities that Sierra Leone exports- round wood and sawn wood. Finally the experiment was run and results analysed.

The main databases used by GFPM were the FAOSTAT for production, trade, and price statistics, the FAO global forest resource assessment for forest area, and forest stock, and the World Bank Development Indicators Data Base.

## 6. Results and Observations

### 6.1. Impact on the environment

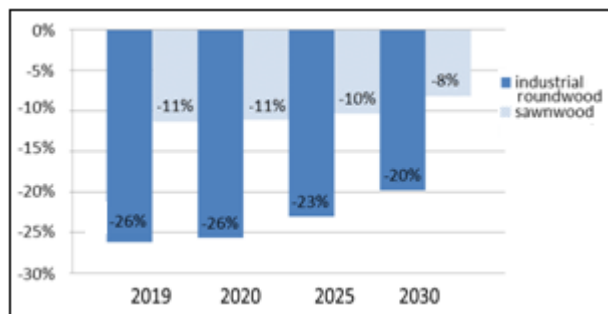


Figure 1: Percentage change of alternative scenarios from base scenario

Production of industrial round wood and sawn wood: Results in Figure 1 show that production of the two major timber products- round wood and sawn wood significantly reduced with an LEB policy with significant change, especially in the production of industrial roundwood. In the first two years of the implementation of the export ban, production of industrial roundwood will dramatically decrease by -26%. Sawn wood production will also reduce by 11%. This change could however have a positive impact on the environment, and is likely to reduce the occurrences of natural disasters like flooding, mudslides and soil erosion. This increase in environmental protection will help Sierra Leone better meet its international environmental obligations.

However, decreased production may have a negative impact on the economy and logging industries. This is due to a

possible loss of revenue, and thus taxes from log exports, resulting in lower GDP. It may also have a considerable impact on the livelihoods of Sierra Leoneans, as jobs are shed in order for logging companies to compensate for the low demand for logs.

From the results it is obvious that the environmental benefits of the LEB policy come with some economic loss, especially in the logging sector. The results show that the LEB policy is bad for the economy but good for the environment; therefore the Sierra Leonean government needs to balance the two and decide which a priority is.

Table 1: Consumption of industrial round wood, sawn wood and fuel wood (per thousand cubic meters)

Name of commodity	Base scenario		Alternative scenario	
	2019	2030	2019	2030
Ind. round wood	5.6	6.3	5	5.8
Sawn wood	4.3	5.3	4.7	5.6
Fuel wood	5851	5978.7	5851	5979.6

Consumption of wood products: Results under this section show that following the LEB (under the alternative scenario) there is a considerable decrease in the consumption of industrial round wood, as compared to a no export ban (under the base scenario). There is particularly a significant change in the first few years the ban is in place. During this period, consumption will go down by 6000 cubic meters which represents 10% decrease in consumption. However, the trend in the sawn wood industry is quite opposite to what is happening in the industrial round wood sector. The export ban induced a sharp increase in the consumption of sawn wood. There is an increase of about 5000 cubic meters in the first few years, with a probability of continuing growth of to 6000 cubic meters by year 2030. The reason for the increase could be attributed to a change in the behaviour of downstream industries as they without foreign competitors, might decide to produce more wood for domestic consumption. The results for fuel wood consumption show that demand for the commodity remained high with a log export ban. The result is bad for the environment as the high volume of fuel wood consumption could mean increase in the removal of more trees from the forest.

### 6.2. Impact on the economy

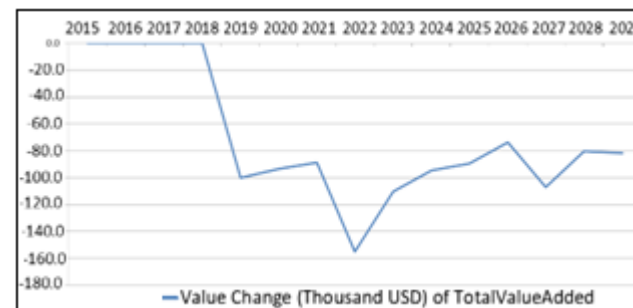


Figure 2: Value Change (Thousand USD) of Total Value Added

Value-added change: Value-added change here refers to the positive or negative contributions made to the GDP from the trade of industrial roundwood and sawn wood. Results from

this section indicate that a log export ban would lead to a huge loss of revenue for Sierra Leone.



Figure 3: Value of Export Change (Thousand USD)

Value exports: The results in this situation show a negative impact of the LEB on the Sierra Leonean economy. Due to the policy the total exports value of Sierra Leone dropped by \$4.6 million. In the short term the policy will have a dramatic impact on the economy, because it will lead to a significant loss of revenue. This is evident, especially in the first five years (from 2019 until 2023). However, it is possible that in the long-term the economy might slowly recover as other areas might make up for the loss in revenue.

## 7. Conclusion

The results from the experiment show that it is difficult for a log export ban policy in Sierra Leone to simultaneously achieve the goals of forest conservation and sustainable economic growth. This experiment shows that the LEB is not a sustainable policy for forest conservation in Sierra Leone due to the following reasons:

First, while the ban was able to significantly reduce the country's level of production and export of industrial round wood, it did not reduce the domestic consumption of sawn wood, fuel wood and other wood products. It is therefore obvious that the deforestation rate will continue to increase even with the ban in place. This is mainly due to pressure on forests for domestic consumption. Moreover, it is also possible that the policy might actually lead to deforestation as domestic processing companies compete against each other to meet domestic market demand for the supply of wood products. This in turn will lead to over production of timber products on the market. Another major concern is that the policy might also lead to illegal cross border timber trade. Given the overproduction of woods, domestic wood processing companies might seek alternative markets in neighbouring countries to sell their excess goods. Therefore if the LEB policy is not effectively implemented it might lead to illegal cross border trade with the other countries Sierra Leone share borders with. On the positive side, the policy might however lead to lower prices of woods.

Second, the results show that an introduction of a log export ban policy is not beneficial for the country's economic growth in the short term. This is as a result of the fact that the policy will lower the country's GDP, and cut off a major source of revenue for the government. The LEB policy will result in a major loss of revenue ranging from export taxes to operation licenses. This is negative for the Sierra Leonean

economy especially so when the country is seeking to diversify its economy so that it can stop relying on mineral exports. The ban might not only cut off a major source of much needed revenue, but it also risks the loss of jobs in the forest sector. The loss of jobs from foreign companies due to the export ban will have a negative impact on the livelihoods of people who were formerly involved in the log export sector.

Third, although it was anticipated that implementing the Log export ban policy will attract higher investment in the domestic wood processing sectors; the results however points to the opposite. Although results indicate that the LEB policy will lower prices and increased availability of logs on the domestic market, however the results also show that little change occurred in the behaviour of domestic consumers, especially in the demand for industrial roundwood. Moreover, rapid investment in trying to achieve value addition to the country's wood manufacturing might in the future induce a higher level of deforestation.

Fourth, although the ban looks bad for the economy it is however good for the environment. It is expected that in the long-run, the log export ban policy might eventually bring economic benefits to the country, with the growing local wood processing industries possibly compensating for the loss of revenue from the operations of foreign wood processing companies.

In conclusion, a log export ban cannot simultaneously achieve conservation and economics goals for Sierra Leone. It can however be very useful in saving the remaining forests of Sierra Leone with strong supervision of the domestic harvesting and use of timber.

## References

- [1] Chernor, M. B. "Economic Growth, institutions, and the natural resource curse in Sierra Leone: an empirical investigation", *IJBSS*, 7(5), pp.100-124, 2016.
- [2] United Nations Development Program "Human Development Report" 2016. Retrieve from <http://hdr.undp.org/en/content/human-development-report-2014>
- [3] Food and Agriculture Organization of the United Nations. "Global forest resources assessment 2015". *FAO Global Forest Resource Assessment*, 2015.
- [4] Everett, T., Ishwaran., Mallika., Ansaloni., G, Paolo., Rubin., and Alex. "Economic growth and the environment". Munich Personal RePEc Archive Munich, Germany, MPRA Paper No. 23585, 2010.
- [5] Eckstein, D., Künzel, V., Schäfer, L., "Global Climate Risk Index" Germanwatch report 2018.
- [6] Nkonya, E., Mirzabaev, A., & Von Braun, J. *Economics of land degradation and improvement: a global assessment for sustainable development*. New York: Springer, 2015.
- [7] Usamah, M, "Analysis of Causal and Trigger Factors of the August 2017 Landslide in Freetown, Sierra Leone: towards a Sustainable Landslide Risk Management in Sierra Leone", *UNDP Sierra Leone and Environmental Protection Agency, Freetown*, 2017.

- [8] Government of Sierra Leone state house Press Release. "Executive order No. 9 April 2018 on revenue mobilization", 9th April, 2018. Available from <https://statehouse.gov.sl/>.
- [9] Alieu, E. "Forestry Outlook Study in Africa", Sierra Leone Country Report, FAO 2001.
- [10] World Trade Organisation. "Sierra Leone Trade policy review". WTO Country Report, 2017.
- [11] Food and Agriculture Organization of the United Nations. "Global forest resources assessment country report – Sierra Leone", FAO Country Report, 2010.
- [12] Bran, J. 2002. "Trade policy in Indonesia: implications for deforestation". Journal of International Economics, Spring 2002.
- [13] Resosudarmo, B. P., & Yusuf, A. A. "Is the log export ban an efficient instrument for economic development and environmental protection? The case of Indonesia", Asian Economic Papers, MIT Press, vol. 5(2), pages 75-104, Spring/Su, 2006.
- [14] Zahanogo, P. "Trade and economic growth in developing countries: evidence from Sub-Saharan Africa". Journal of African Trade, pp 3(1-2), 41-56, 2016.
- [15] Contreras-Hermosilla, A. "The underlying causes of forest decline. Available from Center for International Forestry Research" In proceedings for Center for International Forestry Research (CIFOR) Occasional Paper no. 30, 2000.
- [16] Deacon, R. T. "Assessing the relationship between government policy and deforestation". Journal of Environmental Economic Management. pp 28(1), 1-18, 1995
- [17] Food and Agriculture Organization of the United Nations. "The state of Sierra Leone's biodiversity for food and agriculture", FAO Biodiversity Report, 2017.
- [18] Ijagbemi, E. A. "The Freetown colony and the development of 'legitimate' commerce in the adjoining territories". Journal of the Historical Society of Nigeria, pp 5(2), 243-256, 1970.
- [19] Robin Burgess et al. "War and deforestation in Sierra Leone" Environmental Research Letters Journal. Pp 2-8, 2015.
- [20] Konteh, W. 1997. "Forest resource management in Sierra Leone: a critique of policy formulation and implementation". Doctoral Dissertation, University of Leeds, August 1997 Available: <http://etheses.whiterose.ac.uk/3263/>.
- [21] Food and Agriculture Organization of the United Nations. "Sierra Leone Bio Energy and Food Security Brief". Bioenergy and Food Security Projects, 2013.
- [22] Food and Agriculture Organization of the United Nations. 2015. "Global forest resources assessment country report Sierra Leone". Global forest resource assessment, 2015.
- [23] Buongiorno, J., Zhu S., Zhang, D., Turner, J., & Tomberlin, D. The global forest products model: structure, estimation, and applications. 1st Edition. Academic Press: San Diego, California, 2003.

## Author Profile



**Mohamed John Kamara** received a Bachelor of Arts Degree from the University of Sierra Leone in 2014. In 2015 he was selected for the UNESCO Great Wall Fellowship Program. In 2016 he was awarded a scholarship by the Chinese Scholarship Council to pursue a Master's Degree in International Trade at Northeast Forestry University. He is currently in the final year of his Master's Degree studies.