



**PANDA MITI**  
**KIBIASHARA**  
PRIVATE FORESTRY PROGRAMME

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## FINANCIAL AND ECONOMIC ANALYSIS OF PRIVATE FORESTRY INVESTMENT OPPORTUNITIES IN RUVUMA REGION



United Republic of Tanzania  
MINISTRY OF NATURAL RESOURCES AND TOURISM  
Forestry and Beekeeping



MINISTRY FOR FOREIGN  
AFFAIRS OF FINLAND



## Financial and Economic Analysis of Private Forestry Investment Opportunities in Ruvuma Region

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United Republic of Tanzania  
**MINISTRY OF NATURAL RESOURCES  
AND TOURISM**  
Forestry and Beekeeping Division



**EMBASSY OF FINLAND  
DAR ES SALAAM**

# Financial and Economic Analysis of Private Forestry Investment Opportunities in Ruvuma Region

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#### ABBREVIATIONS AND ACRONYMS

CAPEX	Capital expenditure
FDT	Forestry Development Trust
IRR	Internal rate of return
MAI	Mean annual increment
MNRT	Ministry of Natural Resources and Tourism
NPV	Net present value
NVO	Non-village organisation
OPEX	Operating expenditure
PFP	Private Forestry Programme

RWE	Roundwood equivalent
TFS	Tanzania Forest Services Agency
TIC	Tanzania Investment Centre

## EXECUTIVE SUMMARY

### Objective of the assignment

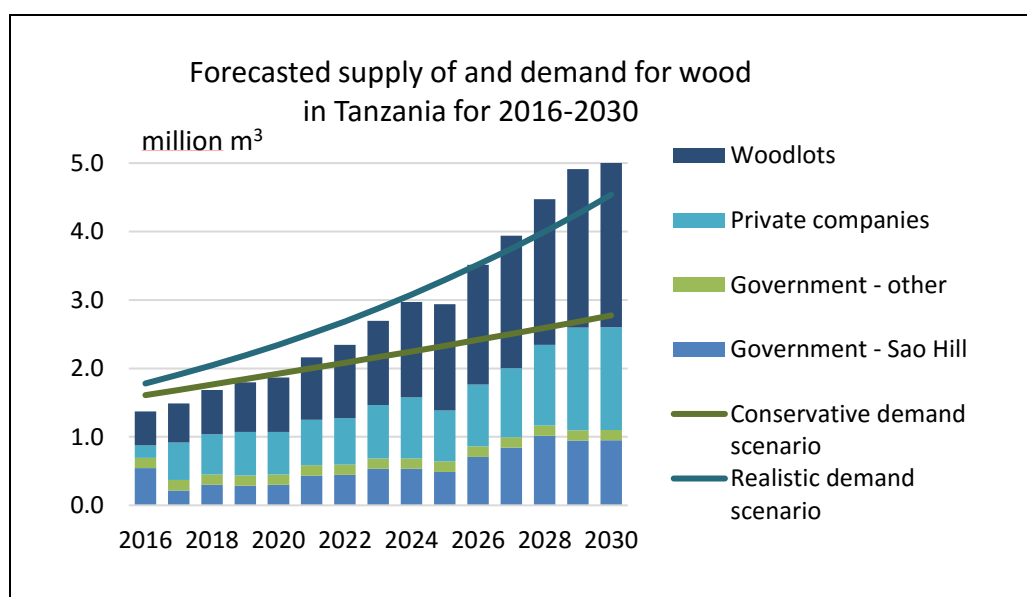
The objective of this report is to provide financial information on viable investments in under-developed plantation areas under a concession or lease agreement with the TFS and/or village TGAs. The report focuses on investment sectors in Ifinga in Ruvuma Region in the Southern Highlands of Tanzania.

### High-level market outlook

The roundwood supply in Tanzania has traditionally relied on the government plantations. The coming years will see a shift towards reliance on private plantations as small and medium-scale tree growers increasingly play a central role in this market.

The demand for wood in Tanzania will increase steadily due to socioeconomic drivers such as the growth of population and gross domestic product and urbanisation. However, since some demand is suppressed, meaning that consumers substitute other building materials for wood, it is difficult to estimate the exact demand potential.

Our analysis of both demand and supply found that there is enough wood in the market to satisfy the increasing demand but that some limiting factors make it difficult to make that assertion conclusively. First, estimates of the supply, especially from private tree growers, are inaccurate. Second, whether small and medium-scale tree growers have the capacity to produce industrial-quality wood in their woodlots is questionable. Even assuming low growth rates, as we do here, and considering a shorter-than-usual average rotation period, whether woodlots can produce a significant supply of wood in the future is far from certain.



### Investment opportunities in Ruvuma Region

The Private Forestry Programme (PFP) has identified 90,000 ha in Ruvuma Region as being suitable for investment in private forestry. This report assessed Ifinga Block, which is comprised of Sector A, 13,316 plantable ha managed by the Tanzania Forest Service (TFS), and sector B, 24,331 plantable ha managed by local tree growers' associations (TGAs).

The internal rates of return on investment (IRR) in the two sectors are both some 14% if we assume that there will be a steady planting programme with an 18-year rotation period. The calculations assume no costs for land since the land will be owned by the local partners to the planned partnership. The plantable areas in sector A are within the boundaries of two villages, Ifinga and Mkongotema, and those in sector B within three

villages, the two named and Wino. The plantable areas in each village in each sector are listed below.

Sector	Village	Total land, ha	Planted/ reserved, ha	Not plantable (25%), ha	Plantable area, ha
Sector A	Ifinga	10,564	1,300	2,316	6,948
	Mkongotema	8,491	0	2,123	6,368
	Total	19,055	1,300	4,439	13,316
Sector B	Ifinga	12,738	0	3,185	9,554
	Mkongotema	2,768	0	692	2,076
	Wino	16,935	0	4,234	12,701
	Total	32,441	0	8,110	24,331

In terms of economic benefits, investing in plantation forestry would affect employment and taxation. Sector A would annually generate USD 2.4 million in corporate tax income calculated at a rate of 30% from 2035 onwards, while sector B would annually generate USD 4.3 million from the same year with the same tax rate.

Managing Sector A would require about 86,000 man-days and employ over 453 people annually, while Sector B would require 157,000 man-days, and 828 employees. Forestry projects normally employ both women and men. Women are commonly employed more in the early stages (i.e. nursery operations and plantation establishment) and less so in later stages (i.e. harvesting) of the plantation forestry value chains. Furthermore, an expanding wood industry developed around the plantation resources would provide additional indirect employment opportunities.

### **Sharing benefits with local partners**

The report presents alternative benefit-sharing models, all of which establish a foundation for negotiations between beneficiaries, namely, the investor, the government, and the TGAs or other involved bodies. Benefits accruing to communities will include employment, income, land rent, a share of revenues, and social improvements, while those for investors will include net revenues, wood supply security, and a social licence to operate. The report analyses the profitability of the investment from the point of view of the investor for each model in turn though, in practice, the models are often combined to create a benefit-sharing package consisting of multiple benefit-sharing models. An example of this package consists of a reasonable level of land rent combined with payments to the local partner based on revenues and a fixed annual allocation to infrastructure projects.

The benefit-sharing model selected should create an incentive for the local partner to ensure that the plantation performs well. It should be a revenue/profit-based contribution that provides small-scale support even in the early phases of the project. In general, the most benefits are created through a revenue-based land rent agreement with additional contributions in the form of infrastructure projects, either social or industrial.

The report also includes a list of activities to undertake during the benefit-sharing process and key concepts to keep in mind while drafting a benefit-sharing agreement. These activities and concepts should be incorporated in the practical steps of the roadmap for investment described below.

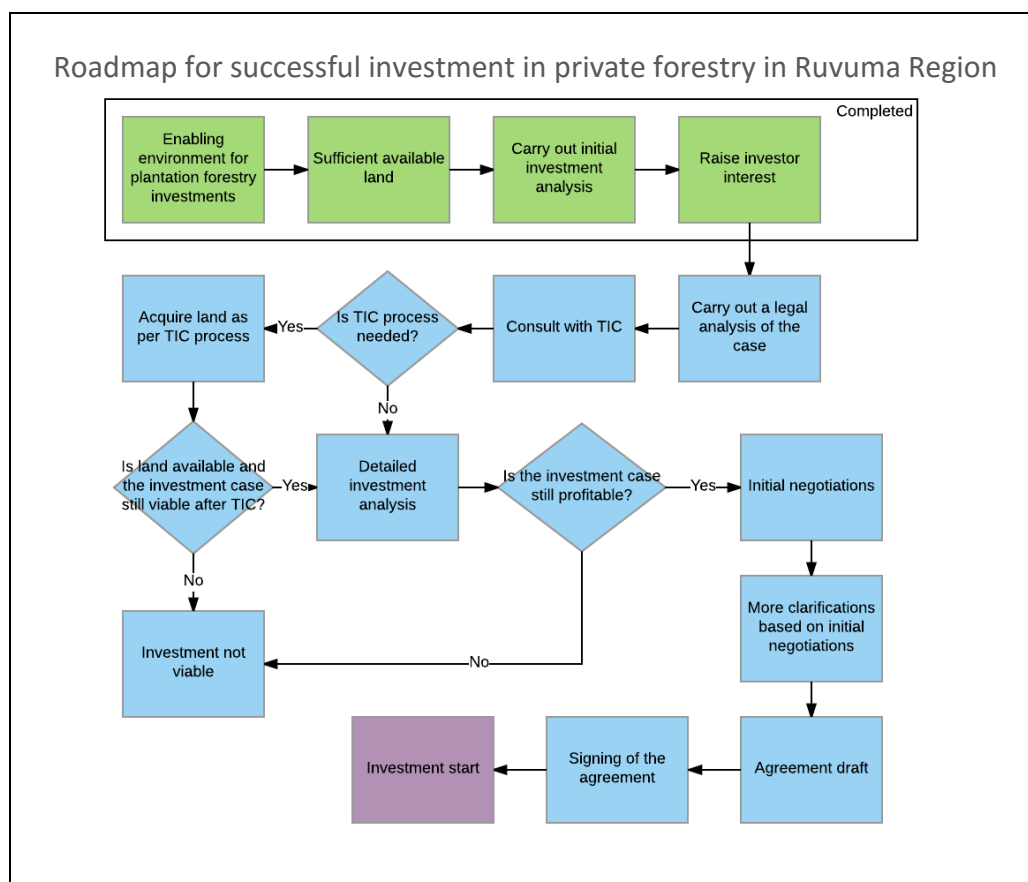
### **Roadmap to successful investment**

The legal restrictions on a foreign investor's ability to access land directly through the TFS or TGAs need a thorough analysis. The Village Land Act of 1999, the Forest Act of 2002, and the Public-Private Partnership Act of 2010 all have implications for the kind of investment planned, and an investor might need to go through the Tanzania Investment Centre (TIC) to gain access to land for investment.

The steps in creating a roadmap are straightforward: the PFP or other investor will need to consult a lawyer to clear all legal issues, consult the TIC to see if its approval is required, prepare a detailed investment analysis with the proposed benefit-sharing



model in mind, and negotiate an agreement that keeps benefit-sharing in mind. Then it simply must start the project.



## Recommendations

### 1. Clear land tenure

The potential investor should study the village land use plans (VLUP) carefully and familiarise him/herself with the land use of the area, and any changes in land tenure that have taken place in the targeted land area to avoid conflicts that may be detrimental to the investment.

### 2. Assess legality of foreign investment in land

Carry out a legal analysis of at least the following legislation to see if a foreign investor can invest in land by indirectly accessing it: Tanzania Investment Act 1997, Land Act 1999, Village Land Act 1999, Land Regulation 2001, Forest Act 2002, Land (Amendment) Act 2004, Land-Use Planning Act 2007, and Public-Private Partnership Act 2010.

### 3. Consult the Tanzania Investment Centre

Consult the TIC to see if the land demands that it gets involved and/or if it can assist and, if the law requires, work together to transfer village land into general land to make investment possible.

### 4. Negotiate an equitable benefit-sharing model

Negotiate an equitable benefit-sharing model with the local partner, either TFS or TGAs, that is optimal for all parties involved. Include at least a component that is linked to plantation performance, such as revenue-sharing, and components that legitimize land reservation for future plantation, such as a low land rent for all reserved land and/or periodic contributions to infrastructure projects.

## **1. INTRODUCTION**

### **1.1 Background**

The PFP is a bilateral initiative between the governments of Finland and Tanzania designed to increase income in the Southern Highlands through commercial private plantation forestry and to strengthen forest industries. The programme seeks to facilitate the Ministry of Natural Resources and Tourism (MNRT) in its initiative to secure private sector involvement in strengthening the management of forest reserves.

### **1.2 Rationale**

During recent decades, substantial areas of forests have become degraded and they make no contribution to economic development. At the same time, there is a serious shortfall in the supply of forest products. Tanzania has had success with private-sector plantation forestry, but the lack of land has limited the scope for its expansion. The government has not leased reserve land under concessional arrangements or even created a model for doing so.

Underutilized forest reserves are envisioned of being developed as productive commercial plantations complying with the best international sustainability practices, which include providing sustained financial returns, benefits for local communities, and ecosystem services.

The establishment and management of productive commercial forest plantations on currently under-utilized forest reserve land could be outsourced to third parties through concession or lease agreements and benefit-sharing arrangements, thereby restoring degraded areas and meeting the demands of the nation's expanding wood industry. The nation's Forest Policy, Forest Act (Sections 20 and 21) of 2002, and Forest Regulation all call for this development.

The overall objective of the assignment is to provide financial information on investment in under-developed plantation areas under a concession or lease agreement with the TFS and/or village TGAs.

### **1.3 Structure of the report**

First, a rationale for investing in private forestry in Tanzania is provided by analysing the supply-and-demand dynamics of forest products in the country. Second, the investment opportunities in Ruvuma Region the PFP in October 2016 in a separate report. Third, a financial and economic analysis of sectors A and B in the Ifinga block is presented. Lastly, various benefit-sharing models are analysed and next steps are discussed.

## 2. MARKET OUTLOOK

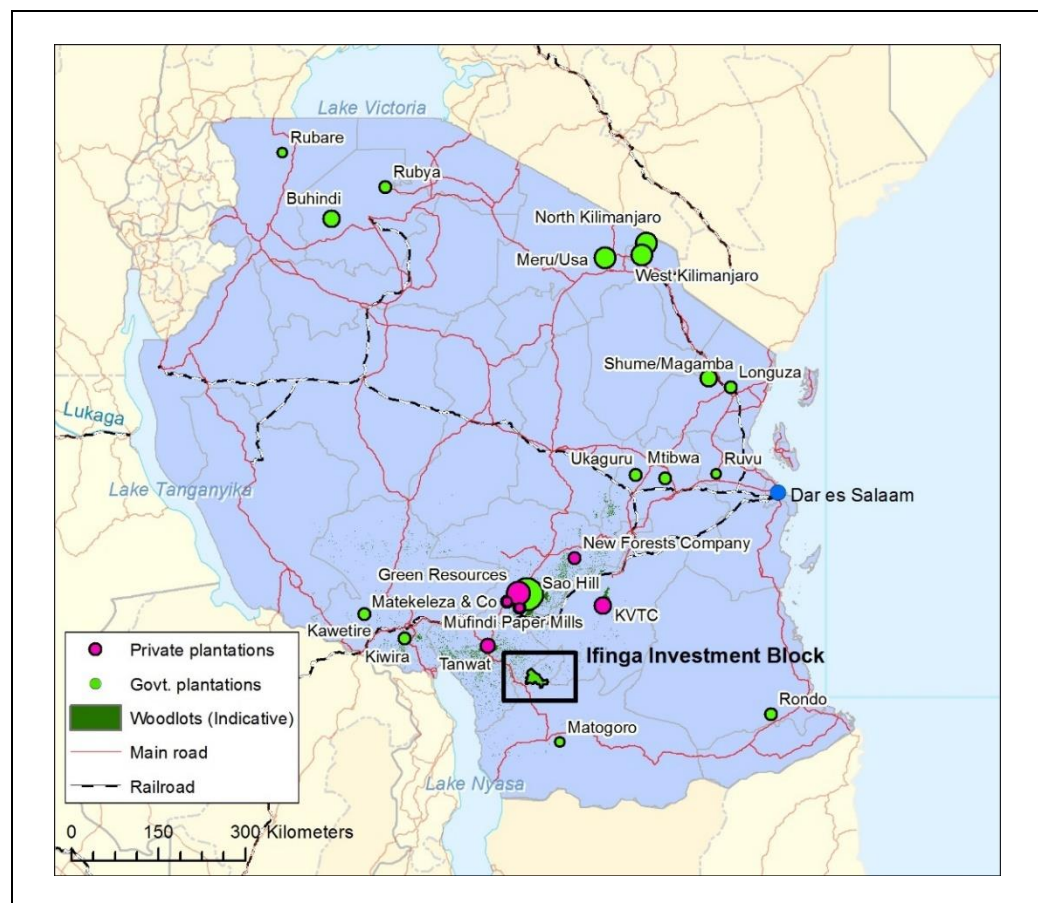
### 2.1 Introduction

This market outlook focuses on supply of plantation wood and demand for wood-based products in Tanzania. The potential supply is estimated based on information available regarding existing plantation assets, on the demand for wood-based products, and the trade balance of the wood-based products industry in Tanzania. It provides potential investors with a reason to invest in commercial tree plantations in Tanzania and identifies the main value-drivers of the assets.

### 2.2 Wood supply from plantations

The study considered only plantation wood, which is concentrated in the Southern Highlands and northern Tanzania. Figure 2.1 presents the locations of private and government tree plantation resources in Tanzania and highlights the Ifinga investment block it studied.

**Figure 2.1 Private and government plantations in Tanzania**



#### 2.2.1 Wood plantation resources in Tanzania

Existing industrial plantations, both private and public, and woodlots are concentrated in the Southern Highlands. They cover 130,000 ha, 64% of which is owned by the government. Most are pine plantation, but eucalypts, teak, and cypress have also been planted. Table 2.1 lists the industrial-scale private and government plantations in Tanzania.

**Table 2.1 Industrial-scale plantations in Tanzania**

Plantation	Location	Plantation area, ha
Total in Tanzania		132,159
Total in Southern Highlands		90,721
Government plantations		85,111
Sao Hill	Mufindi-Iringa*	48,000
North Kilimanjaro	Rombo-Kilimanjaro	6,340
Meru/Usa	Arusha	6,110
West Kilimanjaro	Siha-Kilimanjaro	4,263
Shume/Magamba	Lushoto-Tanga	4,200
Buhindi	Sengerema-Mwanza	3,431
Kiwira	Mbeya*	2,739
Longuza	Muheza-Tanga	1,810
Mtibwa	Turiani-Morogoro	1,640
Rubya	Ukerewe-Mwanza	1,623
Kawetire	Mbeya*	1,563
Rondo	Lindi	905
Wino	Songea*	880
Rubare	Bukoba-Kagera	847
Ukaguru	Gairo-Morogoro	760
Private plantations		47,048
Green Resources	Mufindi, Kilombero, Lindi**	17,052
Kilombero Valley Teak Company	Kilombero	8,150
Tanganyika Wattle Company	Njombe *	6,000
New Forests Company	Kilolo *	4,846
Mufindi Paper Mills	Mufindi*	4,000
Metekeleza & Co	Mufindi*	4,000
Small/Medium mills (estimate)	Mufindi *	3,000

\*All in the Southern Highlands

\*\*Mostly in the Southern Highlands; 1,359 ha of the Lindi plantation is outside

The most recent estimates by University of Turku (UTU) and FAO<sup>1</sup> of the total tree plantation area in the Southern Highlands is 210,000–250,000 hectares, 64% smallholdings and 36% industrial scale. This means that there are some 135,000–160,000 hectares of smallholdings in the Southern Highlands of Tanzania. In addition to UTU/FAO work, Forestry Development Trust has carried out its own geospatial analysis and reported a total of 233,000–258,000 hectares of tree plantations, 68% smallholdings and 32% industrial scale.

**Table 2.2 Recent estimates of tree plantations in the Southern Highlands**

	UTU, FAO	FDT
Total area	210 000 – 250 000 hectares	233 000 – 258 000 hectares
Scale	64% smallholdings 36% industrial-scale	68% smallholdings 32% industrial-scale
Species mix	67% pine 33% eucalypts and wattle	72% pine 28% eucalypts

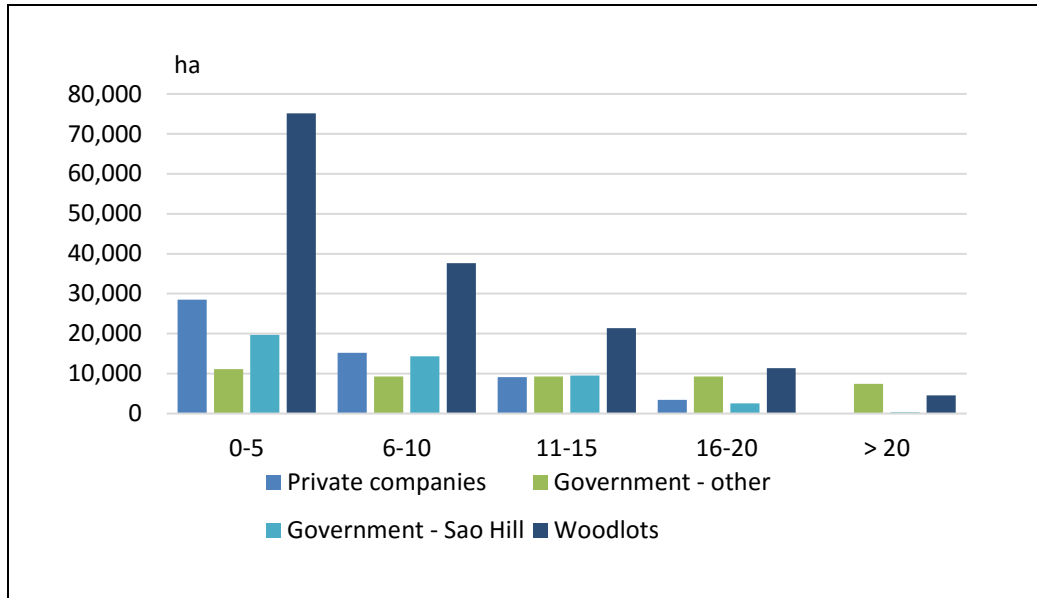
### 2.2.2 Plantation age structure in Tanzania

The age structure of the tree plantations in Tanzania was estimated using data from the Sao Hill plantations and from those company plantations with data and estimations of the age structure of small and medium woodlots. The age structure of other government plantations other than Sao Hill plantations is currently unknown, so their trees were

<sup>1</sup> Mankinen, U., Koskinen, J., Käyhkö, N. & Pekkarinen, A. 2016. Remote sensing and participatory based forest plantation mapping of the Southern Highlands, Tanzania. Food and Agriculture Organization of the United Nations and University of Turku.

assumed to be evenly distributed across the age classes. Overall, the age structure is skewed towards young plantations.

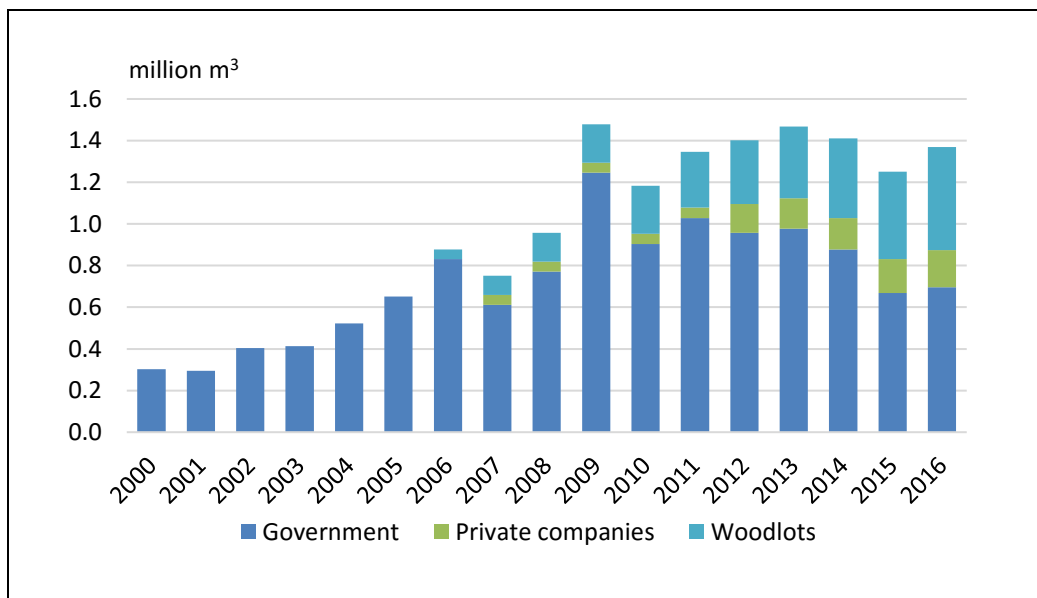
**Figure 2.2 Plantation age structure in Tanzania**



### 2.2.3 Past wood flows

Historically, consumers have relied on government plantations, particularly Sao Hill, the largest in the nation, for wood (Table 2.1). Only during the past decade has wood from other sources entered markets. In fact, the supply of industrial roundwood from government plantations has declined over the past few years and that from private sources has increased.

**Figure 2.3 Wood flow by ownership, 2000-2016**

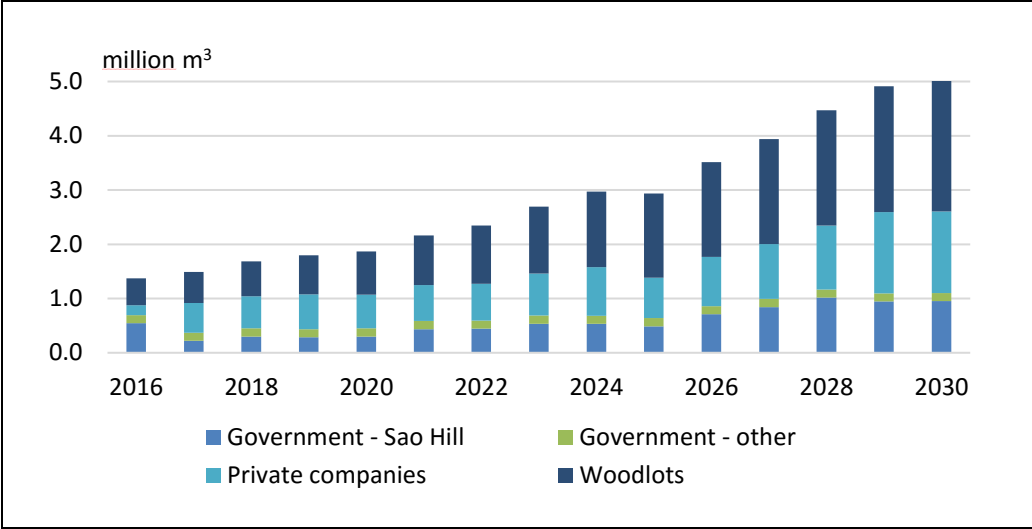


**2.2.4 Future wood flows**

Future wood flows will increasingly come from small and medium woodlots and the significance of government plantations will decrease. In 2030, almost half of the total demand for industrial roundwood will be sourced from woodlots.

Our estimates are based on common growth rates and an average figure for tree plantation management regimes in Tanzania.<sup>2</sup> Our wood-flow forecast indicates the likely overall potential wood flow. It does not separate out different species or timber assortments.

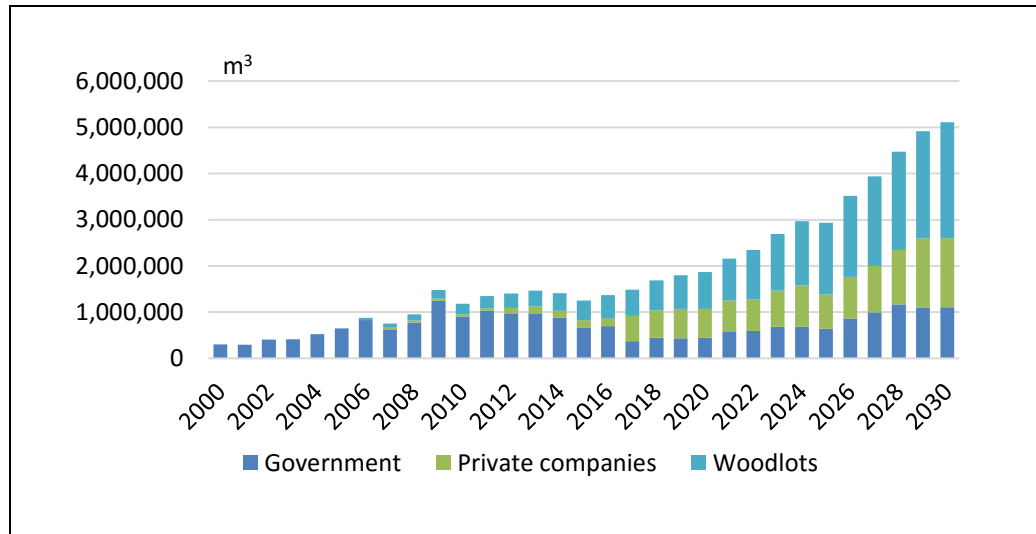
**Figure 2.4 Wood flow by ownership, 2016-2030**



Combining the both wood flows, a picture shown in Figure 2.5, paints an overall picture of how wood enters the industrial roundwood market and highlights the imminent change in wood-market dynamics.

<sup>2</sup> The mean annual increment (MAI) assumed for Sao Hill plantations was 21 m<sup>3</sup>/ha/a and the rotation applied was 25 years. For private plantations, the assumed MAI was 21 and the rotation, 18 years. An MAI of 10 and rotation of 15 was assumed for woodlots.

**Figure 2.5 Wood flow by ownership in Tanzania, 2000-2030**



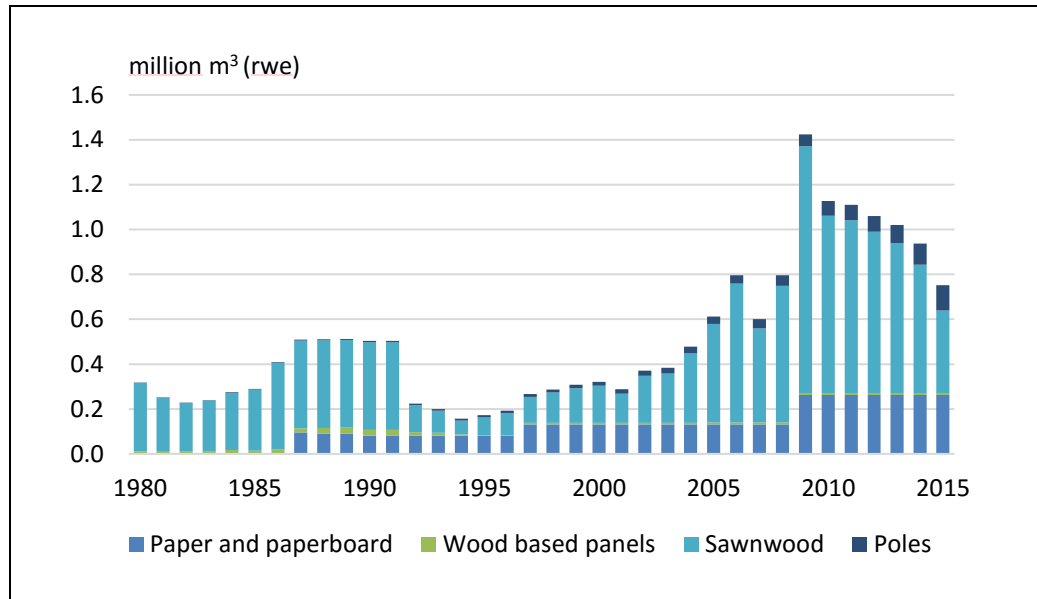
### 2.3 Demand for wood

The wood-product sector in Tanzania is dominated by the production of sawnwood. The largest consumer of sawnwood is the construction sector. The majority of sawnwood is produced by small sawmills with a typical annual production capacity of 500–5,000 m<sup>3</sup>. There are a few larger sawmills; these are owned by Sao Hill Industries, Kilombero Valley Teak Company, and New Forests Company.

The use of roundwood for sawnwood production has decreased significantly during recent years (Figure 2.6). The wood supply from government plantations has not been able to keep up with the demand and more sawnwood is being imported. Although the use of wood has fallen in terms of roundwood equivalents, the output of production has not decreased at the same rate, in part due to the increase in the recovery rates of new sawmills.

In addition, an increasing proportion of industrial roundwood is being used by a vast number of small and medium sawmills. Data about these mills is not gathered systematically.

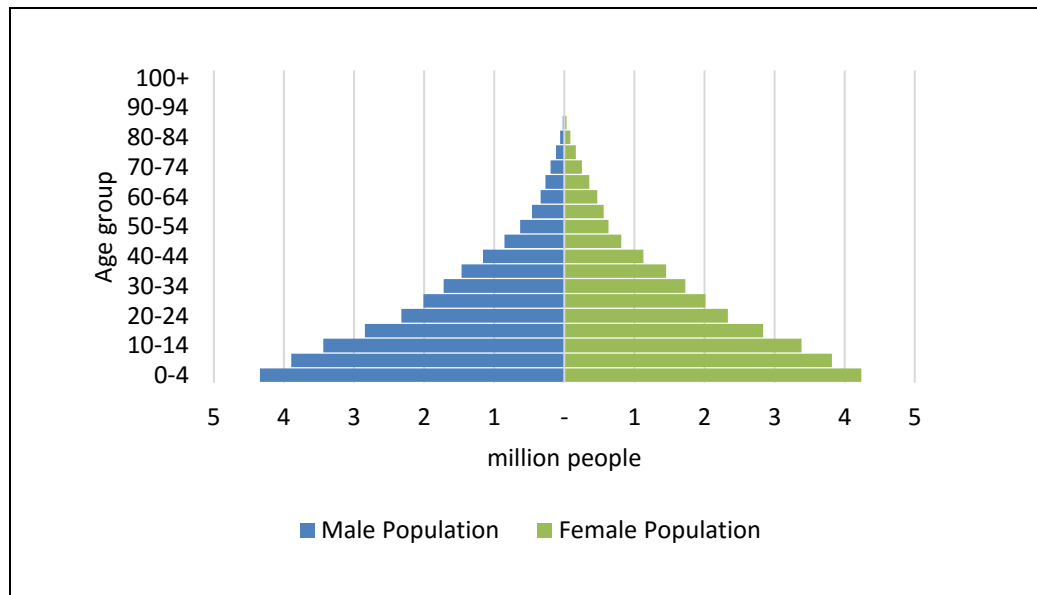
**Figure 2.6 Industrial use of wood in wood-product production, 1980-2015**



**2.3.1 Drivers of demand**

Demand for wood products is driven by the rapid growth of Tanzania’s population and gross domestic product (GDP) and its high rate of urbanisation. According to the World Bank, Tanzania has a population of 53 million and is growing about 3% per year. At this rate, Tanzania’s population will hit 100 million within a few decades. Figure 2.7 illustrates the demographics of the nation: the pyramid shape reflects rapid population growth both now and in the future due to the large population of young people.

**Figure 2.7 Age structure of Tanzanian population, 2016**

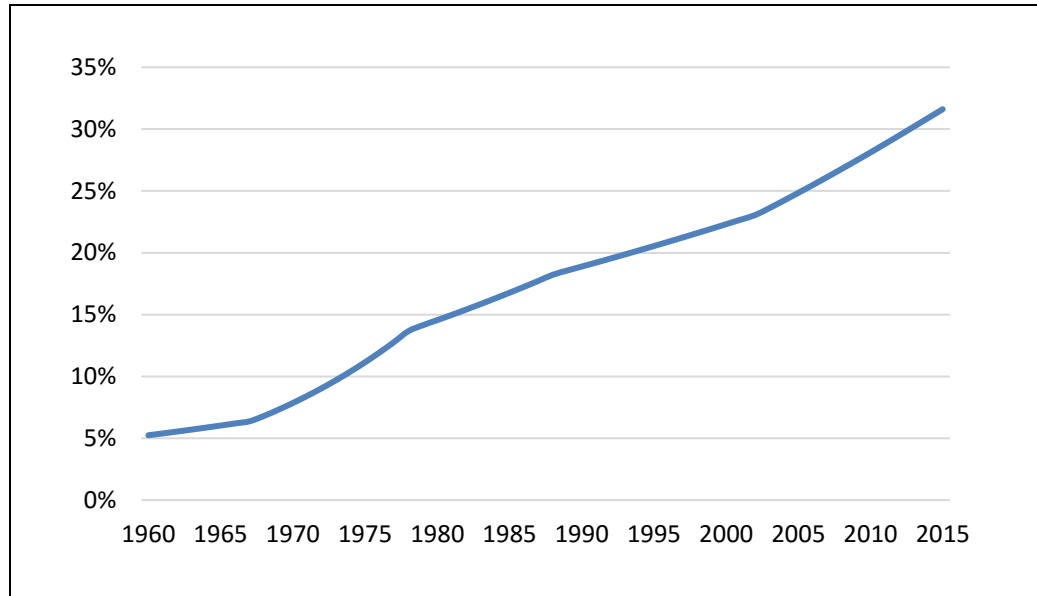


The demand for wood products has also increased with the steady migration of rural populations to cities since 1960. As Figure 2.8 shows, in 1960 just 5% of the population lived in cities; today, that proportion has crossed 30%. Both of these trends have driven up the demand for wood for construction purposes, the main demand-driver. These

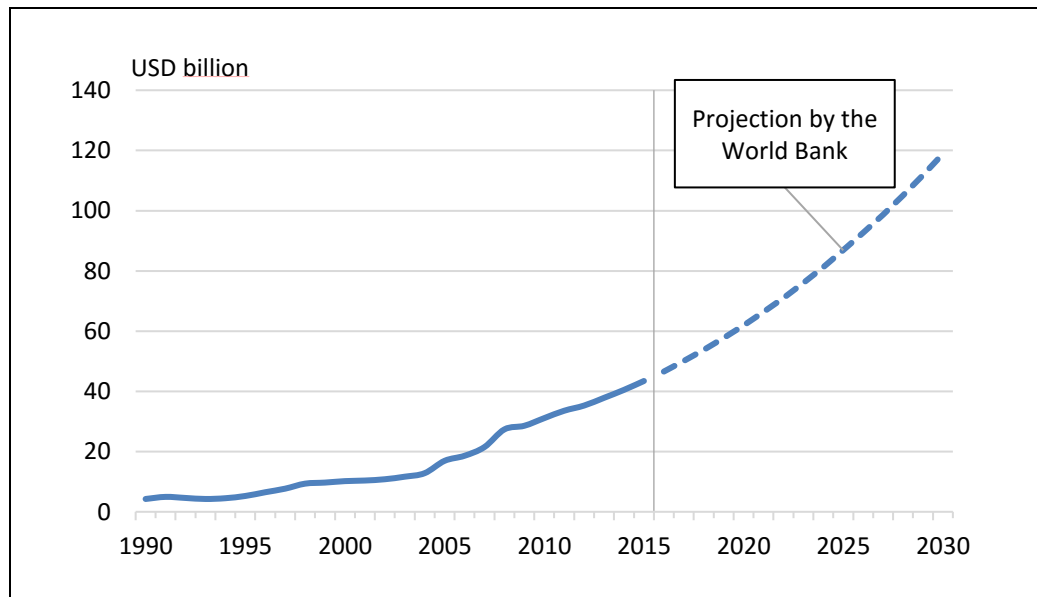


trends have also spurred the fast and steady growth of Tanzania's GDP, which the World Bank projects will triple by 2030 in current terms (Figure 2.9).

**Figure 2.8 Share of urban population in Tanzania, 1960-2015**



**Figure 2.9 Gross domestic product of Tanzania, 1990-2030**



### 2.3.2 Trade balance

The import of wood products has increased rapidly since 2000 and has averaged almost USD 90 million per year over the last five years. The trade deficit of forest products, excluding firewood and charcoal, is a result, in particular, of the import of paper and paperboard products. The wood product with the greatest export value is non-coniferous sawnwood.

**Figure 2.10 Trade balance of wood products in Tanzania, 1980-2015**

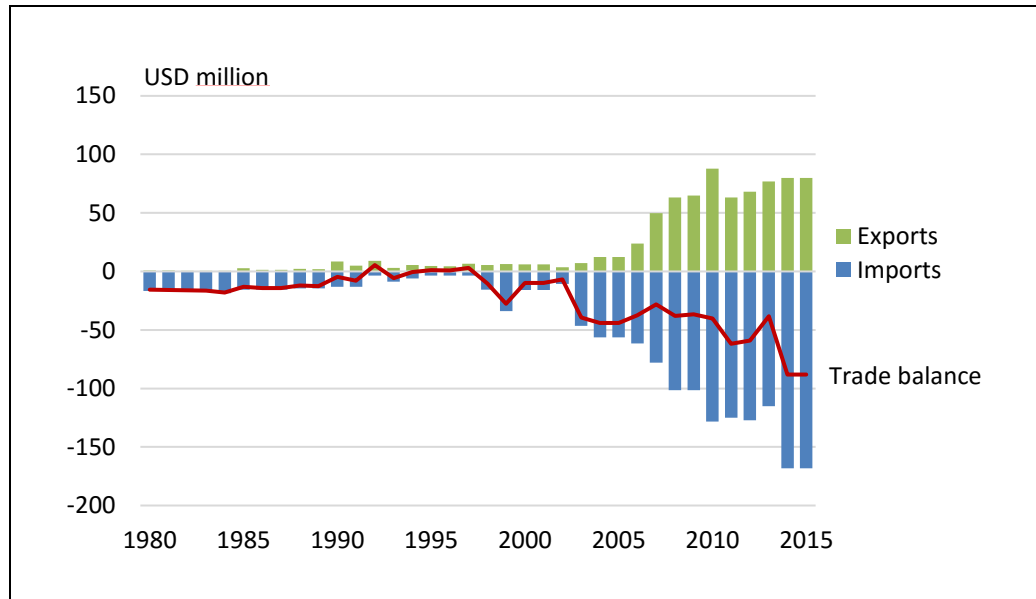


Table 2.3 lists the top-ten imported and exported items as reported by the FAO statistical service FAOSTAT. The five most important import items in 2015 were various paper products, followed by plywood, utility poles, and packaging material. Paper products originated mainly from China, South Africa, and India; newsprint from Finland and Russia; plywood from China; and industrial roundwood from South Africa and India.

Exports included non-coniferous sawnwood; paper products, including wrapping paper; and utility poles. Most of the non-coniferous sawnwood Tanzania exported was sent to India but some went to China and the United Arab Emirates. Exports of various paper products stay mainly in East Africa, with Kenya and Uganda the top two destinations respectively.

**Table 2.3 Top Tanzanian import and export items in 2015 by value**

Import Value	USD '000	Export Value	USD '000
1 Printing and writing paper	36,491	Sawnwood, non-coniferous	27,339
2 Uncoated wood-free paper	22,752	Other paper and paperboard	23,294
3 Other paper and paperboard	22,394	Case materials	14,113
4 Newsprint	14,830	Wrapping Papers	8,315
5 Coated paper	12,681	Sawnwood, coniferous	2,745
6 Plywood	12,008	Ind. roundwood (NC) Other	1,069
7 Ind. roundwood (NC) Other	11,001	Household and sanitary paper	727
8 Wrapping Paper	5,882	Wood residues	612
9 Case materials	5,528	Recovered paper	548
10 Sawnwood, non-coniferous	5,332	Printing and writing paper	232

Source: FAOSTAT. C=Coniferous, NC=Non-coniferous.

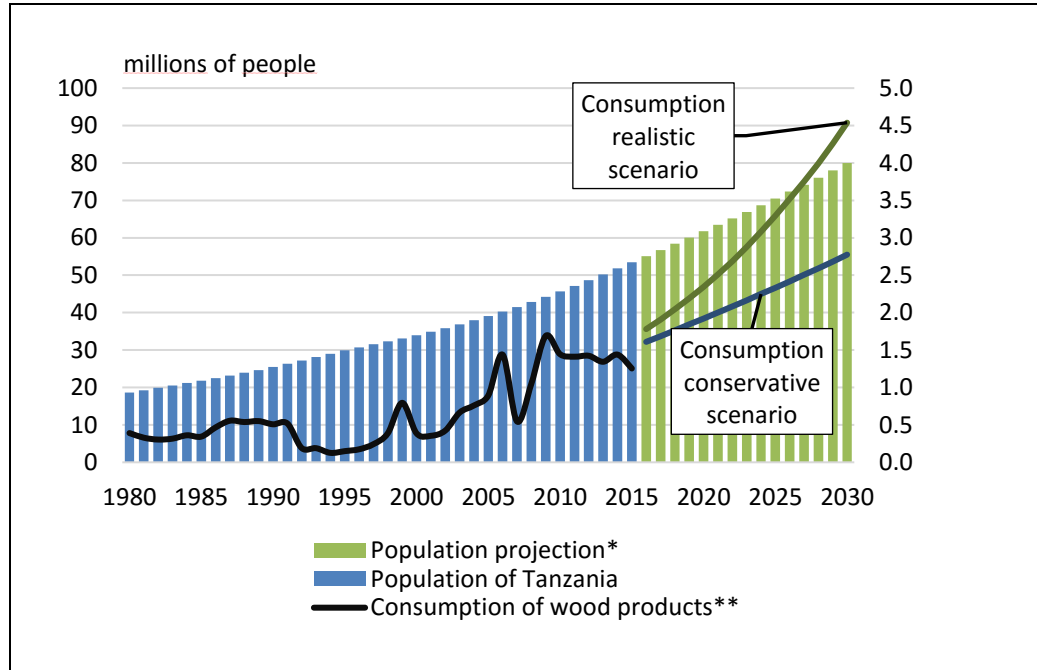
### 2.3.3 Projection of wood demand

The domestic consumption of wood products was calculated by subtracting exports from and adding imports to production. Taking this figure and population growth (which United Nations Population Division project will reach 80 million by 2030) into account, we project that demand for wood in 2030 would reach, conservatively, 3.0 million m<sup>3</sup>. Taking into account the World Bank's projection for GDP growth—7% annually—however, we forecast that demand will actually reach 4.4 million m<sup>3</sup> by the same year.

The demand scenarios in the following figures are based on the current rates of growth of the population and GDP. The conservative scenario assumes that per capita

consumption of wood products will remain constant whereas the realistic scenario assumes that, due to the increases in GDP and urbanization, it will rise.

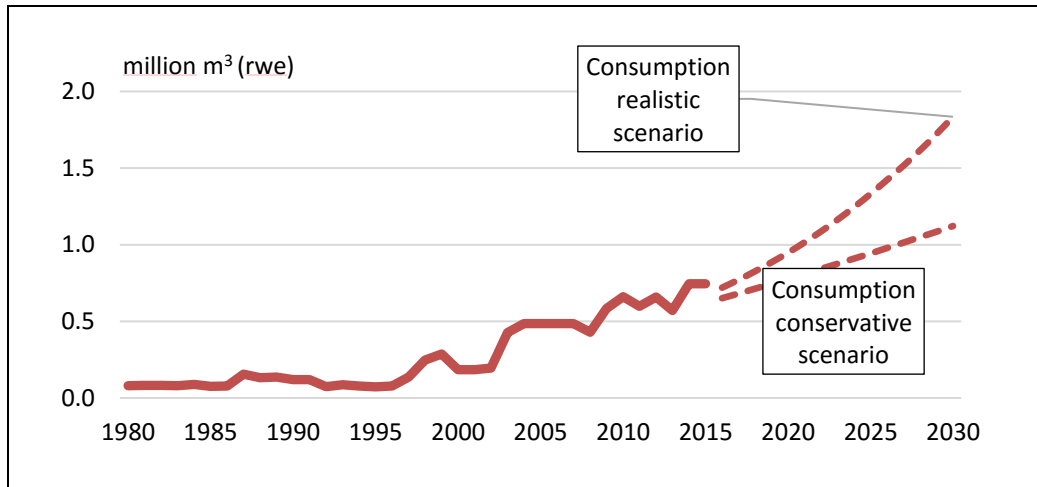
**Figure 2.11 Population and wood-product consumption growth, 1980-2015, and forecast growth, 2016-2030**



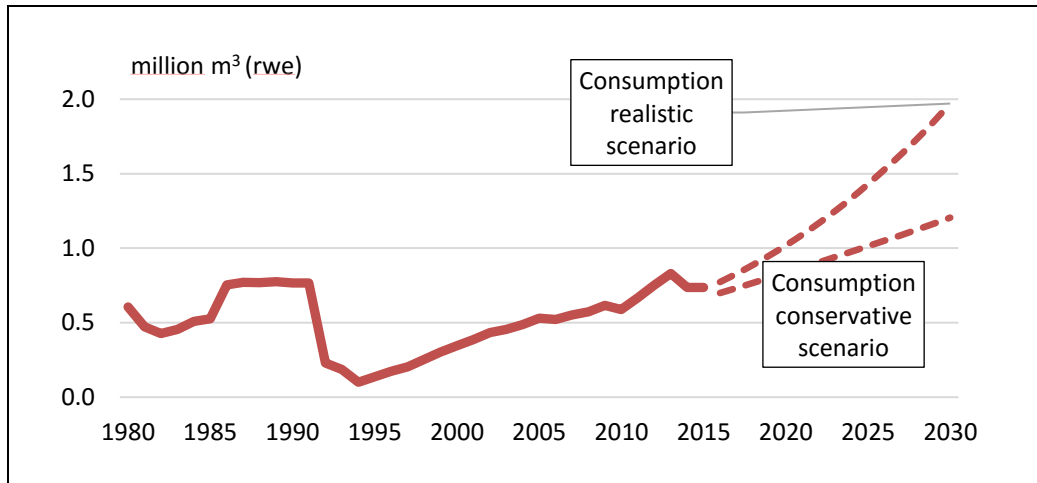
The following figures show that the forecast demand for wood products is split between pulp, paper, and paperboard; sawnwood; and wood-based panels. The figures are based on data from FAOSTAT and past consumption is estimated by apparent consumption (production plus imports minus exports). The values are converted to roundwood equivalents so they can be more easily compared to the supply of roundwood. The consumption of pulp, paper, and paperboard as well as that of sawnwood is currently around 0.8 million RWE m<sup>3</sup>, whereas consumption of wood-based panels is only a tenth that, at 0.08 million RWE m<sup>3</sup>.

It is expected that the apparent consumption of wood products calculated using statistics does not capture the entire consumption. Currently the insufficiency of the supply has created a suppressed demand: consumers have responded to the shortage by changing their consumption patterns, turning away from wood to substitutes. It is likely, therefore, the actual demand for wood products at the present is higher than that captured by statistics. As a result, the future demand, too, will be higher than we have forecast.

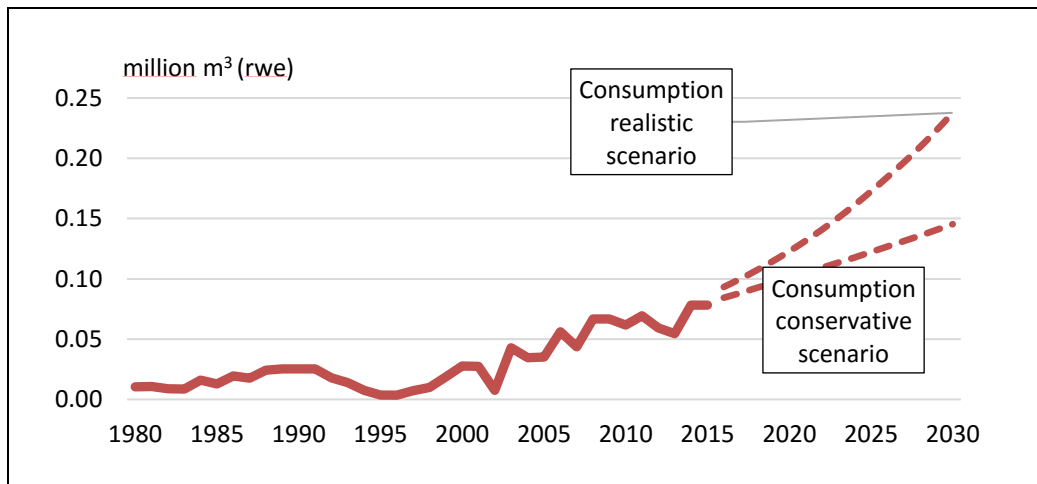
**Figure 2.12 Pulp, paper and paperboard consumption**



**Figure 2.13 Sawnwood consumption**



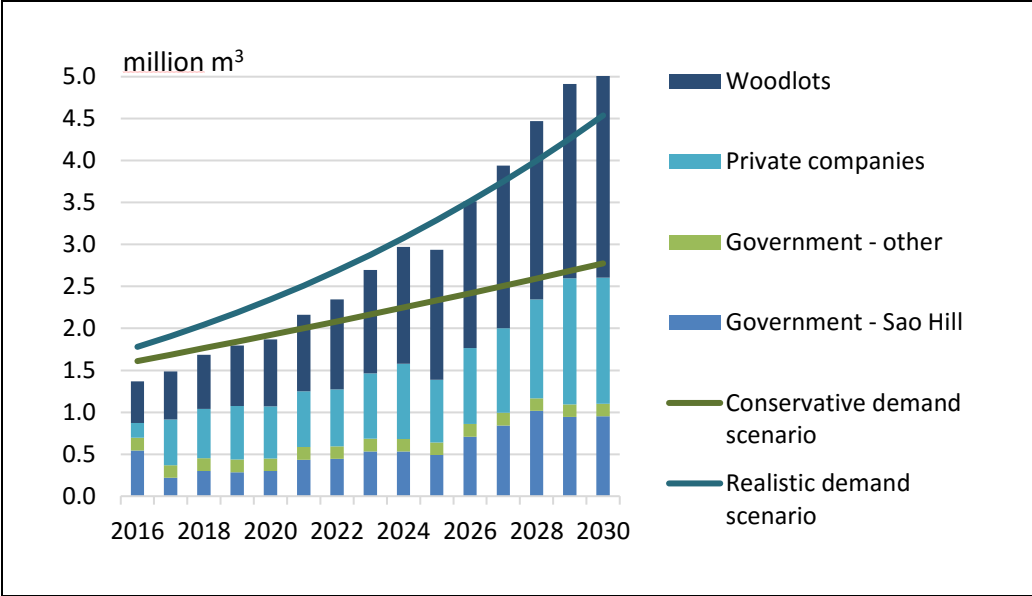
**Figure 2.14 Wood-based panel consumption**



**2.4 Wood supply and demand balance**

An examination of both the estimated supply of and the estimated demand for wood adumbrates the future market situation. The decline in the supply of the Sao Hill government plantation during the coming years will be compensated for by private companies and tree growers and, eventually, the supply of roundwood will be determined by smallholders' capacity to supply the market with roundwood that meets industrial requirements.

**Figure 2.15 Wood flow by ownership, 2016-2030**



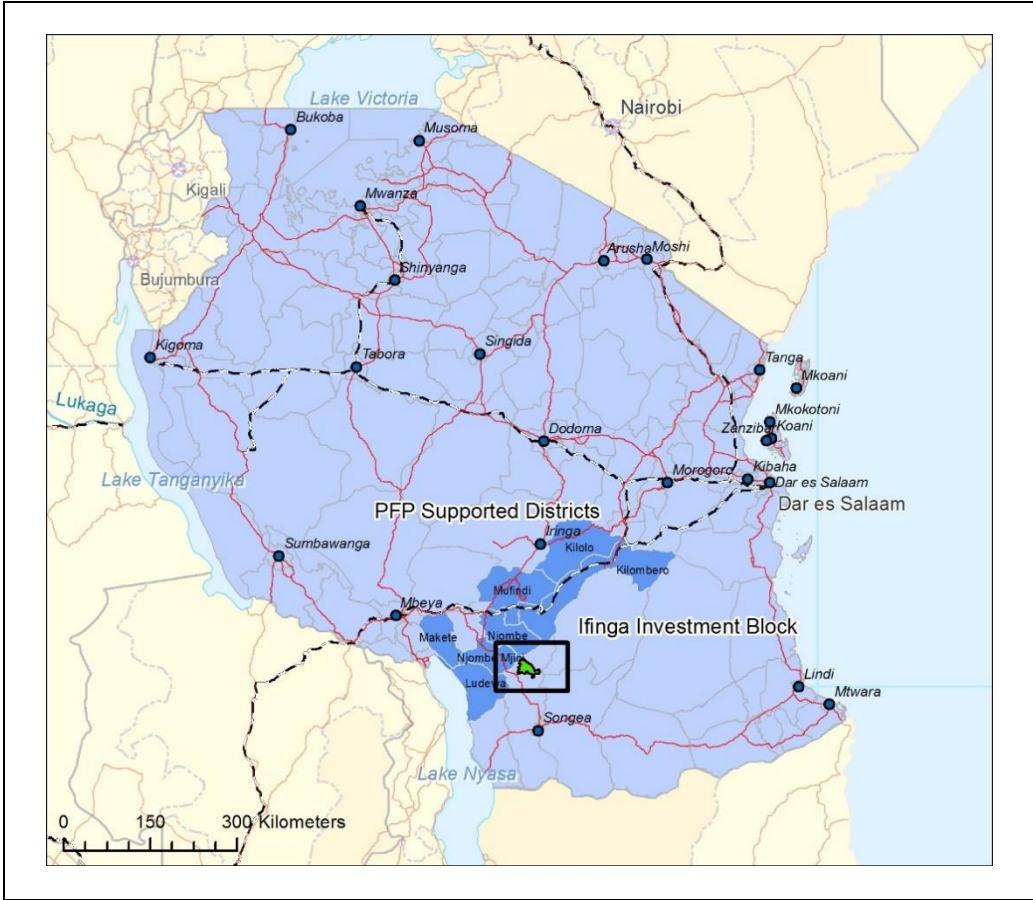
**3. INVESTMENT OPPORTUNITIES IN RUVUMA REGION**

**3.1 Introduction**

The PFP has identified a total of 10 blocks in Ruvuma Region with potential for investment (Table 3.1). We calculated the profitability of investment in two sectors in the Ifinga block using inputs from studies commissioned by the PFP and expanded and refined that information using details related to typical plantation forest investments.

The investment blocks we considered were identified in “Ruvuma Region Forestry Investment Opportunities: Site Profiles.” Sector A is declared by the TFS and Sector B by the TGAs of the villages in which the site lies.

**Figure 3.1 Districts supported by the Private Forestry Programme and the Ifinga investment block**



**3.2 Potential investment site profiles**

The PFP identified 90,000 ha in Ruvuma Region as having potential for investment. All ten of the blocks it identified are listed in Table 3.1. We analysed the most viable block, Ifinga Block. It is divided into two sectors—A and B—declared respectively by the TFS and village TGAs.

**Table 3.1 Identified investment blocks in Ruvuma Region**

	Investment block	Legal status of the land	Total area (ha)	Altitude range (m.a.s.l.)	Annual precipitation (mm)
1	Ifinga Block (A): TFS sector	declared (TFS)	19,055	1,200–1,600	1,500
	Ifinga Block (B): TGA sector	declared (TGAs)	32,441		
2	Lihumbe Block	gazetted (DC)	3,077	1,450	>1,500
3	Kihangimahuki Block	gazetted (TGAs)	7,500	1,400–1,900	1,500
4	Mapera Block	gazetted (TFS)	1,955	1,300–1,800	>1,500
5	Mpepo Block	gazetted (TFS)	3,000	1,300–1,800	>1,500
6	Ndondo Block	gazetted (TGAs)	998	1,300–1,800	>1,500
7	Uporo Block	gazetted (DC)	3,600	1,300–1,500	>1,500
8	Masonya Block	declared (DC)	3,000	500–600	1,000 (high water table)
9	Muhwesi Block	gazetted (TFS)	5,000	500–600	1,000 (high water table)
10	Kipiki Block	gazetted (TFS)	7,000	800–1,000	>1,500

Note: DC – District Council

## 4. FINANCIAL ANALYSIS

### 4.1 Introduction

We analysed the profitability of two plantation sectors in Ifinga Block using information on the area plantable and costs and prices of forest products available in earlier PFP-commissioned studies. We used the forest management regime and forest growth rates typical of a *Pinus patula* plantation in Tanzania.

### 4.2 Investment profitability

The profitability projections for the two sectors, the 13,316 plantable ha of Sector A and the 24,331 plantable ha of Sector B, were similar: their internal rates of return were calculated at 14.23% and 14.16% respectively.

The calculations were based on multiple assumptions, both about finances and plantation management, all of which affect overall profitability. Table 4.1 presents our financial assumptions. The standing wood price of 43 USD/m<sup>3</sup> is based on a PFP report on forest based-value chains<sup>3</sup>. The discount rate we used is based on a calculated weighted average cost of capital (WACC) which includes a country-risk premium for Tanzania of 6.13%. We used a real post-tax discount rate of 10.1% and an MAI of 21.1 m<sup>3</sup>/ha/a for a complete rotation. The calculations on investment profitability do not assume any land costs since the land is assumed to be owned by the local partner to the agreement.

**Table 4.1 Financial assumptions for Ifinga investment block**

Assumption	Value
Standing wood price, logs > 8 cm	43 USD/m <sup>3</sup>
Discount rate, real post-tax	10.1%
Stand growth, MAI	21.1 m <sup>3</sup> /ha/a
Investment period	Until the year 2050
Exchange rate (30 September, 2016), USD/TZS	2 181

The total, planted, not plantable and plantable areas in each block are presented in Table 4.2. The calculations assume that 25% of the total area will not be plantable for various reasons, including the presence of roads, natural forest patches, and other areas not available for planting.

**Table 4.2 Plantable areas in Ifinga investment block**

Sector	Village	Total land, ha	Planted/ reserved, ha	Not plantable (25%), ha	Plantable area, ha
Sector A	Ifinga	10,564	1,300	2,316	6,948
	Mkongotema	8,491	0	2,123	6,368
	Total	19,055	1,300	4,439	13,316
Sector B	Ifinga	12,738	0	3,185	9,554
	Mkongotema	2,768	0	692	2,076
	Wino	16,935	0	4,234	12,701
	Total	32,441	0	8,110	24,331

#### 4.2.1 Ifinga Block Sector A

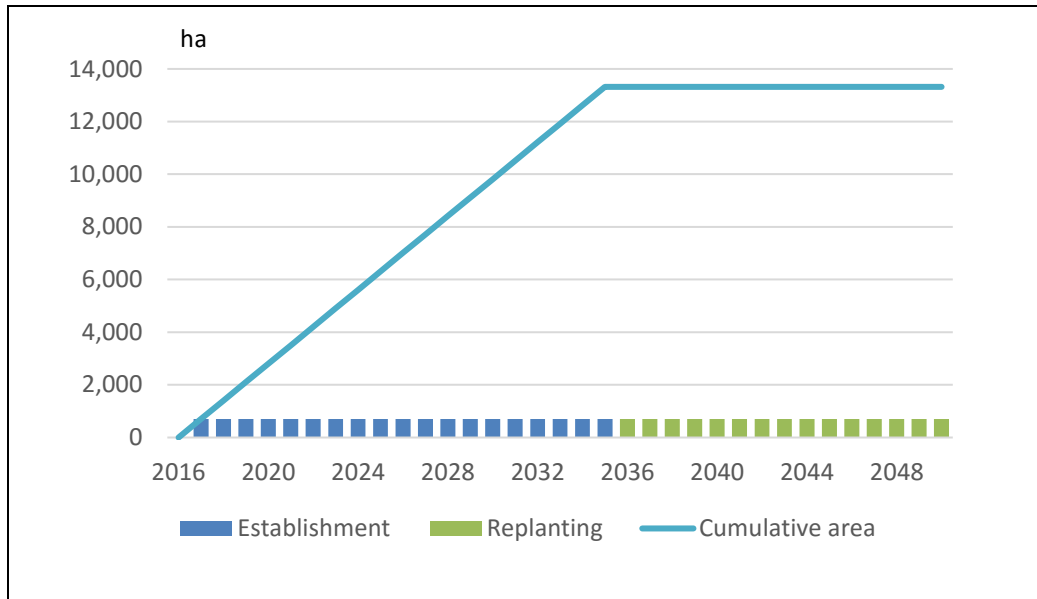
The total plantable area of sector A in the Ifinga block was estimated to be 13,316 ha. Assuming a steady planting programme is adopted, the annual planting pace will be 701 ha and the annual plantation, 779,000 seedlings.

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<sup>3</sup> Private Forestry Programme. 2016. Value Chain Analysis of Plantation Wood from the Southern Highlands. Private Forestry Programme. Iringa, Tanzania.

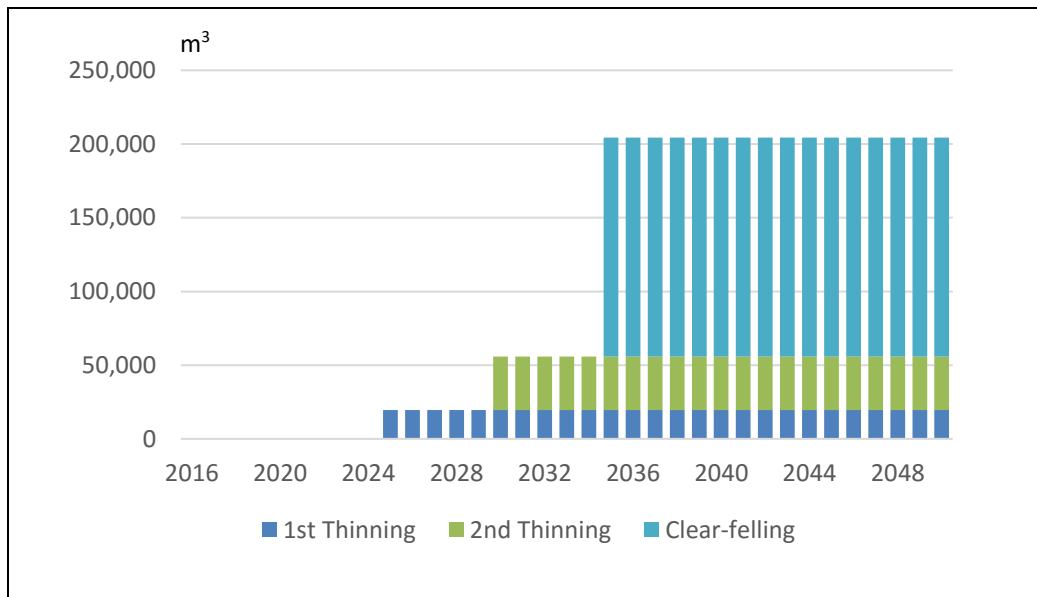


**Figure 4.1 Planting programme for Ifinga Sector A**



The wood-flow model constructed using this 701-ha planting programme indicates that the first wood flow will be that from the first thinning in 2025. The first felling will start in 2035. From that point onwards, the plantation will produce about 200,000 m<sup>3</sup> of wood annually.

**Figure 4.2 Annual removals from Ifinga Sector A**



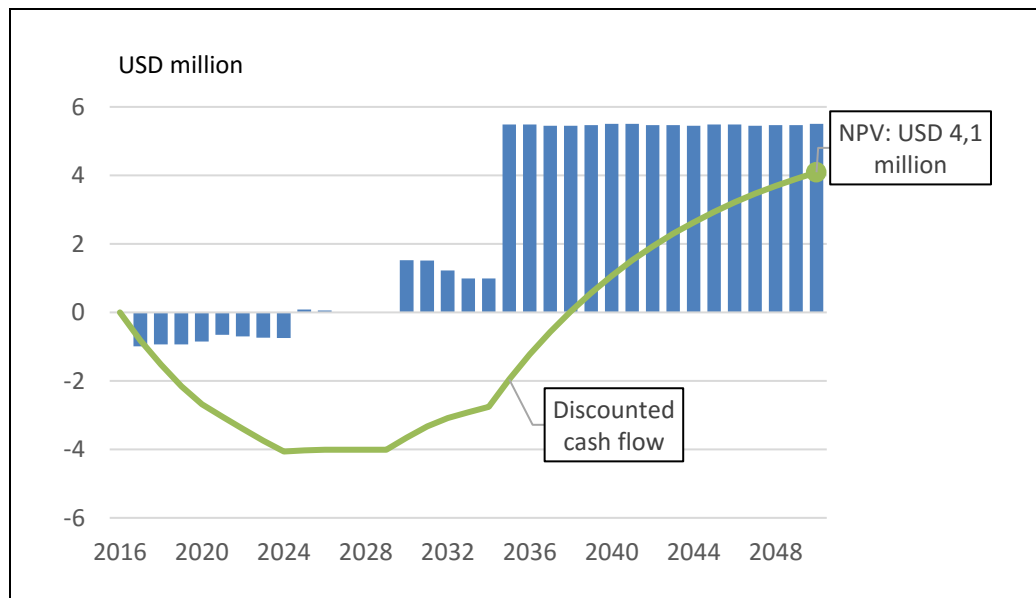
**Table 4.3 Total operational expenditure and capital expenditure of the investment in Ifinga Sector A**

Assumption	Value, USD million
OPEX over the whole investment period	25.61
Silviculture cost	17.07
General and administrative costs	8.54
CAPEX over the whole investment period	3.24
Buildings, roads and other infrastructure	1.50
Vehicles	0.67
Firefighting equipment and machinery	0.27
Transactions costs, feasibility studies	0.50
Contingency, 10%	0.29

Note: OPEX – Operational expenditure; CAPEX – Capital expenditure

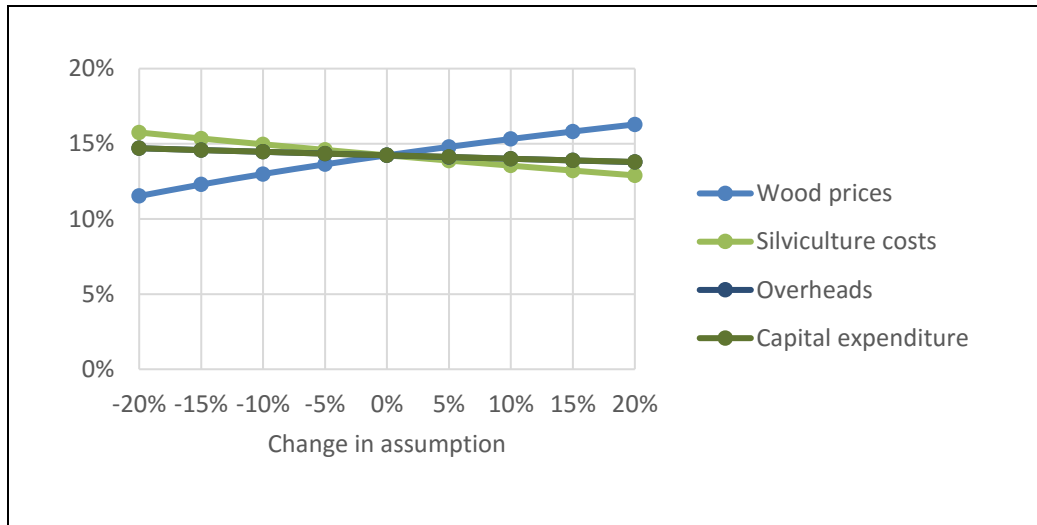
The cash flow projection for Ifinga Sector A is presented in Figure 4.3. The net present value associated with the above financial assumptions is USD 4.1 million; the internal rate of return is 14.23%.

**Figure 4.3 Cash flows of Ifinga sector A**



Investment profitability depends on multiple assumptions, all of which are subject to some level of uncertainty. The sensitivity analysis presented in Figure 4.4 sheds insight on the effects of possible changes in the assumptions of the analysis. The figures show that the internal rate of return is very sensitive to wood prices: a change of just 20% will raise or decrease the internal rate of return by 1.6%.

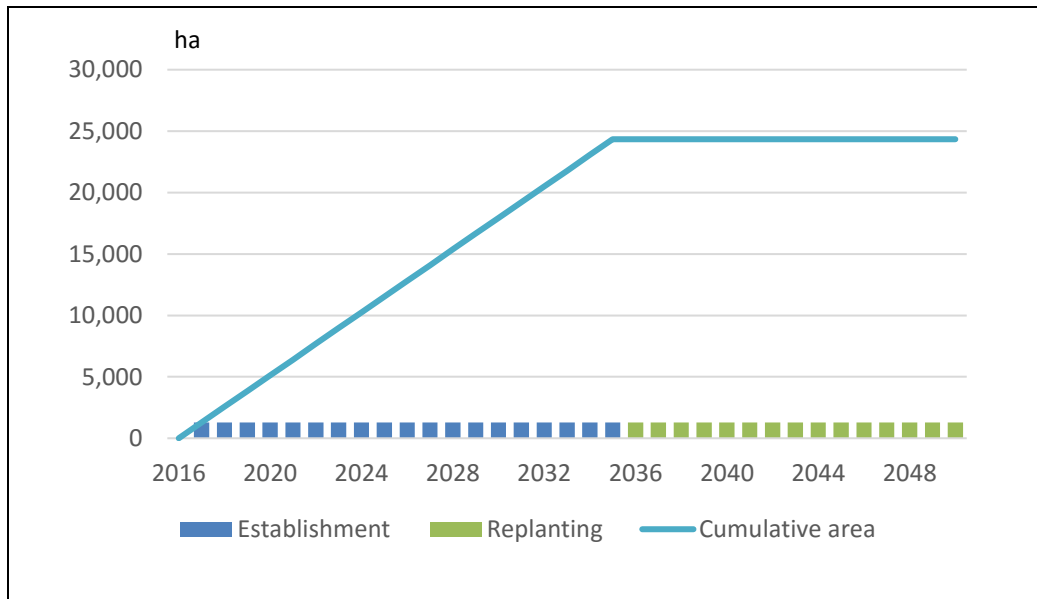
**Figure 4.4 Sensitivity analysis of the internal rate of return for Ifinga Sector A**



**4.2.2 Ifinga Block Sector B**

The total plantable area of Sector B of the Ifinga block was estimated to be 24,331 hectares. If a steady planting programme is adopted, the annual planting pace will be 1,281 ha and the annual plantation, 1,424,000 seedlings.

**Figure 4.5 Planting programme for Ifinga Sector B**



The wood-flow model constructed using this 1,281ha planting programme indicates that the first wood flow will be that from first thinning in 2025. The first felling will start in 2035. From that point onwards, the plantation will produce almost 375,000 m<sup>3</sup> of wood annually.

**Figure 4.6 Annual removals from Ifinga Sector B**

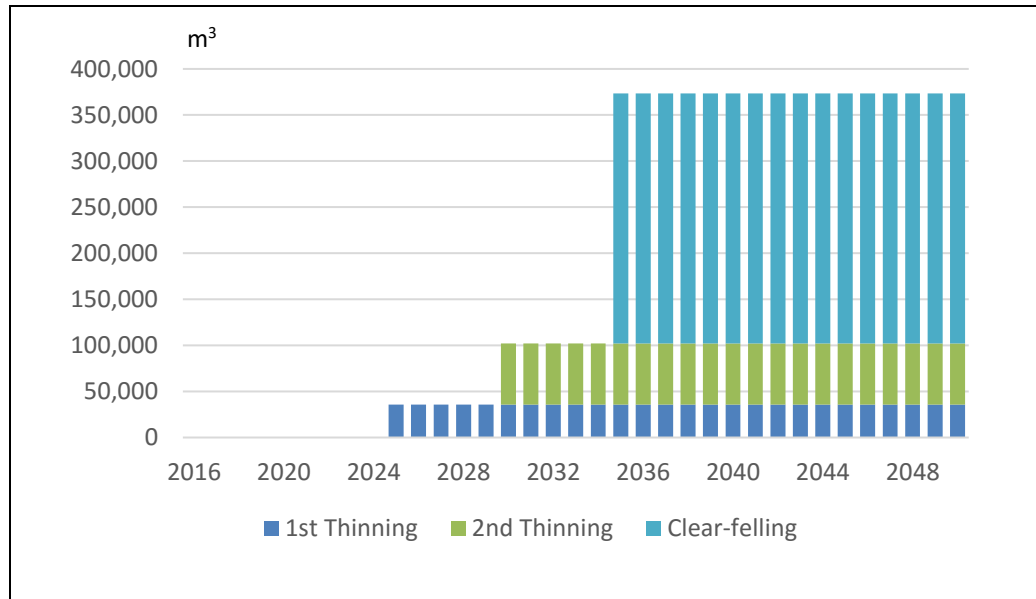


Table 4.4 presents our financial assumptions for Ifinga Sector B. The values are, for the most part, identical with those used for Sector A. The only difference is that both the operational and the capital costs are significantly greater because the investment is larger in scale.

**Table 4.4 Total operational expenditure and capital expenditure of the investment in Ifinga Sector B**

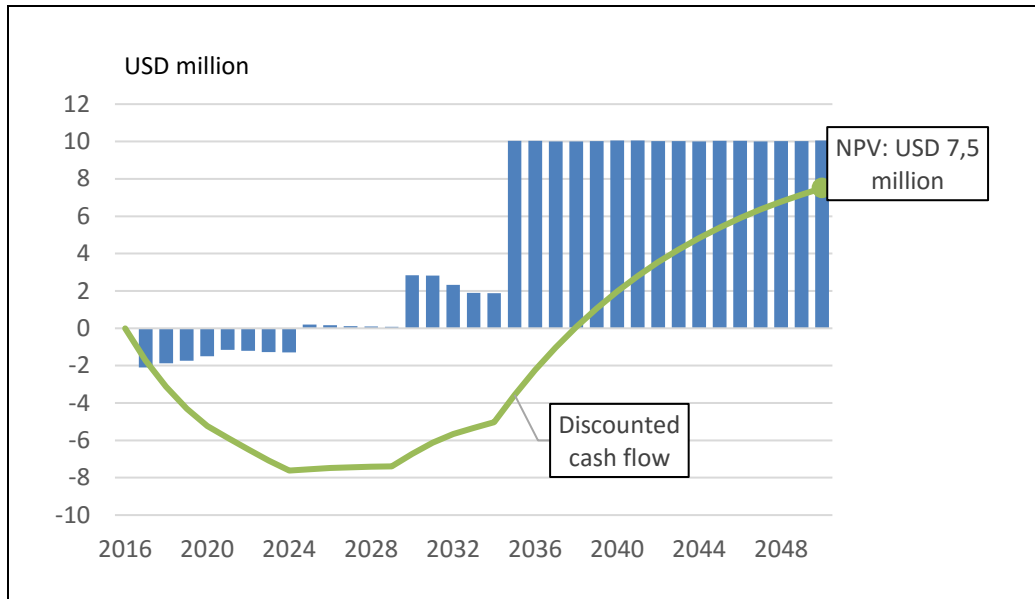
Assumption	Value, USD million
OPEX over the whole investment period	46.79
Silviculture cost	31.19
General and administrative costs	15.60
CAPEX over the whole investment period	4.89
Buildings, roads and other infrastructure	1.50
Vehicles	0.67
Firefighting equipment and machinery	0.27
Transactions costs, feasibility studies	2.00
Contingency, 10%	0.44

Note: OPEX – Operational expenditure; CAPEX – Capital expenditure

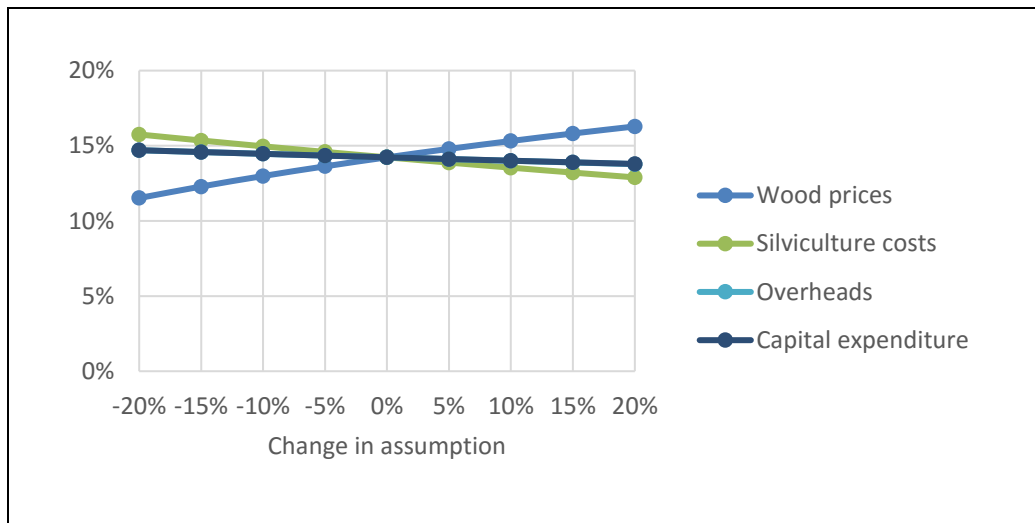
The cash flow projection for Ifinga Sector B is presented in Figure 4.7. It is very similar to that for Sector A except that the net present value is greater because the scale is larger. The internal rate of return for Sector B is slightly less than that for Sector A.

Figure 4.8 provides insight into the effects of variations in our assumptions, all of which are subject to varying degrees of uncertainty. As we found in the case of Sector A, the internal rate of return is particularly sensitive to wood prices.

**Figure 4.7 Cash flows of Ifinga Sector B**



**Figure 4.8 Sensitivity analysis of the internal rate of return for Ifinga Sector B**



### 4.3 Carbon credits

The possible carbon benefits from investment in forestry were not incorporated directly into the investment models laid out above. These benefits need to be assessed separately and a plan to seek carbon financing carefully designed if carbon credits are, as is often the case with plantations, deemed viable. Plantations qualify if they can show evidence—collected through extensive monitoring and evaluation—that their existence will decrease forest degradation and deforestation. They also need to add value to business-as-usual, a claim which might be difficult to make if the investment would have been made anyway. Currently, the options for carbon credits for a forestry project in Tanzania are voluntary carbon trading schemes such as the voluntary carbon standard (VCS), which is applied in conjunction with the climate, community, and biodiversity standards.

Carbon offsetting in Africa is lagging behind offsetting in the rest of the world: its total, 6.7 MtCO<sub>2</sub>e, just 8% of the global total, of 84.1 MtCO<sub>2</sub>e and of that, Kenya alone offset 3.1 MtCO<sub>2</sub>e. The average global price for voluntary carbon offsetting was at a record low in 2015, just USD 3.3 per tonne, though the average for Africa was slightly higher at USD 5.2 per tonne. The price of carbon is critical for the viability of carbon offset projects and the current market price is too low for a stand-alone carbon offset project.

A separate contract that stipulates the terms of payment for a carbon-credit project needs to be drafted before credit can accrue, so it is virtually impossible to estimate the possible benefits to the investor. If an investment can demonstrate additionality, then it may be able to be compensated for the carbon it sequesters before it reaches a steady state 18 years after plantation. It should not be forgotten that there are also costs in carbon trading.

In our simplified case, we include the costs of designing and negotiating the project, the volume-based costs of trading carbon credits in the market, and annual verification costs. Below are the possible costs and that Ifinga Block Sector B would incur:

Consulting costs:

- During the design phase, six months of consultation at USD 15,000 per month
- During the second year, two months of consultation for setting up monitoring, reporting and verification systems at USD 15,000 month
- For the rest of the project, one month of consultation per year for MRV and other tasks at USD 15,000 per month

Costs of carbon trading under the VCS programme fee schedule<sup>4</sup>)

- Registration fee: Estimated annual volume of emission reductions x USD 0.10, capped at USD 10,000
- Verified carbon unit (VCU) issuance levy: USD 0.10 per unit
- Administrative fees for the approval of methodology: USD 10 000
- Methodology compensation rebate: USD 0.02 per VCU
- Annual fee to the validation/verification body: USD 2,500 per year

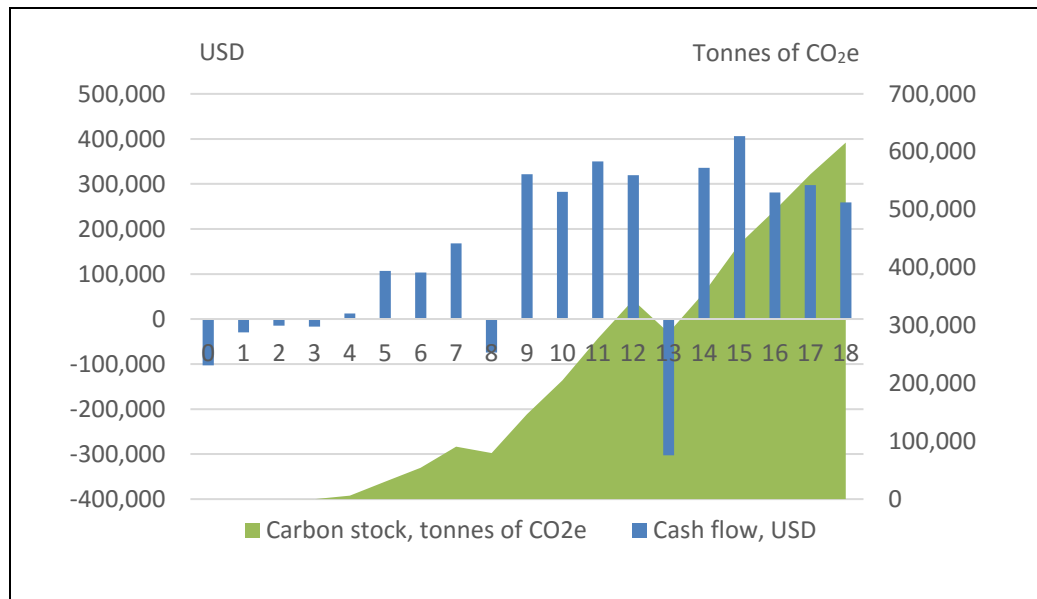
The above costs and prices are very tentative and there may be more costs that are still hidden at this point. The price of carbon may also change significantly as, in the voluntary carbon market, it is project-specific. The following figures for a sample cash flow assume that all the carbon sequestered by the project is demonstrably additional to business-as-usual. In addition, to benefit from any carbon offset project, the plantation management must comply with standards of the selected scheme.

The below estimation is based on the above-listed costs of an additional carbon-credit project and a carbon price of USD 5.2 per MtCO<sub>2</sub>e, the average for Africa in 2015. The net present value of a carbon project with a 10.1% discounting factor is USD 753,872.

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<sup>4</sup> VCS. 2015. Verified Carbon Standard – Program Fee Schedule VCS Version 3 Requirements Document. 12 January. 2015, v3.5.

**Figure 4.9 Example of nominal cash flow and carbon stock of carbon trading in Ifinga Block Sector B**



**4.4 Investment risks**

The risks to investment in Ifinga Block and its sectors are presented in Table 4.5. They are categorised as political, market/business, operational, social, and environmental. Each has been evaluated in terms of its probability and severity. The sectors are scored separately as there are differences. For example, while the risk that land tenure will be unclear in Sector A is low but that in Sector B is medium. In both cases, however, the severity of this risk, if it does materialise, will be high.

The most crucial risks are those that result in conflicts with the local partner or community because such conflicts could result in the loss of the entire or part of the asset due to sabotage. Another serious risk will arise if the investor finds himself or herself in a situation in he or she cannot benefit from the asset in the way planned when the agreement governing the project was signed.

In addition to these land conflict-related risks, regional and country risks could arise if there is any large-scale political unrest. The likelihood of such a risk is now relatively small in Tanzania, but if there were unrest, the investment could lose value very quickly.

As is always the case in Tanzania, the risk of fire is ever-present. We assumed that the risk of fire is less in Sector A than B because the TFS may be able to provide better infrastructure than TGAs. That said, Sector B might be protected due to the community patrolling villagers will no doubt carry out to protect their investment.

**Table 4.5 Probability and severity of various investment risks**

Source of risk	Sector A		Sector B	
	P	S	P	S
<b>Political</b>				
Unclear land tenure	○	○○○	○○	○○○
Unstable tax policies	○○	○○	○○	○○
Instability and unrest in the region or country	○	○○○	○	○○○
Policy changes affecting business environment	○○	○○	○○	○○○
<b>Market / business</b>				
Market outlook – decrease in wood prices*	○	○○○	○	○○○
Market outlook – increase in costs*	○○	○○	○○	○○
Failure to establish sustained market channels	○	○○	○	○○
Failure to supply sustained volumes and quality to the market	○	○○	○	○○
<b>Operational</b>				
Overall management	○	○○	○	○○
Forest fires	○	○○○	○○	○○○
Increase in plantation costs*	○○	○○	○○	○○
Increase in harvesting or logistics costs*	○○	○○	○○	○○
Lower-than-expected yields*	○	○○	○	○○
Pests and diseases	○○	○○○	○○	○○○
Insufficient supply of labour and services	○	○○	○	○○
Lack of infrastructure supporting operations	○	○○	○○	○○
<b>Social</b>				
Breach of benefit-sharing agreement	○○	○○○	○○	○○○
Conflicts with local communities	○○	○○○	○○	○○○
<b>Environmental</b>				
Failure to secure environmental permits	○	○○	○○	○○
Climate change – changes in temperature patterns	○○	○○	○○	○○
Climate change – changes in rainfall patterns	○○	○○○	○○	○○○
Erosion	○	○○	○	○○
Loss of biodiversity	○	○○○	○	○○○

\*risk included in the sensitivity analyses, ○ – low, ○○ – medium, ○○○ – high.

\*\*P – probability; S – severity



## 5. ECONOMIC ANALYSIS

### 5.1 Tax income

The European Union labelled the Tanzanian taxation system “very complex” in a recent policy briefing<sup>5</sup>. An agricultural company, for example, must pay 38 different taxes and charges per year, including value-added tax (VAT), cess taxes on produce, business licences, pay-as-you-earn (PAYE) taxes, and many more.

A 2014 report commissioned by the PFP<sup>6</sup> to explore mechanisms and policies related to private forestry outlines a four-level taxation system. At the central level, taxes are collected by the Tanzania Revenue Authority (TRA); at the district level by local government authorities (LGA); at the sectoral level by the Ministry of Natural Resources and Tourism (MNRT); and at the village level by village councils. The TRA collects VAT, duties, and income taxes; the LGA collects permits and licenses; the MNRT collects royalties through the TFS and conservation levies as prescribed in Tanzania Forest Act of 2002 through the Tanzania Forest Fund (TaFF); and village councils collect fees for the extraction of materials from village land using their own separate by-laws.

Assuming a corporate tax rate of 30%, the investment cases for sectors A and B calculated in Section 3 will annually generate about USD 2.4 million and USD 4.3 million respectively from 2035 onwards. This tax may be reduced to 25% if more than 30% of its equity is issued to the public. The development of infrastructure, the purchase of vehicles, maintenance of equipment, and the establishment of the will all generate VAT income. The current rate of VAT is 18%. A forestry investment in a special economic zone, however, may be entitled to investment incentives as laid out in the Export-Processing Zones Act of 2002.

### 5.2 Employment

The development of plantations will provide opportunities for both skilled and unskilled labour. Sector A will require an estimated 86,000 man-days or employ over 453 people annually, whereas Sector B will require 157,000 man-days or employ over 828 people annually. Forestry projects normally employ both women and men. Women are commonly employed more in the early stages (i.e. nursery operations and plantation establishment) and less so in later stages (i.e. harvesting) of the plantation forestry value chains. Furthermore, an expanding industry developed around the plantation resource will provide additional indirect employment opportunities.

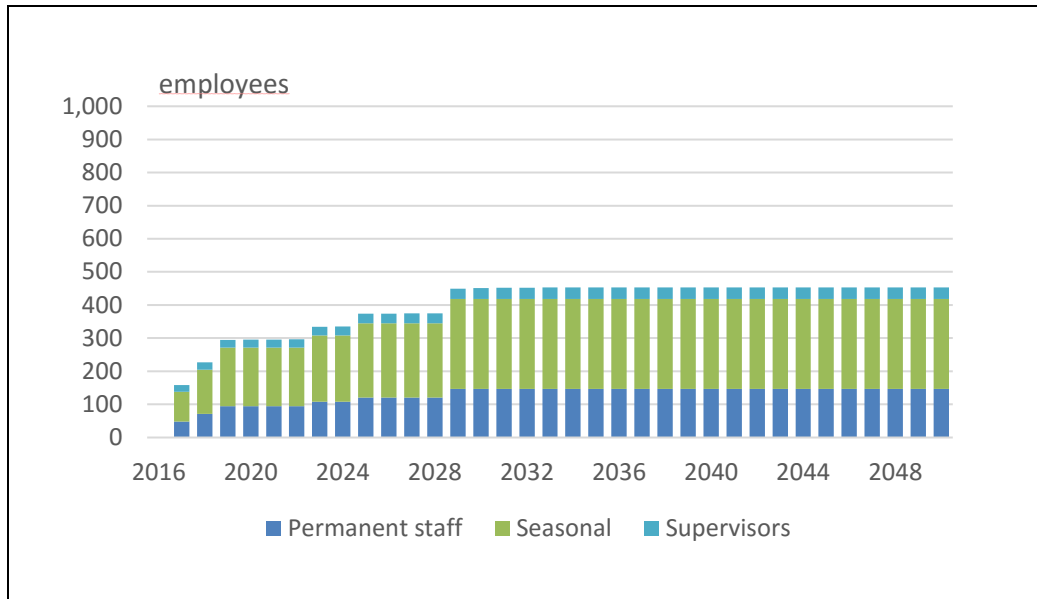
While the figures above indicate that plantations in Ifinga will make a substantial contribution to the local economy through employment, most forestry projects carried out by plantation forestry companies in East Africa have been criticised for providing low wages and poor working conditions to their workers. In addition, since most forestry work in the Southern Highlands is seasonal, most workers will be employed only part-time. This problem is compounded by the fact that most forestry work takes place during the peak agricultural season. These issues and the terms of employment ought to be agreed upon when a benefit-sharing model is being negotiated.

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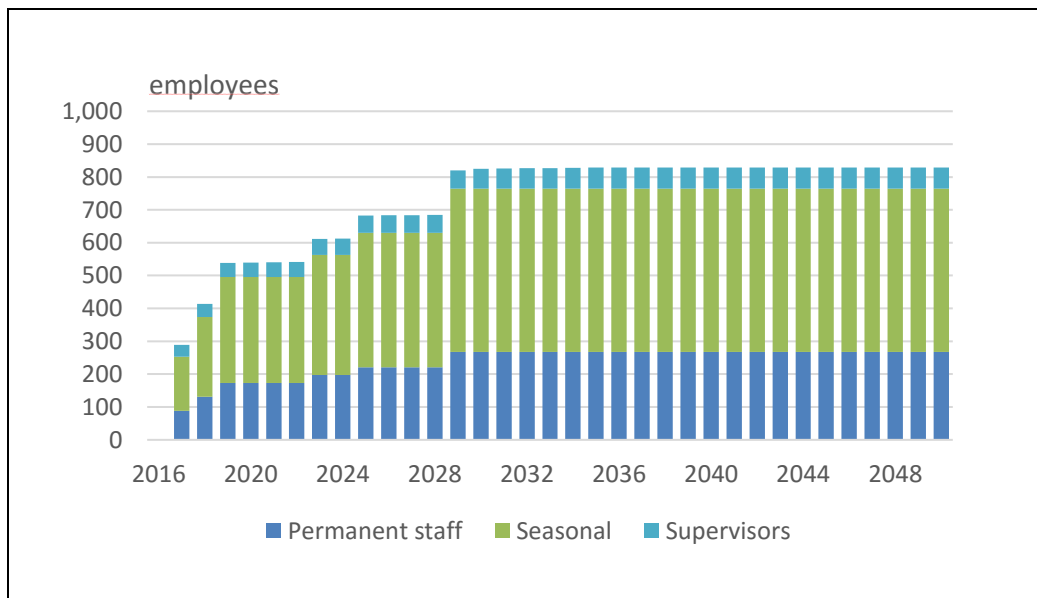
<sup>5</sup> European Union. 2016. Policy Briefing: Tax and Tax Administration in Tanzania.

<sup>6</sup> PFP. 2014. Desk Study for Developing Mechanisms and Policies That Strengthen the Private Plantation Forestry and Related Value Chains.

**Figure 5.1 Employment impact of Sector A in Ifinga Block**



**Figure 5.2 Employment impact of Sector B in Ifinga Block**



## **6. BENEFIT-SHARING MODELS**

### **6.1 Introduction**

Benefit-sharing arrangements come in many forms. Generally, local and external partners agree on a mechanism for sharing the benefits of a resource. In the case of plantation forestry, the benefits to be shared are, most obviously, the income from the sale of forest products.

In addition to sharing this income, local partners often expect to benefit through an increase in employment opportunities, improved small business opportunities, and investment in local infrastructure like clinics, dispensaries, and schools. The external partner, for its part, may expect to create non-income benefits like a secure source of labour, local cooperation and patrolling, alleviation of poverty in the community, and the management of fire risks. Naturally, the exact benefits expected depend on the type of investor.

Given that each partner has multiple expectations, managing them, and including them clearly in a benefit-sharing model is key to success.

In the case of plantation forestry, a good benefit-sharing model should be equitable; in other words, each party should receive benefits equal to its inputs to the project. The community, by allocating land for forestry, experiences the opportunity cost of not using the land for another purpose. This cost depends on the availability of land, which, if there is a lot, will drive the price of land down and render the cost low.

The benefit-sharing models discussed below show how various levels of shared benefit affect the profitability of the investment cases discussed in Section 4. In other words, they demonstrate how much can be shared and on what basis. These models do not consider the lawfulness of the investments on the village land. Issues regarding land rights for foreign investors are discussed in Section 7.

The benefit-sharing models will be the basis for a public-private partnership (PPP) that will be formed between the external and the local partners as provided for in the Public-Private Partnership Act of 2010.

### **6.2 Examples of benefit-sharing models**

The basic modalities for payments from the investor to the local partner and the community are three: i) upfront payment, ii) annual fixed rent and iii) revenue-based payment. In addition to these basic modalities there are a number of variations of and add-ons, including contributions in forms of industrial and social infrastructure.

We analysed five benefit-sharing models considering, in addition to financial performance, multiple other factors such as vulnerability to conflicts, social license to operate, and security of wood supply. Table 6.1 presents the benefit-sharing models analysed.

**Table 6.1 Basic models for benefit-sharing arrangements**

Model	Sector A - TFS	Sector B - TGA / village
Model 1: No direct benefit-sharing. The economic benefits of employment and taxes compensate for the land use.	No benefits to local level of TFS. Tax income from corporate taxation paid to TRA and TFS gets funding from TRA for administration and staff.	Creates income for the community through employment and license/permit payments to local government authorities.
Model 2a: Fixed annual land rent for the duration of the investment to compensate for the land use.	Compensation of land use to the local partner as a fixed payment for the total land area.	
Model 2b: Upfront payment to the local partner to compensate for the land use for a fixed period.	Compensation of land use to the local partner with significant upfront payment.	
Model 3: Revenue-based land rent payments to compensate for the land use.	Compensation of land use to the local partner proportional to the revenues generated from the plantation.	
Model 4: Periodic support to industrial and social infrastructure.	Direct benefits through contributions from the investor to roads, offices, and other infrastructure projects.	Direct benefits through the establishment of clinics and schools and provision of training.

Table 6.2 presents the magnitude of the contributions and the financial returns of the above benefit-sharing models for Sector A and Sector B in Ifinga Block. Here we also analysed a case in which the various models are combined into a package that could eventually form the basis for the benefit-sharing agreements.

**Table 6.2 Benefit-sharing models and their internal rates of return**

Benefit sharing model	Sector A	Sector B
1. No direct benefit-sharing	14.23%	14.16%
2. Land rent on total area*		
USD 10 / hectare	12.81%	12.78%
USD 20 / hectare	11.91%	11.90%
USD 50 / hectare	9.22%	9.24%
USD 100 / hectare	6.15%	6.19%
3. Land rent based on share of revenues		
5%	13.63%	13.58%
10%	12.99%	12.95%
15%	12.29%	12.26%
25%	10.68%	10.69%
4. Support to local infrastructure projects		
USD 1000 / year	14,22 %	14,16 %
USD 5,000 / year	14,17 %	14,13 %
USD 10,000 / year	14,11 %	14,10 %
USD 50,000 / 5 years	14,07 %	14,08 %
USD 100,000 / 5 years	13,92 %	13,99 %
USD 250,000 / 5 years	13,47 %	13,75 %
Example combination of land rent USD 10 / hectare, share of revenues 10% and USD 10,000 / year for infrastructure projects.	11.47%	11.51 %

\*either annual fixed payment or upfront at year 0 based on the net present value of the annual fixed rent.

The perceived and expected benefits, benefitting partners, and the magnitude of the benefits vary in different models. The possible benefits of the above models are listed in the table below. These were used to analyse the models.

**Table 6.3 Benefits for various benefit-sharing parties**

Investor	TFS	TGA / Community
+ Net profits	+ Revenue from land	+ Revenue from land
+ Favourable timing of contributions	+ Employment	+ Employment
+ Secure source of wood	+ Infrastructure development	+ Infrastructure development
+ Conflict mitigation		+ Stable income
+ Social license to operate		
+ Development impact		

### 6.3 Analysis of benefit-sharing models

Each of the benefit-sharing models presented in Table 6.1 results in different amounts of the benefits listed in Table 6.3. The following figures analyse these benefits in both cases in which the agreement is made with the TFS and with TGAs. The higher the benefit to the partner in question is, the higher the value is on a scale from 0 to 5. The benefit-sharing model that produces the most coverage in the diagram is worth investigating in more detail as it is the most beneficial benefit-sharing model.

First, we present the benefits of benefit-sharing models as if they had been made with the TFS are analysed and then we present the same models as if they had been made with TGAs and/or communities.

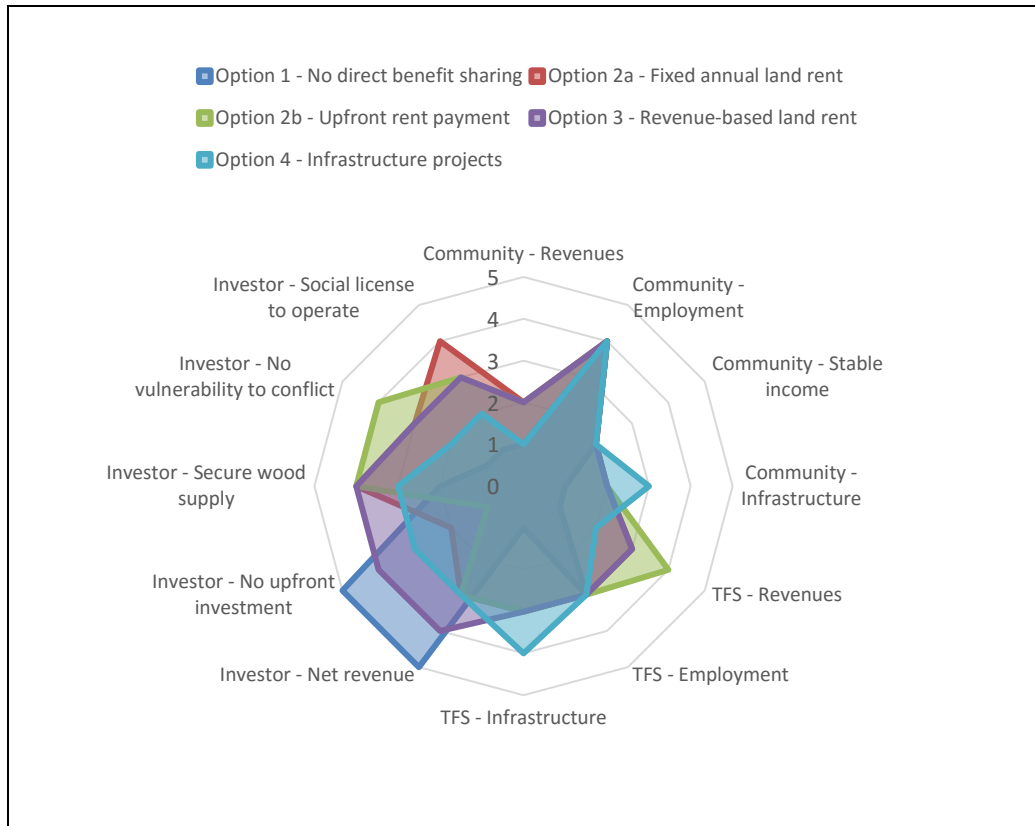
We assume that the potential investor has at this point decided whether he or she is entering an agreement with TFS or TGAs. Therefore, analysis between the models is done on agreements with TFS and TGAs separately.

#### 6.3.1 Benefit-sharing with the TFS

A benefit-sharing arrangement with the TFS creates a wider spectrum of benefits than does an agreement with local communities because we assume that local communities will benefit through employment as well as permit and license payments, regardless of who the local investment partner is.

Figure 6.1 illustrates the benefits of the five benefit-sharing models outlined above. Each model has its own specific characteristics with respect to the benefits it provides to the partners to the agreement.

**Figure 6.1 Analysis of models when benefits are shared with the TFS**



**Model 1: No direct benefit-sharing**

The model with no direct-benefit sharing creates a skewed benefit distribution: the benefits to the investor are considerable, while those to the community, largely just employment, are few. This option makes the investor vulnerable to conflicts with local communities and results in a relatively insecure wood supply.

**Model 2a: Fixed annual rent**

The model with fixed annual rent creates less direct benefit to the investor than the no direct benefit-sharing model. Having a fixed rate for payments to the TFS improves the security of the wood supply and improves the social license for the investor to operate. The benefits to the TFS are greater than they would be with no direct benefit-sharing and the community benefits about the same amount, largely from employment.

**Model 2b: Upfront land rent payment**

We assume both that the upfront payment is equal to the net present value of the fixed annual land rent as well as that it generates more benefits to the TFS than does the fixed annual rent model. The fact that there is a significant upfront payment also gives the investor a strong social license to operate as it is a clear sign of commitment to the investment. However, this same provision could encourage a breach of contract since it includes no new benefits in the pipeline.

**Model 3: Revenue-based land rent**

Revenue-based benefit-sharing creates one of the widest spectrums of benefits for all parties involved. This is because the local partner will be motivated to ensure that the plantation is the most productive possible in order to increase its revenues.

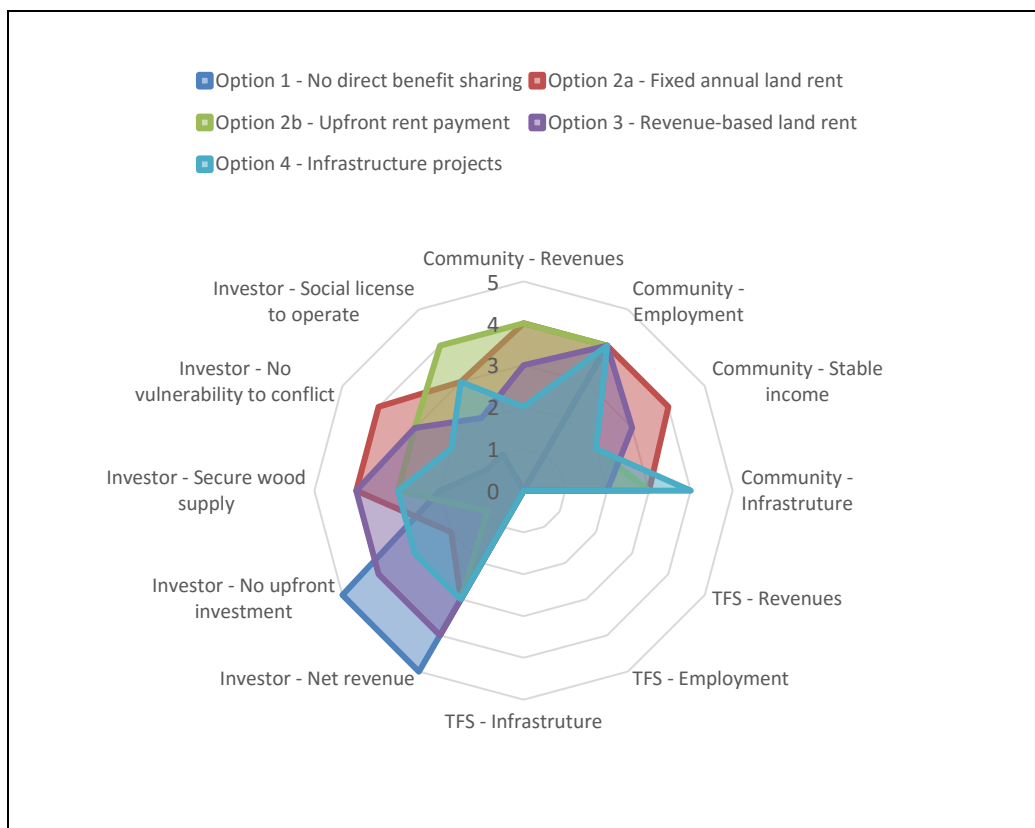
### Model 4: Infrastructure projects

One significant advantage of working with the local partner on infrastructure projects is that the benefits from those projects will be tangible and that there will be no suspicion that the funds received from the investor are being misused. One shortcoming associated with infrastructure projects, however, is that they need to be well-designed with the participation of the local partner and that a consensus must be achieved before a project is undertaken.

### 6.3.2 Benefit-sharing with TGAs

Figure 6.2 illustrates how benefits will be shared if an agreement is signed with local TGAs. In such a scheme, the TFS will not benefit at all. Other than that, the benefits are distributed in a fashion similar to those described above.

**Figure 6.2 Analysis of models when benefits are shared with TGAs**



### Model 1: No direct benefit-sharing

As was the case when benefits were shared with the TFS, the benefits that accrue when there is no direct benefit-sharing and TGAs are involved are skewed: the investor benefits greatly and the local community gets opportunities for employment.

### Model 2a: Fixed annual rent

Providing fixed annual land rent to the local partner results in a stable income for the community. In fact, it results in the most stable of incomes of any model and could be made stable if the payment were adjusted annually for inflation. This option also is viable for the investor as it does not require that it make a high level of actual contributions to the community.

### **Model 2b: Upfront land rent payment**

We assume that an upfront payment will result in there being a high social license to operate. This license, however, will fade with time, a shortcoming that could be overcome by combining it with, for example, periodic infrastructure projects to demonstrate to local communities that then investor is continuing to contribute even after its initial, significant investment.

### **Model 3: Revenue-based land rent**

As was the case with the partnership with the TFS, revenue-based land rent seems to again be the model that provides the greatest range of benefits to the partners. This option generates a high return for the investor and motivates the local community to take care of the plantations well in order to optimize their benefits.

### **Model 4: Infrastructure projects**

The model calling for the provision of infrastructure projects to the community generates the fewest overall benefits because infrastructure is not actual revenue to the community and because, in East Africa, such projects are often the subject of conflict.

#### **6.3.3 Risk-sharing**

In addition to agreeing on one of the above options, partners must agree on a host of other issues before an investment can be made. Most importantly, the partners need to agree on the sharing of risks and responsibilities in cases of loss or damage to the plantation asset. If, for example, a fire breaks out, it needs to be clear which party will cover the loss or, if the loss will be divided, what proportion of the total loss each partner will be accountable for.

It may be that, in cases of loss, the investor offers the local partner an opportunity to share the cost of replanting but that the local partner has the right to refuse to take part in that replanting and, in doing so, will agree not to demand an equitable part of the benefits. Such a provision for sharing risk would work in all models except for that which assumes there is no benefit-sharing.

#### **6.4 Benefit-sharing contract**

A study on benefit sharing models by the World Bank<sup>7</sup> lists five good practices for partnership contracts in forestry. The contract should

1. be legally valid,
2. be clear, understandable, and complete;
3. address points that promote agreement-keeping, including practicality, verification, communication, and incentives;
4. provide ways of handling disputes short of going to court, and
5. consider issues that have caused conflict in other partnerships that the partners have been part of.

The above list illustrates that drafting a benefit-sharing agreement is not a complex process; it simply requires following a series of logical steps. That said, it does require that the expectations of the partners as well as the context and history of the community be well understood.

In general, the minimum requirements for a benefit-sharing contract are that land tenure issues need to be clear; that either monetary or non-monetary compensation for benefits forgone due to the loss of access to the land (the opportunity cost) is provided; that

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<sup>7</sup> The World Bank. 2009. Rethinking Forest Partnerships and Benefit Sharing.



potential environmental impacts are mitigated; and that an agreement about investments in social infrastructure as agreed is made.

Based on our findings and the World Bank's advice, we recommend following the steps below to design a benefit-sharing agreement:

1. Identify the local partner
  - Decide on TFS, TGA or TGAs, village or villages
2. Clear land tenure issues
  - Review village land-use plans and assess their legitimacy
  - Review gazetting processes and make sure there are no conflicts
  - Check for issues related to pressure on land use, especially that there is enough land for food production
  - Find out if the partner is allowed by law to agree on an equitable and viable benefit-sharing model
3. Identify stakeholders
  - Carry out a preliminary identification of stakeholders
  - Conduct a workshop to validate stakeholders affected
  - Hold further consultations
  - Discuss and manage expectations
4. Start negotiating the benefit-sharing model:
  - Assess the opportunity cost of using the land for plantation forestry to decide the magnitude of equitable benefit-sharing
  - Negotiate appropriate levels of contribution with the local partner and, possibly, with local stakeholders
  - Agree on the duration of the contract
  - Agree on a benefit-sharing model
    - Identify which of the above models or combination of those models, or a different model altogether will be used.
    - Identify the type of contributions to be made to the local partner—payments in cash, payments in kind, or something else
    - Identify the time schedule for providing these contributions
    - Identify the responsibilities of each party
    - Identify how risks will be shared and what the responsibilities of each party will be in the case a loss
    - Define the terms of employment for local workers who are to be employed in the operations
    - Define how benefits will be distributed to the community
5. Solicit inputs from stakeholders
  - Open an honest discussion of the benefits and costs of the investment as well as the risks associated with it
6. Finalise the agreement with the local partner
7. Follow up on and monitor progress, in part by regularly and publicly disseminating information about the performance of the plantation to local stakeholders

## 7. ROADMAP

It takes many steps to convert an idea about creating a plantation to actually doing so. Before the any action is taken, a number of issues need to be clarified. Not only does it have to agree on a benefit-sharing model, hold social consultations, and carry out financial analyses, it must also overcome some legal hurdles. We present the steps take in Figure 7.2, but first discuss the issue of foreign investment in land.

This report has thus far assumed that the targeted land area is owned by the local partner and that no land acquisition process of any kind will be needed. The local partner would be either the TFS, a TGA or a group of TGAs, or a village or a group of villages through their councils. We assumed from the background information provided by the client that it is legal for TGAs to acquire the customary right of occupancy to a specific area of land and then grant derivative rights to that land to another agent through a separate agreement. In the case of the TFS, we assumed that the investor, through a PPP agreement, would be able to negotiate freely with the local partner to arrive at a benefit-sharing agreement that would make is investment viable. The above assumptions suggest that the local partner might have to hold a majority share in any arrangement, thus rendering a viable investment very problematic.

For the following reasons, the legality of a foreign investor's investing in village land needs a detailed legal analysis that is beyond the scope of the terms of reference for this study:

- i. The Village Land Act of 1999 recognizes no other rights to village land than the customary right of occupancy
- ii. Section 27 of the Village Land Act of 1999 states that the customary right of occupancy can be given only to citizens of Tanzania.
- iii. Isaksson and Sigte<sup>8</sup> state that “foreign investors cannot therefore get direct access to village land but they have the possibility to get indirect access to village land by being a member of a NVO where the majority of the shareholders are citizens, 17 (1) (c) and 17 (5).”  

The “NVO” to which Isaksson and Sigte refer is to a non-village organisation like a government department, public or parastatal body, corporate or other body the majority of whose members are not residents of the village, but citizens.
- iv. Isaksson and Sigte (2010) add that if an investor wants direct access to village land that that land must first be transferred into general land.

The above provisions leave open the question of how the law applies to TGAs. A TGA is not an NVO because most of its members are from a village. Whether or not there are laws that govern cases where a village-based organisation such as a TGA seeks to partner a foreign investor must be ascertained, as must the requirements for the shareholdings of this sort of venture. Since the TFS seems to be an NVO, the investor would have to settle for a minority interest in any joint venture it establishes with the TFS.

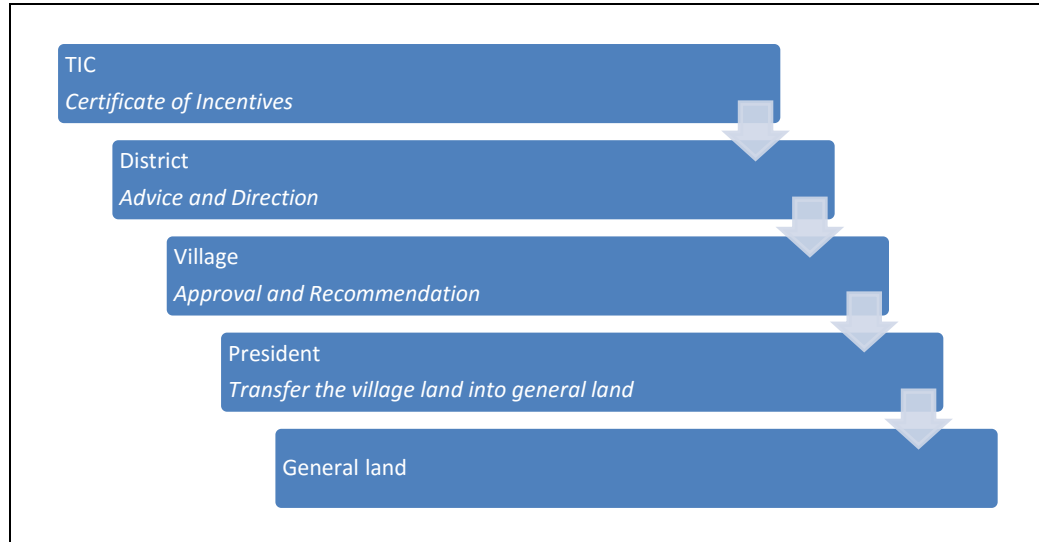
If it turns out that land cannot be accessed through either the TFS or TGAs, the investor must work through the Tanzania Investment Centre (TIC). First, it would have to apply for a certificate of incentives, providing the TIC with information on the project, including its management structure and its financing. If it grants such a certification, the TIC would support the investor by helping it find land in which to invest. Land acquisition would require that village land to be transferred into general land through national,

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<sup>8</sup> Isaksson, R., & Sigte. I. 2010. Allocation of Tanzanian Village Land to Foreign Investors.

district and village level authorities. This process of land acquisition through the TIC is presented in Figure 7.1. In some cases, it is reported, the process has taken several years.

**Figure 7.1 Transferring village land into general land**

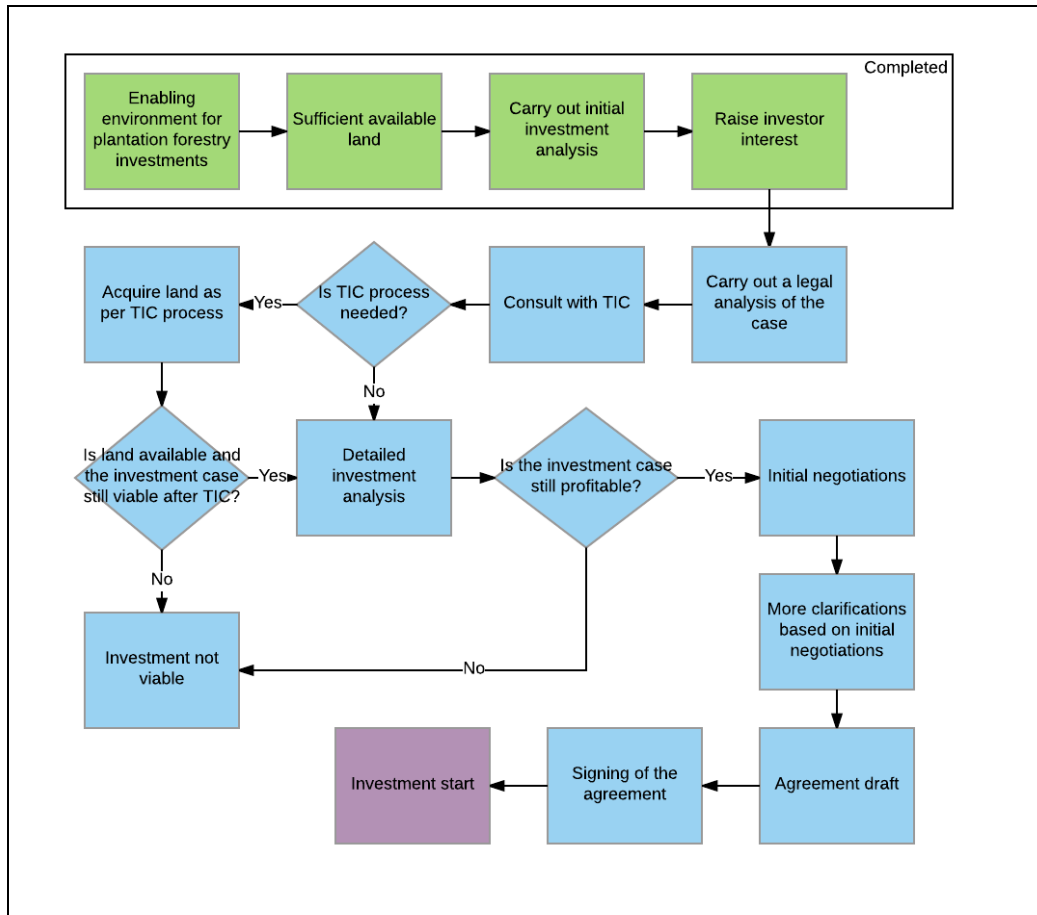


Source: Adopted from Isaksson, R., & Sigte, I. 2010. Allocation of Tanzanian Village Land to Foreign Investors

Once the village land had been transferred into general land, the investor would be granted either the right of occupancy (granted by the president for 99 years) or a derivative right (the TIC would be the primary holder of the land and transfer rights to the land for 99 years to the investor). A third possibility is that the investor become part of a joint venture with a local investor.

The overall roadmap, including all the above analyses for the investment, is illustrated in Figure 7.2. This roadmap includes steps that have already been taken by the PFP (in green) as well as steps that need to be taken by an investor or the PFP together with an investor in order make an investment such as is outlined in Section 4.

**Figure 7.2 Roadmap to private forestry investment in Tanzania**



## 8. RECOMMENDATIONS

Our recommendations to the PFP and any potential investors are presented below. The sequence is not intended to imply any hierarchy of importance.

### 1. Clear Land Tenure and the Processes Carried Out Thus Far

The potential investor should study the village land use plans (VLUP) carefully and familiarise him/herself with the land use of the area, and any changes in land tenure that have taken place in the targeted land area to avoid conflicts that may be detrimental to the investment.

### 2. Assess Laws Applicable to Investment Cases

Carry out a legal analysis of at least the following laws to ascertain whether or not Tanzanian law allows a foreign investor to indirectly invest in land:

- The Tanzania Investment Act, 1997
- The Land Act, 1999
- The Village Land Act, 1999
- The Land Regulation, 2001
- The Forest Act, 2002
- The Land (Amendment) Act, 2004
- The Land Use Planning Act, 2007
- The Public Private Partnership Act, 2010

### 3. Consult the Tanzania Investment Centre

Consult the TIC regarding foreign investors' ability to invest in land and find out if it can provide relevant assistance. If the law demands, work with the TIC to transfer land from village land to general land and thereby make the investment possible.

### 4. Negotiate an Equitable Benefit-Sharing Model

Negotiate an equitable benefit-sharing model with the local partner, either TFS or TGAs, that is optimal for all parties involved. Include at least a component that is linked to plantation performance, such as revenue-sharing, and components that legitimize land reservation for future plantation, such as a low land rent for all reserved land and/or periodic contributions to infrastructure projects.

## Annex 1

## Cash flow projections of the cases in Section 4

## Cash flow projection of Ifinga Block A

	Total cumulative land area	Total wood flow	Total revenue	Total OPEX	Total CAPEX	Cash flow	Discounted cash flow
Year	ha	m <sup>3</sup>	USD '000	USD '000	USD '000	USD '000	USD '000
2017	701	0	0	480	465	-993	-819
2018	1,402	0	0	524	410	-938	-1,522
2019	2,103	0	0	572	355	-931	-2,155
2020	2,803	0	0	582	264	-847	-2,679
2021	3,504	0	0	591	64	-656	-3,047
2022	4,205	0	0	601	99	-701	-3,404
2023	4,906	0	0	639	99	-742	-3,748
2024	5,607	0	0	649	99	-749	-4,063
2025	6,308	19,616	835	688	64	80	-4,032
2026	7,009	19,616	835	697	82	55	-4,013
2027	7,709	19,616	835	707	117	10	-4,010
2028	8,410	19,616	835	717	117	0	-4,010
2029	9,111	19,616	835	726	117	-9	-4,012
2030	9,812	55,901	2,381	789	64	1,522	-3,653
2031	10,513	55,901	2,381	798	64	1,518	-3,327
2032	11,214	55,901	2,381	808	99	1,226	-3,088
2033	11,915	55,901	2,381	818	99	994	-2,912
2034	12,615	55,901	2,381	827	99	987	-2,754
2035	13,316	204,369	8,703	837	19	5,486	-1,953
2036	13,316	204,369	8,703	837	19	5,487	-1,225
2037	13,316	204,369	8,703	837	54	5,452	-569
2038	13,316	204,369	8,703	837	54	5,452	27
2039	13,316	204,369	8,703	837	35	5,471	571
2040	13,316	204,369	8,703	837	0	5,506	1,068
2041	13,316	204,369	8,703	837	0	5,506	1,519
2042	13,316	204,369	8,703	837	35	5,471	1,926
2043	13,316	204,369	8,703	837	35	5,471	2,296
2044	13,316	204,369	8,703	837	54	5,452	2,631
2045	13,316	204,369	8,703	837	19	5,487	2,937
2046	13,316	204,369	8,703	837	19	5,487	3,215
2047	13,316	204,369	8,703	837	54	5,452	3,465
2048	13,316	204,369	8,703	837	35	5,471	3,694
2049	13,316	204,369	8,703	837	35	5,471	3,902
2050	13,316	204,369	8,703	837	0	5,506	4,091

### Cash flow projection of Ifinga Block B

	Total cumulative land area	Total wood flow	Total revenue	Total OPEX	Total CAPEX	Cash flow	Discounted cash flow
Year	ha	m <sup>3</sup>	USD '000	USD '000	USD '000	USD '000	USD '000
2017	1,281	0	0	878	1,125	-2,090	-1,724
2018	2,561	0	0	957	905	-1,869	-3,125
2019	3,842	0	0	1,045	685	-1,738	-4,308
2020	5,122	0	0	1,063	429	-1,494	-5,231
2021	6,403	0	0	1,080	64	-1,145	-5,874
2022	7,683	0	0	1,098	99	-1,198	-6,485
2023	8,964	0	0	1,168	99	-1,274	-7,075
2024	10,245	0	0	1,186	99	-1,286	-7,616
2025	11,525	35,842	1,526	1,256	64	199	-7,540
2026	12,806	35,842	1,526	1,274	82	168	-7,482
2027	14,086	35,842	1,526	1,292	117	115	-7,445
2028	15,367	35,842	1,526	1,309	117	98	-7,417
2029	16,647	35,842	1,526	1,327	117	80	-7,396
2030	17,928	102,139	4,350	1,441	64	2,833	-6,727
2031	19,208	102,139	4,350	1,459	64	2,825	-6,121
2032	20,489	102,139	4,350	1,477	99	2,322	-5,669
2033	21,770	102,139	4,350	1,494	99	1,898	-5,333
2034	23,050	102,139	4,350	1,512	99	1,886	-5,030
2035	24,331	373,413	15,902	1,529	19	10,040	-3,564
2036	24,331	373,413	15,902	1,529	19	10,042	-2,233
2037	24,331	373,413	15,902	1,529	54	10,007	-1,028
2038	24,331	373,413	15,902	1,529	54	10,007	66
2039	24,331	373,413	15,902	1,529	35	10,025	1,062
2040	24,331	373,413	15,902	1,529	0	10,060	1,970
2041	24,331	373,413	15,902	1,529	0	10,060	2,794
2042	24,331	373,413	15,902	1,529	35	10,025	3,540
2043	24,331	373,413	15,902	1,529	35	10,025	4,218
2044	24,331	373,413	15,902	1,529	54	10,007	4,832
2045	24,331	373,413	15,902	1,529	19	10,042	5,392
2046	24,331	373,413	15,902	1,529	19	10,042	5,901
2047	24,331	373,413	15,902	1,529	54	10,007	6,361
2048	24,331	373,413	15,902	1,529	35	10,025	6,780
2049	24,331	373,413	15,902	1,529	35	10,025	7,161
2050	24,331	373,413	15,902	1,529	0	10,060	7,508

**Facilitation of Private Sector Investment in Forest Reserve Management through Public Private Partnership (PPP) – Economic analysis of different lease arrangements****Background*****Forest reserves in Tanzania***

The Private Forestry Programme (PFP) is a bilateral initiative between the Governments of Finland and Tanzania. The Programme increases income in the Southern Highlands through science-based private plantation forestry, and strengthening forest industries.

The Programme seeks to facilitate the Ministry of Natural Resources and Tourism in its initiative to secure private sector involvement in strengthening forest reserve management.

Today the total area of land covered by forests in Tanzania is estimated at 34.7 million ha, of which 14.3 million ha is categorised as forest reserves. National forest reserves; are owned by central government, regulated, and overseen by Forestry and Beekeeping Division of the Ministry of Natural Resources and Tourism, and managed by Tanzania Forest Service (TFS) as an executive body of that ministry. They cover about 12.3 million ha, and constitute roughly 35% of the total forest and woodland area. National forest reserves are classified as either protection forest reserves (managed for conservation purposes such as biodiversity or water catchment), or production forests (including natural and plantation forests, which are harvested for timber, fuelwood, and other purposes). The area of production forests is 9.3 million ha.

Substantial areas of forest reserve have become degraded due to past management failures, and are not contributing to economic development. At the same time, Tanzania is experiencing a serious shortfall in supply of forest products. Tanzania already has successful experiences of private sector plantation forestry but their scope for expansion is limited by land availability. So far the Government has not leased reserve land under concessional arrangements and thus has not created a uniform model for such arrangements.

***Rationale for outsourcing management of forest reserves***

Significant areas of underutilized forest reserve could be developed as productive commercial plantations complying with the best international sustainability practices; i.e. providing sustained financial returns, benefits for local communities as well as ecosystem services.

The establishment and management of productive commercial forest plantations on currently underutilized forest reserve land could be outsourced to third parties through concession or lease agreements and benefit sharing arrangements. In this way, the degraded areas could be gradually turned into productive plantations supplying expanding wood industries. This is in line with the Forest Policy, Forest Act and Forest Regulation (Sec 20, 21 of the forest act 2002).

***Options for plantation management and development through outsourcing***

Tanzania has experienced different forest land tenure arrangements besides national forest reserves. These have included: joint forest management between government and community, small scale private forests, and larger private company forests. However, only private companies and small-scale private forest owners have been able to develop commercial plantations.

A few companies, such as Green Resources, New Forest Company, Kilombero Valley Teak Company, Mufindi Paper Mills and Tanwat manage larger-scale industrial plantations on private land. At the same time there are thousands of smaller scale private tree growers establishing private plantations on village land especially in the Southern Highlands. Some of the tree growers (>4,000) have organized themselves into 90 Tree Growers' Associations (TGAs) with an apex body to represent them at the moment being developed. These TGAs mostly plant on individual small holdings and on village land that has been set aside for this purpose. However, neither of these tenure arrangements can be directly applied to leasing or granting concessions to the national forest reserves. In addition, there are cases where villagers have established commercial plantations on underutilized forest reserve land.

The procedures for selecting investors and negotiating leases will need to be seen to be open, transparent, and equitable. These opportunities must be accessible to a tolerable balance of small and



large investors. The major options for establishing and managing productive commercial plantation forests on underutilized forest reserve land appear to be:

- a) Repeat similar leases as before – what are the lessons learned from the past?
- b) Create new forms for leasing or granting concessions to the government reserves (there are several cases e.g. Ghana, Mozambique, Uganda).
- c) Working within existing legislation identify suitable forest reserve blocks for development, identify potential investors with proven capabilities and reputations, and negotiate lease arrangements.
- d) Working within existing legislation identify small and large (5 ha to >10,000 ha) forest reserve blocks for development, develop suitable leasehold models with private sector representatives, advertise and seek expressions of interest, identify potential investors with proven capabilities and reputations, and negotiate lease arrangements.
- e) Identify one project developer that initiates the plantation development and at later stage lease the areas further for new partners (e.g. Malonda Foundation in Mozambique)
- f) Rationalise the illegally established forest plantations on forest reserve land through formalising a public private partnership
- g) Creation of reserves banks – auctions

#### **Relevant outputs already delivered by the TFS/PFP**

The TFS/PFP have identified and prepared site profiles for nine blocks suitable for private investments in Ruvuma region on TFS land (see table below). All but one of the blocks are gazetted for government use while one is currently declared for government use.

District	Investment block	Legal status of the land	Estimated plantable area (ha)	Altitude range (m.a.s.l.)	Precipitation (mm/year)
Songea rural	Ifinga	gazetted	10,000	1,200–1,600	1,500
Mbinga	Lihumbe	gazetted	3,000	1,450	>1,500
Nyasa	Mapera	gazetted	1,500	1,300–1,800	>1,500
	Mpepo	gazetted	2,500	1,300–1,800	>1,500
	Ndondo	gazetted	900	1,300–1,800	>1,500
	Uporo	gazetted	3,000	1,300–1,500	>1,500
Tunduru	Masonya	declared	2,800	500–600	1 000 (high water table)
	Muhuwesi	gazetted	4,500	500–600	1 000 (high water table)
Namtumbo	Kipiki	gazetted	5,000	800–1,000	>1,500

The blocks are prioritised according to their potential for commercial plantation establishment. The highest priority has been given to a block in Ifinga with some 10 000 hectares available for commercial plantation development. In addition, there are already some adjacent TFS plantations and local villagers have already started establishing woodlots in the nearby areas. Assessment of the land use around the block shows no significant pressure on land.

Based on the information acquired by the TFS/PFP so far, the following steps will need to be taken next:

1. Preparing of village land use plans for all the affected villages
2. Carrying out a cadastral survey of the areas and assigning land title to TFS
3. Attracting potential investors and providing them with relevant information on all aspects of the investment
4. Forming Public Private Partnerships with TFS/Tanzania Investment Centre (TIC) and the investor

The following sections of these terms of reference explain the process through which the consultant will provide the necessary information to investors as stated in the third point above, mainly focusing on providing relevant financial information for sound investment decisions.

#### **Objectives and expected outputs**

The overall objective of the assignment is to provide financial information on investment to under-developed plantation areas under a concession/lease agreement with the TFS.

The consultants will produce a report outlined by the tasks discussed below. In addition, the information provided by the draft report will be available for use in the Forestry Conference in November 2016 to complement information acquired by TFS/PFP. The report will form a basis for a more complete package for potential investors interested in investing in commercial plantations in Tanzania.

### **Tasks**

The work will build on top of the knowledge obtained through the above-mentioned activities already undertaken by TFS/PFP and present an investment case concentrating on the priority block of Ifinga. The work will consist of four main parts that are explained in more detail in the chapters below.

#### *Desk work*

##### High-level market outlook

The outlook will focus on supply of plantation wood and demand of wood-based products. The potential supply of plantation wood will be estimated based on information available on existing plantation assets. The demand and trade-balance of wood-based products industry in Tanzania will be assessed. The market outlook will provide the potential investors the rationale for investing in commercial tree plantations in Tanzania and exhibit the main value driver of the assets. The market outlook will feed inputs to the financial assessment. In addition, the market outlook will serve as an independent output for the conference overlooking the supply, demand and price trends of plantation wood and plantation wood based products.

##### Financial assessment of the investment case developed by the projects Incremental investments / generated cash flows

The second part of the report will focus on the actual investment case for the selected case of Ifinga block and analyse the investment's profitability. This high-level financial analysis will look at the investment mainly through assessing the potential of the investment to generate cash flow. This part of the assignment will provide the potential investors an indication of time needed for the investment and the potential profits available in the future with a simplified planting programme. The financial assessment will include a sensitivity analysis on price, costs and discount rate.

##### Economic analysis

This part will justify the lease arrangement from the society's point of view through a socio-economic analysis. It will consider the broad benefits of a commercial tree plantation investment into an under-developed site as opposed to leaving the land undeveloped or using it for other purposes. This part of the assignment will show the potential investors and the government how the investment will affect the parties involved and whether all parties will benefit from it.

##### Benefit sharing models/options based on potential financial outcome

As the purpose of the entire assignment is to provide information for setting up a PPP that will benefit local community, potential investors and the government, the fourth part of the assignment will focus on reviewing models/options for benefit sharing of the PPP. Since the modality of the PPP is not yet finalised, this part will introduce working solutions from existing PPPs where applicable.

#### *Field work*

The aim of the field work is to validate findings and finalise the report with key stakeholders such as TFS, PFP and FDT. The consultants will also make their findings available for TFS/PFP while presenting the investment case for the potential investors in the Forestry Conference of November 2016. The stakeholders to be consulted include representatives for example from:

- Tanzania Forest Service (TFS)
- Ministry of Natural Resources and Tourism (MNRT)
- Ministry of Lands, Housing and Human Settlement Development
- Tanzania Investment Centre (TIC)
- Private Forestry Programme (PFP)
- Forestry Development Trust (FDT)
- Embassy of Finland, Dar es Salaam
- Potential investors

### **Timing and resources**

Considering that the assignment feeds into the Forestry Conference to be held in November 2016, the assignment needs to begin as soon as possible. Most of the work will be done as a desk study during October 2016 after which the work will be finalised in Tanzania with relevant key stakeholders, the findings will be made available to be used in the conference in November and the final report will be published by the end of November 2016. Tentative work plan is presented in the table below.

Task	Week commencing								
	3.10	10.10	17.10	24.10	31.10	7.11	14.11	21.11	28.11
High-level market outlook									
Financial assessment of investment									
Economic analysis									
Benefit sharing model									
Draft report writing									
In-country consultations									
Finalisation of the report									



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