

# COMPANY REPORT

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## COMPANY PROFILE

**Green Resources is Africa's leading forestation company and a leader in East African wood manufacturing.** The company has 25,000 ha of standing forest in Tanzania, Mozambique and Uganda, **established through its own planting activities.** It operates East Africa's largest sawmill in Tanzania and electricity pole and charcoal plants in Tanzania and Uganda and is also one of the first global companies to receive carbon revenue from its plantation forests.

The company was established in 1995 and is a private Norwegian company with 80 shareholders. It employs more than 3,600 people and has invested USD 120 mn in its African operations since its inception. Green Resources aims to establish over 100,000 ha of plantation to serve both the growing regional and global demand for wood products. Its strategy is based on growing wood for both traditional uses (sawn timber, panel board, pulp, etc.) and for the growing bio-energy sector. Green Resources has probably planted more trees than any other private company in Africa during the past ten years; a record 5,600 ha of new forest was planted in 2011. In addition, the company holds land for future planting and conservation, ensuring continued strong growth.

Green Resources also harvests logs from its own plantations **established in the 1990's and will continue to do so as the plantations mature.** Much of the harvesting is in Uganda where eucalyptus is being logged for use in the electrical pole industry, pine for sawlogs and the residues for charcoal production. The company expects revenues from harvesting to sharply increase over the next five years.

Green Resources aims to follow the highest international environmental standards by conserving natural forest and other valuable habitats. The company has more than three-quarters of its forests certified according to the Forest Stewardship Council® (FSC®) standard, the **world's leading standard for environmental and sustainable forest management,** and is aiming for 100% certification. It is the only company with FSC-certified plantations in three African countries and it owns more than two-thirds of the FSC-certified plantation forest in Africa outside the Republic of South Africa (RSA) and Swaziland. As part of this sustainability policy, the company only harvests plantation forest, currently is planting at least ten new trees for every one tree that it harvests, and only plants on low value grassland or degraded forestland.

**Green Resources' strategy is based on the sustainable development** of the areas in which it operates. The company believes that forestation is one of the most efficient ways of improving social and economic conditions for people in rural areas and aims to be the preferred partner for local communities in these areas; it also wants to be the favoured African employer within its industry.

The prime objective of the industrial operations is to add value to the **forest.** **Green Resources' main industrial operations, Sao Hill Industries (SHI), Tanzania,** have been significantly upgraded in the past three years. It now operates two log lines, a pole treatment plant, joinery **facilities and a charcoal plant, including what is probably Africa's (ex-RSA) largest and most modern sawmill.** It has several sales branches throughout Tanzania. It also operates an electricity pole plant in Uganda. The industrial operations generated USD 12 mn of revenues in 2011.

**Green Resources' carbon credit projects include both forestation and bio-energy.** It is a leader in forestry-derived greenhouse gas emission **reductions, having registered the world's first forestry project based on the Voluntary Carbon Standard (VCS) in 2009 and sold the first issued credits in 2010.** All of Green Resources' forestry-derived carbon offset revenues will be reinvested in the countries where they were generated and 10% will be used for community developments, making the credits some of the most attractive in the world.

Publication date: 19 November 2012

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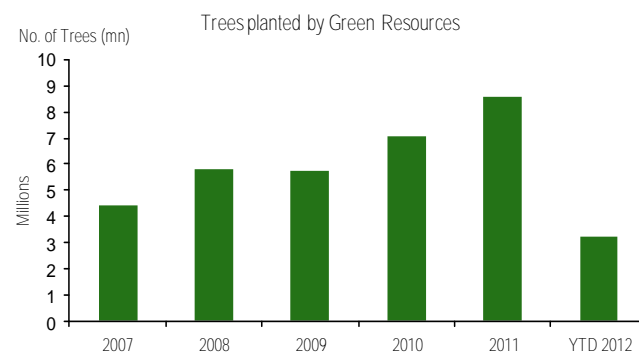
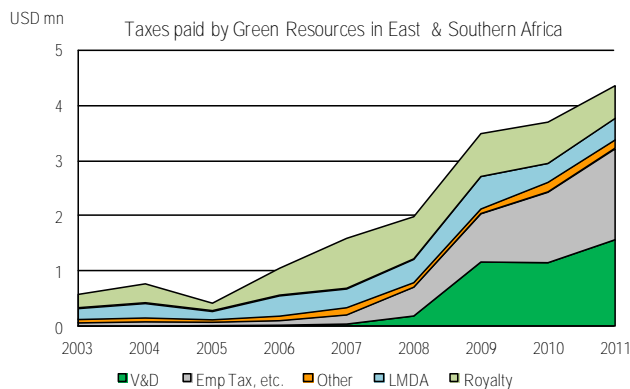
## 2011 HIGHLIGHTS

- Planted a record 5,600 ha of new forest
- Produced 150,000 clones in Bukaleba nursery, Uganda
- Improved forestry programme aiming to increase the growth rate of newly planted forest by at least 30% compared to the base year in 2008-09
- Focused on core plantations in Northern Mozambique, Southern Tanzania and Uganda. Halted activities in three non-core plantations
- Completed FSC® certification in Mozambique (the first Mozambican plantation to ever receive certification) and Uganda
- Achieved CDM project validation for Kachung, Uganda plantations, all credits sold on a 25-year contract to a European government buyer
- Generated good profits at industrial operations in Uganda during its first full year of operations
- Industrial operations in Tanzania turned around in the second half of the year

## 2012 HIGHLIGHTS

- Completed agreement with development banks to provide funding for the company's long-term plan until the company becomes cash flow positive
- Implemented the company's first tree breeding programme, aiming to significantly improve the yield of our plantations
- Production of clones at the key nursery in each of the three operating countries
- Started up new small log HewSaw at Sao Hill, Tanzania, probably Africa's largest sawmill outside of South Africa. Also commenced operation of new dry kilns, the largest in East Africa
- Completed the 50th external third-party assessment or audit
- Commenced operations of first high efficiency, methane-free charcoal production in Uganda, as part of a four-plant grant-funded programme in Mozambique, Tanzania and Uganda
- Reached 1,200 participants in GR's Agricultural Out-Grower Programme, probably the largest in Northern Mozambique
- Started farm forest and charcoal programme in Mozambique and Tanzania that will benefit 2,000 farmers, partly EU-funded

## GREEN RESOURCES OPERATIONS



Source: Green Resources



## COMPANY OBJECTIVES

**Green Resources' goal is to be Africa's best and the world's best positioned forest and carbon credit company.** It aims to generate superior return for its shareholders, provide an excellent working environment for its employees, protect the environment and help develop the local communities where it operates. We aim to create an advanced plantation company. We also aim to develop a first-class, rapidly-growing forest products and energy business in Africa where this helps us provide the maximum value for our forests. The company converts low-yielding grass and degraded forestland to tree plantations suitable for the different areas under its management and ownership.

Green Resources intends to access a broad spectrum of products and markets, and include value adding processing to maximise the value of the forest. **The company's products include** sawn timber, pallets, electricity poles, charcoal, and other wood products. The company currently sells all of its products in the rapidly growing East African markets, but also intends to export its forest products.

Green Resources aims to develop a leading African carbon offset business and use carbon finance to fund the planting activities. The company will absorb and store the maximum amount of CO<sub>2</sub> through forestation projects and by converting plantation forests into renewable energy.

**Green Resources' goal is to conserve and** expand natural forest and other valuable vegetation within its areas of operation and obtain FSC certification for all its forests. The company will reach out to local communities to establish farm forest schemes, maintaining a strong focus on sustainable environmental and social development, and adhering to high standards of corporate social responsibility. Green Resources wants to be the preferred employer and attract the best employees in its industry. The company aims to be the preferred partner for the local communities in which it operates and for international business partners and financial institutions.



Pole treatment, Uganda



Nursery, Lurio



Forest and fire breaks, Mapanda



Pine at Bukaleba

## COMPANY HISTORY

2012

- Started Africa (ex RSA)'s largest sawmill
- Started pyrolysis charcoal production
- Funding in place for new long-term plan

2011

- Record 5,600 ha planting of new forest
- FSC certification in Mozambique and Uganda
- CDM validation in Uganda
- First clones produced

2010

- USD 1 mn and 100,000 tons of VCS carbon credits sold
- Electricity pole plant start-up in Jinja, Uganda
- USD 5 mn of grant financing awarded

2009

- Framework agreement in Mozambique for 126,000 ha Lurio Project
- USD 17 mn loan financing from IFC and Norfund
- **World's first VCS**-validated forestry project
- First harvesting from own forests

2008

- FSC certification of Uchindile and Mapanda plantations, Tanzania
- Received more than USD 1 mn in development grants
- Raised USD 32 mn in new equity

2006

- Reached agreement for Kachung, Niassa and Tanga

2005

- First year exceeding 1,000 ha planting

2003

- Refinancing of company
- Acquired Sao Hill- largest sawmill in East Africa

2000

- Uchindile voluntary carbon project received SGS validation
- Saw-milling halted after cost rises and market collapse

1998

- Peak in early planting operations

1997

- Acquisition of first mobile saw equipment

1996

- Pilot for carbon offsets
- First licences in Uganda and Tanzania

1995

- Incorporation

Dear Stakeholder,

It is three years since we last published a major company report. Green Resources has doubled in size during this period and the company has been transformed from being a small plantation company to **one of Africa's largest forestry companies with two modern industrial facilities** and 25,000 hectares of plantations located in three countries. Green Resources has continued its intensive investment in plantation operations, while upgrading its industrial capacity to meet the growing demand for its wood. Plantation investments include a wide variety of activities, starting with improved seed quality and the use of clones to better land preparation and more intensive plantation maintenance. The Company has increased the use of manual slashing, herbicide and fertiliser to improve growth rates and has begun implementing a system of mechanised planting in Mozambique.

We have continued to grow with the strong support from our shareholders and smaller loans from development banks. Green Resources underwent a strategic review late last year which enabled the Company to revamp its long term strategy and make the company cash flow positive within the next four years. We believe the Company is now well positioned in both the local and global markets as the world emerges from the global financial crisis. Key accomplishments include:

- Record planting levels
- Finishing a modern sawmill line in Tanzania
- Improving the quality of the planting and silviculture company-wide
- Achieving FSC and carbon certifications on the large majority of the plantations
- Completing our planting plan for the Uganda operations where we are now focusing on thinning, harvesting and eventually replanting after harvest
- Ramping up planting and infrastructure in northern Mozambique
- Starting a pole plant and charcoal facility in Uganda
- Building state of the art nurseries in Mozambique and Tanzania and producing clones in all three countries of operation
- Identifying and focusing on core operations and discontinuing non-strategic investments

### 2011: record planting

In 2011, the company planted a record 6,400 ha of forest. Of the total planted area, 800 ha were replanting, giving a net addition of 5,600 ha of new forest. 2012 has continued to see major improvements in the quality of the planting, including planting more eucalyptus clones than ever, and continued efforts to mechanise operations. Green Resources has cemented its position as a leading African forestry company and is believed to have established more new forest plantations in Africa than any other organisation during the last decade.

In 2011, Green Resources achieved FSC® certifications in Mozambique (the first plantation ever to receive certification there) and Uganda, including the first ever FSC certified forest plantation in Mozambique. It has more than two-thirds of all FSC® certified forest plantations in Africa, outside of South Africa and Swaziland and confirmed its position as a leader in African plantation forestry.



Makungu nursery, Tanzania

2011 was the first full year of industrial operations in Uganda which generated good profits and the industrial operations in Tanzania turned around in the second half of 2011. 2012 has seen the completion of all major industrial investment projects. This includes the new sawmill and dry kilns at Sao Hill, and in Uganda, the pyrolysis charcoal production plant has started up.

### 2012 and beyond

The 2011/12 planting season (starting in November/December) was completed with continued quality improvements, but with a reduction in the year-on-year planting by over 40%, partly because there is no more land for planting in Uganda and the company has stopped planting in the coastal regions of Tanzania, and partly because it was difficult to raise funding for new planting. The preparations for the 2012/13 planting season are the best ever, despite a tight financial situation and the company is in a position to continue increasing the quality of the planting, as well as increasing the planting area from the last planting season.

The first half of 2012 saw the strongest industrial EBITDA on record, even before the new sawmill started up at Sao Hill. We believe that the opportunities in the pole business are very promising as rural electrification remains a priority in East and Southern Africa. The market for sawn timber continues to grow and local demand for timber products is strong throughout the region.

### Completion of major investments

During 2012 Green Resources completed its investments in a major capital expenditure programme that was started three years ago. These investments have been completed in the face of a difficult financing environment and tough internal capital rationing. While most investments have taken longer than expected to implement, the in-



Completed sawmill, Sao Hill, Tanzania



Retort charcoal kilns, Uganda

vestments have been made within budget and the quality of the new operations has improved dramatically.

In 2010, Green Resources purchased the equipment from a sawmill in Estonia that had operated for only five years, due to the decline in the northern European forestry sector. Green Resources has re-assembled, expanded and improved the sawmill line and began operating at Sao Hill in 2012. We believe this sawline is the most modern in all of Africa. It will be used to saw both pine and eucalyptus with a log diameter from 10 cm to 24cm. New dry kilns have also been completed. A new logistics system with ten new trucks and trailers and log cranes has been put in place. In Uganda, retort charcoal kilns have been started up in Jinja, the first new generation clean, high yielding charcoal production to take place in East Africa. A charcoal briquetting plant has also commenced operation.

There have also been significant capital investments in the plantations, primarily by establishing two high-capacity, high-tech nurseries in Mozambique and Tanzania. Since the start of 2011, Green Resources has successfully started tree clone production at its leading nurseries in Mozambique, Tanzania and Uganda.

#### *Improving silviculture*

Green Resources has significantly increased its efforts to improve future planting material, partly by widening the purchase of seeds and clones, partly by starting a trial programme in conjunction with leading international tree breeding organisations, and partly by starting clones production at the major nurseries.

Growth rates for eucalyptus, pine and acacia, the main commercial tree species that have been grown in East and Southern Africa for several decades, are 15-30m<sup>3</sup> per ha per year, depending on location and species, with typical growth rates being 20-25m<sup>3</sup>/ha/yr. For eucalyptus, these growth rates are similar to Brazilian growth rates 30 years ago and in Uruguay 20 years ago. Much of the initial planting material used in South America came from Africa. Since then, in South America the growth rates for eucalyptus have doubled and there have also been significant improvements in the growth rates of pine. Green Resources believes major improvements can be made in East Africa, too – maybe not as large, but probably more quickly. This would have a very positive effect on our forestry operations.

#### *Successful community projects*

Green Resources continues to invest in community development programmes. It has contributed half of the public infrastructure in the villages in Tanzania where it has its largest operations, including support for schools, health stations, village halls/offices and roads.

In Mozambique, a successful agricultural outgrower programme

already has 1,200 participants in its second year of operation. The smallholder tree grower programmes will be better organised from the next growing season through a new programme that will include 2,000 farmers.

#### *Increasing grant financing*

A record NOK 11mn (USD 2mn) was disbursed in grants during the first half of 2012. The main providers were the EU, Norad and NCF/NEFCO. Green Resources is creating significant development effects by its investments, which are attractive for donor organisations. At the same time, various grant programmes and donor organisations have contributed meaningfully to develop these projects. The grant projects relate to innovative capital investments, project development costs and community programmes. The company will continue to work with these organisations to improve the communities in which we operate.

#### *Forestry focus on Africa*

The September 2012 newsletter of the International Woodland Company (IWC), **Europe's largest timber management company**, was dedicated to Africa. Tanzania and Mozambique were identified in the article as the most attractive countries in Africa to establish new plantations. IWC highlighted that Africa is growing, Africans need more wood, that there are good growing conditions for plantation forestry and that the costs of plantation establishment are attractive. They point out that the distance from East Africa to China is about the same as from New Zealand, and half as far as from Brazil/Uruguay. And, no southern hemisphere international forestry trade route is shorter than from East Africa to India, a country with fast growth and a huge wood deficit.

Leading forestry conferences in Europe and North America over the last couple of months drew record attendances and the focus on emerging market forestry was larger than ever. Africa is attracting increasing attention with focus on South Africa, East Africa/ Mozambique and Ghana, with East Africa and Mozambique being the leading areas for establishing new plantations. There are no larger standing forests available in Africa outside of South Africa and there has been no new entrant into the commercial plantation industry in East Africa and Mozambique during the last five years. Thus, the position of Green Resources has improved.

#### *Wood supply shortage throughout Africa*

Extensive studies have been made over the last two years about the wood supply situation in East Africa, reviewed later in this report. In every country, the government owned forests which traditionally dominate the supply, are being depleted and replanting and growth do not keep up with the harvesting. Tanzania, which has the largest



Mapanda plantation, Tanzania



forest plantation in the region, will see a dramatic drop in supply at the end of this decade. In most other countries, the situation is worse.

### *Independent audits*

Implementing large-scale land-based investments in agriculture and forestry is both challenging and complicated. However, there are several internationally recognised guidelines, standards and tools available to assist in this process. Green Resources uses some of the most sophisticated of these tools in its operations, and continues to undergo extensive third-party assessments in this process. The company has conducted more than 50 third-party assessments and audits in the last five years, of which at least 20 are publicly available. Although this can be an expensive process, it is a core part of the **company's approach to developing new plantations, because it provides operational discipline while ensuring the company's values of social and environmental excellence are maintained.**

In addition to the third-party assessments and audits, Green Resources has completed extensive business, environmental and social and legal due diligence processes during the last year. These processes have involved studies by leading consultants, as well as extensive reviews and dialogues with developing banks. This has been a demanding and time-consuming process for the company, but the processes have identified several opportunities for improving its operations. Green Resources has also been able to raise the standard of its internal documentation and management in the process.

### *Combating deforestation*

Deforestation devastates the environment, reduces biodiversity and accounts for 15-20% of all greenhouse gas emissions in the world (more than the transport sector), according to UNFCCC. Deforestation has received significant attention in recent years, though with modest results. In East and Southern Africa, fuel wood collection and charcoal burning are the main source of deforestation along with agricultural expansion. 90% of the population relies on biomass for its energy needs, typically the poorest part of the population.

Only new plantation forests can provide the biomass required to meet the rapidly growing need for energy. Green Resources believes establishing plantation forests are the most effective way to combat deforestation, by creating an alternative supply of biomass. The **company's investments in charcoal processing** – from both its plantations and industrial facilities - will provide a sustainable source of alternative fuel to this fast growing market. Thus, Green Resources is at the cutting edge of combating the real sources of deforestation.

### *Need for 5 million ha of new plantation annually*

**WWF's Forest for a Living Planet reports are reviewed later in this report.** This is the most comprehensive and intelligent review of **global forestry we have come across.** **WWF's objective is to create a world based on renewable energy by 2050, and this requires extensive use of biomass.** We interpret the Living Planet reports such that the world needs 5 million ha of new forest plantation per year until 2050 and that there are sufficient suitable land available to achieve this. Current global achievements are less than 1/5 of this.

### *New long-term plan*

At the end of 2011, Green Resources undertook a comprehensive review of its **long-term strategy.** **Green Resources' aggressive plantation establishment over the past decade has been capital intensive and maintaining that level of investment has been difficult during the global financial crisis.** In order to address the shortage of private equity investment, Green Resources conducted a strategic review and

concluded the company should focus more closely on generating positive cash flow sooner. To this end, a new long-term plan was approved that includes the following elements:

- The current rate of new plantation establishment (approximately 5,000 hectares per year) would remain for the next five years
- The company would focus on its most profitable and promising operations in Mozambique, Tanzania and Uganda
- Non-core plantations (coastal Tanzania and South Sudan) would not be expanded in the near term, and non-strategic assets would be considered for sale
- Additional capital investments in the industrial units would be delayed until the company was closer to being cash-flow positive
- Overheads have been reduced to reflect the scaled-back growth

### *Secured financing*

**The company's shareholders have provided NOK 120mn (USD 21mn) of capital since the start of 2011, mostly through a rights issue that was completed at the start of 2012.** This capital has enabled Green Resources to complete its capital expenditure programmes and continue planting, and has created the basis for the long-term funding of the company. Since the long-term plan was approved by the board, Green Resources has signed a USD 25mn six-year mezzanine loan agreement with Finnfund and Norfund that will secure funding of the new plan. This financing will enable the company to implement the investment phase of its new strategy, moving into a situation of positive cash flow where internal cash generation will determine the level of annual planting.

### *Positioned for continued strong growth*

Green Resources has doubled in size during the last three years and is well positioned for continued growth. We aim to plant 4-5,000 ha of new forest every year and sharply improve the quality of all our planting operations, including achieving a steady improvement in the growth rates of the forest. Our industrial investments should enable us to more than double the revenues over the next three years.

1 November 2012

Juha Niemela  
Chairman

Mads Asprem  
CEO



Juha Niemela (left) and Mads Asprem in Mozambique

## GREEN RESOURCES' 50+ ASSESSMENTS AND AUDITS

Green Resources is a leading forestation company. Developing our forest plantations, we have had 52 formal third party assessments and audits during the last five years, including the world leading standards within forestry and carbon, in addition to a number of due diligence processes from development finance institutions. We might have been exposed to more independent assessment than any other land-investment based company in Africa.

**Plantations help feed the world's population** and provide the energy and building materials required in Africa and other parts of the world. Plantations, and better utilisation of the land, are pre-requisites if Africa shall continue to experience economic growth, at least where the objective is economic growth that benefits rural as well as urban areas. And, land utilisation is a requirement if we are going to protect high conservation value forest in other areas.

Green Resources is proud of being at the forefront of this development. However large scale land based investments in agriculture and forestry are complicated. There are many considerations and large challenges for anybody implementing these projects. However, there are several internationally recognised guidelines, standards and tools available to assist in this process. Green Resources aim to utilise the best of these tools and follow the highest international standards in the implementation of its plantation projects.

### *A leader in Africa*

Green Resources has planted more new forest in Africa than any other company in the last 10 years. The company operates in rural areas that are some of the poorest parts of East Africa where we meet many economic, environmental and social challenges. Through these challenges, GR continues to improve its operations. To help navigate these challenges, Green Resources is utilising the most demanding international standards and world leading certification systems available within the sector. We believe we are among leaders in applying the most sophisticated global standards to plantation investments in Africa, and aim to be at the forefront of developing the best new plantations.

### *Following the most demanding global standards*

Green Resources is dedicated to getting all of its plantations certified by the **Forest Stewardship Council™ (FSC)**, the world's leading standard for sustainable, environ-

mentally friendly and socially responsible forestry. The majority of GR plantations are **certified by one or more of the world's leading carbon standards**, which represent a further check of many of the standards within FSC. We conduct third party Social-economic Impact and Ecological Studies (SEIAs) and Ecological Studies for all plantations. We adhere to all relevant national and international guidelines and regulations such as the UN, World Bank, IFC and other relevant international organisations.

### *More than 50 third-party assessment and audits*

There have been 52 formal third party environmental, social and operational assessments, audits and due diligence reports of **Green Resources' operations produced by highly competent international and national organisations** during the last five years. In addition there are dozens of annual studies confirming that we comply with national legislation within environmental and social aspects. Green Resources might have more third-party certification than any other agricultural or forestry company of our size in the world.

The organisations conducting these assessments and audits include the world leading certification companies and forestry consultants, and leading African and European environmental and social consultants; including SGS, TÜV-Nord, TÜV-Sud and Veritas. Through these audits and reports, identified shortcomings have been rectified one by one. More importantly, these audits have ensured that we have a continuous process of improvement in all aspects of our organisation.

### *Transparency and public availability*

Green Resources has a number of both national and international stakeholders and we aim for a high level of transparency in all our operations. At least 20 of the third party assessments and audits are publicly available.

### *USD 1 mn direct costs, USD 5 mn total costs*

In the last five years, the company has spent USD 1.1 mn on third party audits and assessments required to meet third party certifications and standards. The internal costs required to prepare for and comply with these standards are at least equally large. The costs of physical investments required to meet these standards are believed to be several times higher, suggesting that our total assessment and certification costs are likely to have exceeded USD 5 mn.

### *Unparalleled third-party forestry certification*

We have certified more than three quarters of our forest according to the FSC standards, the world leading and most demanding standard for

sustainable forest management. In comparison, only 0.5% of total Norwegian forest is FSC certified, while many of the large Finnish and Swedish forests have been FSC certified in recent years. On 14 different occasions we have had third party FSC auditors on our forest plantations, and there are seven publically available reports from these visits.

FSC is a rigorous standard that considers a wide range of environmental and social issues. The FSC principles regulate environmentally appropriate forest management, ensuring that all forest activities maintain local biodiversity, forest productivity and ecological processes. Social monitoring ensures that local people and society at large enjoy the long term benefits of the forests and ensure the human rights of surrounding communities and employees.

Green Resources is the first Norwegian company to get FSC certification and have more FSC certified plantation forest in Africa outside of RSA and Swaziland, than any other company. Green Resources is the only plantation organisation in Africa, excluding RSA that is close to getting all of its plantations FSC certified.

### *Additional, extensive carbon certification*

Most of our plantations are subject to three different carbon certification standards (Verified Carbon Standard, CDM standard and the Community Conservation and Biodiversity Alliance (CCBA standard). These standards look at many similar issues to that of FSC, as well as additional issues. The carbon certifications represent a double check on all our operations. On 13 different occasions we have had third-party auditors reviewing our carbon projects; eight of these reports are publically available. We are possibly the world leader in certified forestry based carbon credits.

### *Socio-economic and Environmental Impact Assessments*

In addition, we have had more than 20 socio-economic and environmental impact assessments (SEIAs) by third party consultants, using national and international guidelines, typically followed by approval by local authorities. There have also been several significant and successful consulting studies made as part of the due diligence processes ahead of financing from development banks. These assessments are made to comply with national legislation, to meet high standards set by development finance institutions and to comply with the requirements of the FSC and carbon certifications. There are often annual follow-up studies and assessments by national authorities or specialist organisations for each of the SEIAs. At least half a dozen of these are publically available.



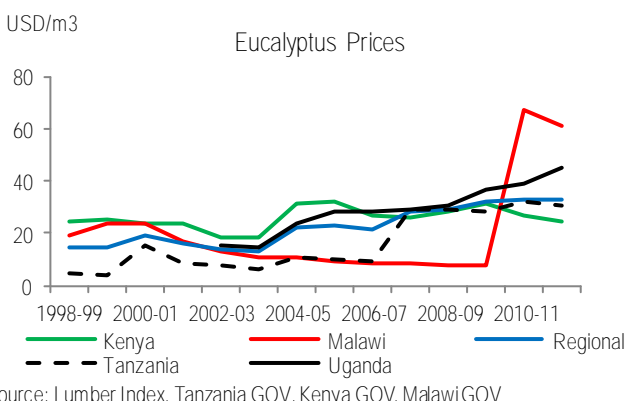
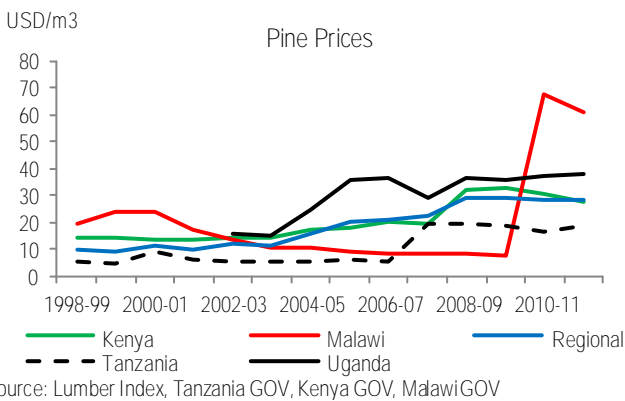
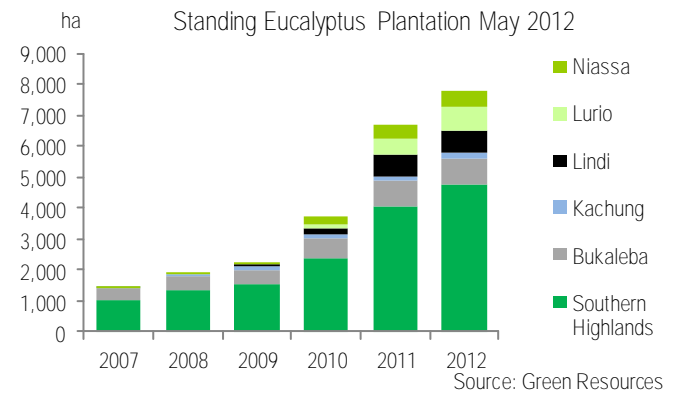
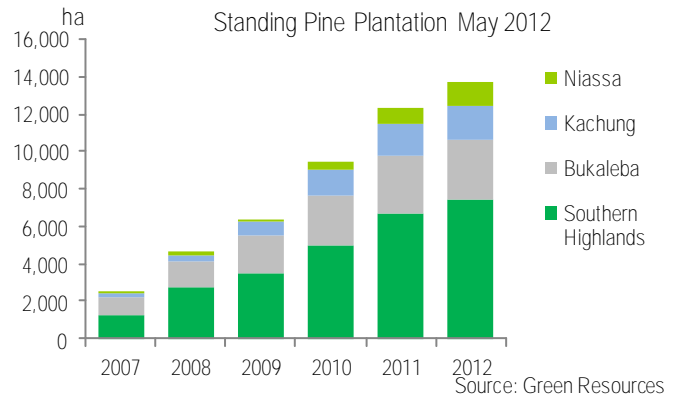


Landscape mosaic, Mapanda.

PLANTATIONS

Green Resources has tripled the size of its plantation area during the last five years, and now has a total of 24,000 ha of standing forest. This has been achieved by establishing new plantations and the company believes it has planted more new forest in Africa than any other organisation during the last ten years. About two-thirds of the plantations are pines and about one-third is various types of eucalyptus.

**Tanzania's Southern Highlands still dominate the plantations and** account for about half the total planted areas. Green Resources will continue to plant in South-western Tanzania. There are well established plantations in Uganda, but there is little scope for further expansion because the existing areas are fully planted. The company has made major investments into Northern Mozambique, and the results of this commitment will be rapidly expanding plantations during the coming years.



Local wood stumpage prices have seen a strong increase in recent years, both in local currency and USD terms. The latter increases have exceeded those of USD inflation by a clear margin, and East and Southern African wood prices are approaching world market prices. This is also reflected in local market product prices, like electricity poles and sawn timber. It is particularly heartening to see that the demand for wood residue, in the form of firewood and wood for the panel board and pulp industry, has increased. The price for wood residue has increased particularly fast in Uganda, but there is also a much tighter market in Tanzania.

Green Resources maintains a small but attractive investment in Lindi, South-eastern Tanzania and has a foothold in South Sudan through a small eucalyptus and teak plantation in Tindilo, Central Equatorial State. Further investments in these two plantations have been put on hold until land titles are finally issued and attractive funding is made available. During the last year the company has discontinued its operations in Tanga, Tanzania, due to unclear land situations and difficult growing conditions.

TANZANIA

*Southern Highlands*

Green Resources Limited (GRL) manages three plantations in the Southern Highlands with 12,682 ha of standing forest on 74,000 ha of land. An additional 21,000 ha of plantations can be established on the existing land areas. The remainder of the land is set aside for conservation purposes, buffer zones and infrastructure or is inaccessible. The land areas set aside for planting are low-value grassland that has almost entirely been acquired from local villages.

The objective is to grow trees for a wide range of forestry products. **The Southern Highlands of Tanzania already have East Africa's largest concentration of plantation forests and the largest wood processing industry.** The plantations and industry is focused on Mufindi District, but increasingly also in neighbouring areas, as witnessed by **Green Resources' extensive operations in Kilombero District.** The

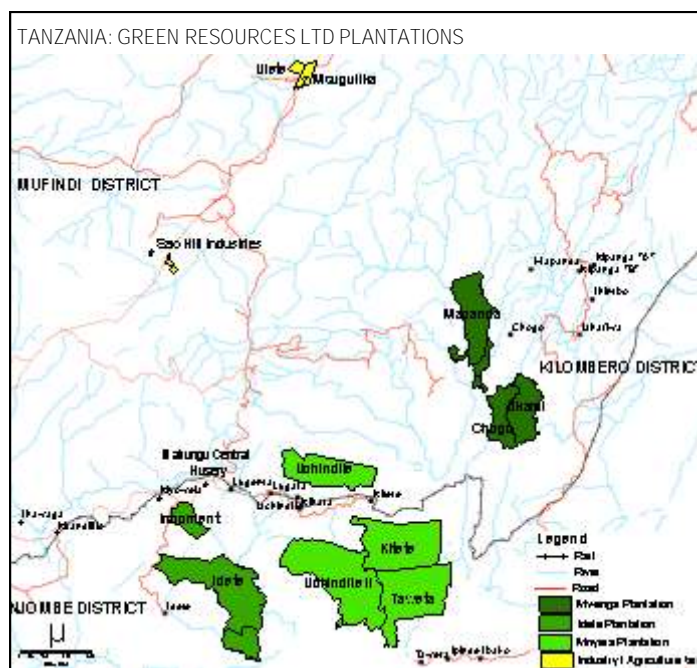
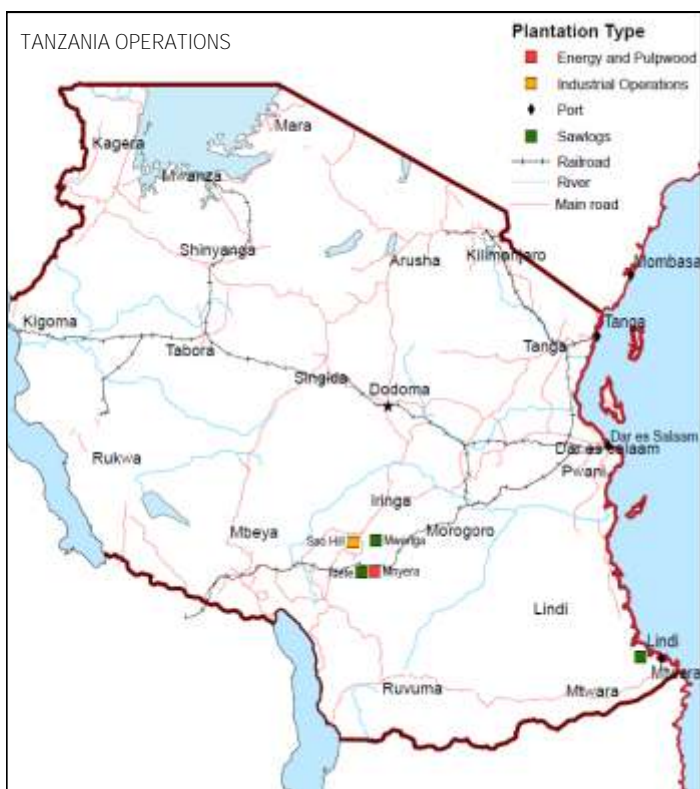
largest forest owner in the region is the government, with its 40,000 ha Sao Hill Forest Plantation, while Mufindi Paper/Tanwat owns more than 10,000 ha of standing forest. There are also a rapidly growing number of smallholder-owned forests. The government forest is over-mature and over-logged, resulting in lower harvesting rates during the last two years. With minimal new planting taking place in the government forest from about 1985 to 2005, there should be a wood shortage in the region from about 2020 onwards.

There is a good road connection to the main population centres in Kenya and Tanzania, which represent the home markets for the **Southern Highlands' wood products. Dar es Salaam port is the export hub.** The Southern Highlands have the potential to become a large producer and exporter of wood products. However, the combination of strong regional demand and supply limitations make it likely that most of the products will be sold locally and that East African wood product prices will continue to increase more rapidly than world market prices.

**GRL's planting capacity has increased steadily, reaching a peak of almost 3,000 ha in 2011.** New planting in 2012 was reduced to 1,805 ha planted across the three plantations in addition to some re-planting of previously partly-failed plantings. Green Resources has invested significantly in the infrastructure in the Southern Highlands. The state of the art high capacity Makungu tree nursery is the most modern in the region.

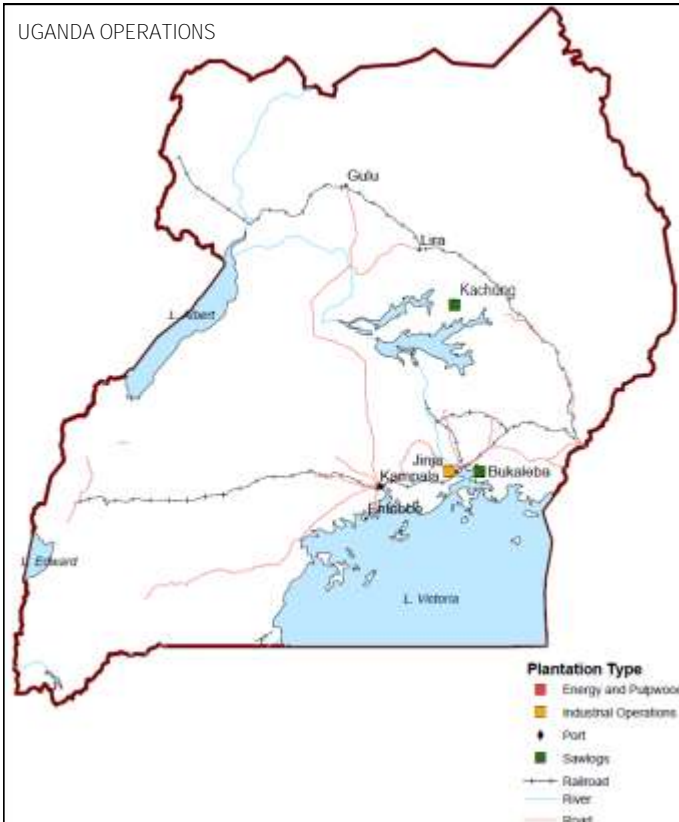
*Coastal lowlands*

**The warmer climate and lower altitude of Tanzania's coastal regions** allow for different species to grow, including teak and other high-value hardwoods. After some initial experimentation with teak, Green Resources has decided to focus all operations in this area on eucalyptus, through its subsidiary Lindi Forests Ltd (LFL). The coastal lowlands are well located for supplying the Dar es Salaam metropolis, one of **Africa's largest and fastest growing, and for export.**



UGANDA

Green Resources has two plantations in Uganda: Bukaleba and Kachung. Both plantations have been established within government-owned Central Forest Reserves that have been set aside for forest plantations.



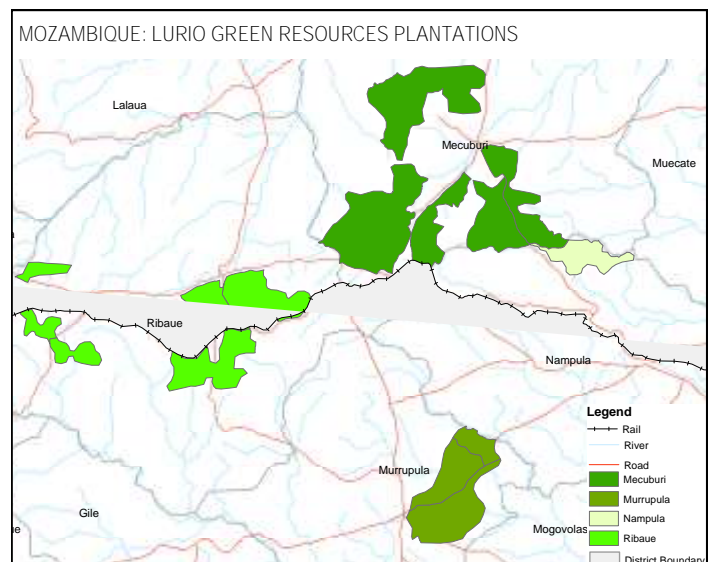
MOZAMBIQUE

**Green Resources' largest future expansion is focused on Northern Mozambique.** The existing plantations in Mozambique are modest, with 2,700 ha of standing plantations. However, the platform has been put in place for a sharp increase in the speed of the **planting from 2013 onwards.** Investments include the country's most modern tree nursery.

Mozambique is a large, sparsely populated country with huge agriculture and forestry potential. It has the potential to establish one or more forest plantations that could supply wood for world-scale forest industries, including pulp production, and could become **Africa's largest forestry nation.** The discovery of large reserves of natural gas in Northern Mozambique will ensure a first-class energy supply for future processing facilities; the discovery of large reserves of coal inland has already led to major investments in road and rail infrastructure.

**Green Resources' Lurio project is aiming to establish 126,000 ha** of new hardwood forest plantations in Nampula Province. Combined with additional supplies from smallholder farms and local small- and medium-sized enterprises, there will be sufficient supplies for a world-scale pulp mill, which could become one of the very lowest-cost producers worldwide. The logistics are excellent, with good connections to the Nacala deep-water port. Many other wood industries can start up well ahead of a pulp mill, including charcoal, wood chips and pellets, and Northern Mozambique could **become the 'domestic' supplier of panel boards to the Indian Ocean region.**

Green Resources is also one of half a dozen companies that have established around 30,000 ha of new forest plantations in Niassa Province, located inland from Nampula. At a higher altitude, the Niassa plantations have, to a large extent, been focused on pine, but driven by interest from international pulp companies, an increasing amount of eucalyptus has been planted during the last couple of years. Niassa is a likely future producer of solid wood products for the Indian Ocean region, but there are also early plans for a pulp mill in the province.





MNYERA , TANZANIA

The Mnyera plantations (including Uchindile) spans a total 42,656 ha, and are located in the villages of Kitete, Taweta and Uchindile in the South-West corner of Kilombero district in Morogoro region, Tanzania, an area with exceptionally low population density. The plantations (including Uchindile), comprise about 19,000 ha of plantable land, with the rest set aside for conservation, infrastructure, buffer zones or steep terrain. Approximately 40-50% of the total area will be converted to plantations; these areas are currently unproductive grasslands with no prior economic activity. The average altitude is 1,100 m with an average rainfall of 1,220 mm, with the rainy season falling between December and April. Out of the total project area, 6,647ha is under the Uchindile Forest Plantation, where GRL holds a title deed (no.50742) on a renewable 99-year lease obtained from the Ministry of Lands and Human Settlements valid from 2000, while the remaining land is approved by local and district authorities subject to final issuance of title deed from the central government.

Uchindile, along with Mapanda Forest Plantation, has been FSC certified since 2008, the first certified forest plantation in Tanzania. In 2009 the two plantations were successfully registered under the Verified Carbon Standard (VCS) and the Climate, Community and Biodiversity Standard (CCBS), and became the **world's first VCS registered forestry project.**

Plantation Development

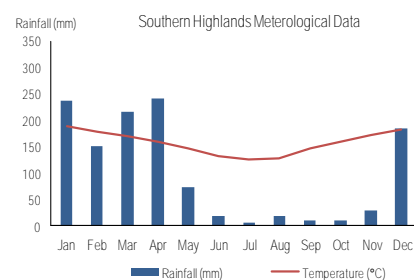
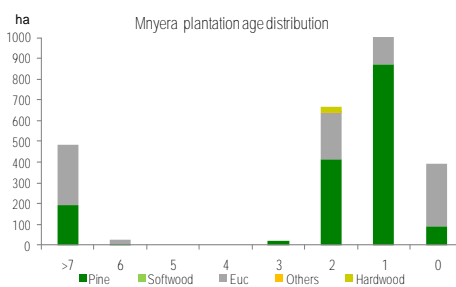
Uchindile I was the first of Green Resources Tanzanian planting activities in 1997. Uchindile I is now fully planted, and development of the rest of the Mnyera Plantations will continue in the planting season of 2012/2013. Most of the seedlings and planting material will be supplied from Green Resources modern Makungu nursery.

To the south and west, the Uchindile plantation borders Division III of Sao Hill Forest Plantation (SHFP), a Government owned plantation of mature eucalyptus and pines, exhibiting high growth rates. SHFP is East Africa's largest forest plantation. The plantation is at the closest 5 km from Uchindile Tazara railway station which runs to Dar es Salaam (500 km away) and 70 km from the main tarmac road at Mafinga, the main road running south-west from Dar es Salaam, and 25 km from Mufundi Paper Mills, the largest pulp and paper mill in East Africa. Some of the mature stands have been sold on stump to local sawmillers.

Following a setback in 2009, when a large fire significantly damaged large parts of the Uchindile I forest, a record 1,355 ha of new

Mnyera, standing plantation by year of establishment

In ha	Pine	Euc	Other species	Total
1997-2007	198	384	-	582
2008	-	9	-	-
2009	83	23	-	106
2010	822	602	37	1,461
2011	1,019	936	11	1,966
2012	124	328	-	452
Total	2,246	2,282	48	4,567
In %	49%	50%	1%	100%



plantation was established in 2011 and an additional 394 ha in 2012. The main pine species in the project are *P. patula*, *P. caribaea*, *P. elliotii* and *P. taeda* representing 54% of the total planting. The main Eucalyptus species in the project are *E. saligna*, *E. grandis*, and *E. tereticornis* contributing to **45% of total planting, 9.6% of Eucalyptus' are** various GC and GU clones. Other species such as *Croton megalocarpus*, *Grevillea robusta* and other indigenous species (*Syzygium* and *Albizia*) are being planted on a smaller scale.

Pine is grown for sawn timber on 21 year rotations with an expected MAI of 21 m<sup>3</sup>/ha/yr, while Eucalyptus is grown on 13-year rotations with an expected MAI of 23 m<sup>3</sup>/ha/yr. The current planting is expected to yield 176,000 m<sup>3</sup> of wood products over the next 10 years. Green Resources aims to reduce the rotation by 10-20% over the next few years.

Green Resources is in the process of establishing a 4,000 tons per year retort charcoal plant in Uchindile for start up in 2013, which will be fed with raw material from thinnings in **Green Resources' own forest and from small private forests** established in Uchindile and surrounding villages with support from the company.

FSC™: Certified FSC-C015169, August 2008  
 VCS: Reg. and issuing ID 142, July 2009  
 CCBS: Validated, October 2009  
 Carbon credits for 2012—2013 sold

Carbon

GRL's Uchindile plantation is part of the flagship Uchindile and Mapanda forest carbon project, which became the world's first registered and (VCS) forest project in 2009 and 2010, respectively. Under the Carbon certification, the Uchindile/Mapanda projects are reforesting 10,000 ha of land, with 7,000 ha coming from Uchindile, whilst contributing to sustainable development in the region. It has so far issued and sold approximately 140,000 tCO<sub>2</sub>e of carbon credits (100,000tCO<sub>2</sub>e from Uchindile). A carbon volume of more than 200,000 tCO<sub>2</sub>e is expected to be delivered from the project between 2012 – 2015, with 110,000 tCO<sub>2</sub>e from Uchindile. The project is validated under the CCBS, which certifies that the project delivers net-positive benefits across these aspects. A CCBS verification will take place at the next VCS verification later this year. The project has shared 10% of the carbon revenues from the first carbon sale with local communities, which has been used for additional community development initiatives.

Community development

Green Resources initiated the establishment of Uchindile Secondary School and built two of **four classrooms and one of two girl's dormitories.** Green Resources rebuilt Kihata Primary School, Uchindile by constructing five out of **eight classrooms, a teacher's office and four semi-detached teacher's houses.**

In Kitete village the company constructed the healthcare facilities, a dispensary and two **nurses' houses. The company has also constructed a village hall,** comprising of a meeting room and three offices.

In Masagati a new secondary school with 8 classrooms, named Tree Farm Secondary School has been constructed. Green Resources has built two primary school classrooms at both Ibaku and Taweta schools.

Co-ordinates: 8°52'41.62"S, 35°32'25.99"E  
 Altitude: 1,100m-1,437m  
 Average annual rainfall: 1,220mm  
 Mean temperature: 16°C  
 Main rains: December-April  
 Pine: 21 m<sup>3</sup>/ha/yr MAI, 21 year rotation  
 Euca: 23 m<sup>3</sup>/ha/yr MAI, 13 year rotation

IDETE, TANZANIA

**Idete is part of GRL's Lower Escarpment**

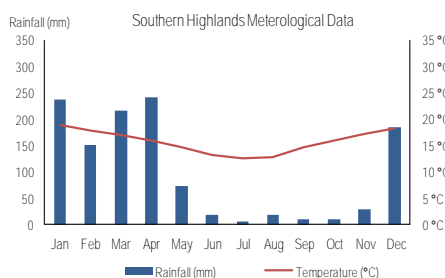
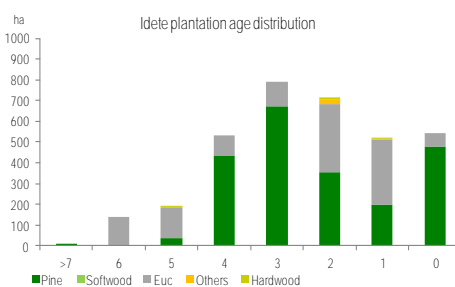
plantations, along with Mnyera, with parts being located on rolling hills and other parts on steeper hills often seen in South African forest plantations. The plantations are established to produce a wide variety of wood products, from sawn timber and electricity poles to panel board, energy production (including charcoal) and for supply to the existing and future pulp industries. There is a long term target of a 50/50 mix of eucalyptus and pine. Most of the seedlings have historically been supplied from **Idete's own nurseries, but the planting material** is now supplied from Green Resources modern Makungu nursery.

Idete Forest spans a total 15,966 ha of which at least 6,450 ha are plantable; the remaining land is set aside for conservation and infrastructure, and after further analysis, some added areas will be planted up. In 2012, 613 ha of new forest was planted, taking the total established plantation to 3,439 ha. 64% of the total planted area is Pine species including *P. patula*, *P. elliotii*, *P. caribaea* and *P. oocarpa*, while 35% are Eucalyptus species including *E. grandis*, *E. saligna* and *E. camaldulensis* and *Ecalyptus clones*

In 2011 the plantation received FSC® certification and also became validated according to the CCBS.

Located in Mufindi district, Iringa region, Tanzania, it is 20 km from Kiyowela railway station and located 110 km from the tarmac road in Mafinga, which is the main road running south-west from Dar es Salaam. It is located 15 km from Mufundi Paper Mills (MPM), the largest pulp and paper mill in East Africa, and borders some plantations being established by MPM. The average altitude is 1,250 m with a mean annual rainfall of 1,100

In ha	Pine	Euc	Other species	Total
1997-2007	47	286	9	343
2008	437	94	-	532
2009	671	119	-	790
2010	354	328	31	713
2011	200	311	8	520
2012	477	65	-	542
Total	2,186	1,204	49	3,439
In %	64%	35%	1%	100%



FSC™ : Certified FSC-C015169, July 2010  
 CDM: Undergoing validation  
 CCBS: Validated May 2011  
 Carbon credits for 2009-2012 sold

mm. GRL obtained the main title deeds for a 99 year renewable lease from the Ministry of Land and Human Settlements in April 2009.

Pine is grown for sawn timber on 21-year rotations with an expected MAI of 21m<sup>3</sup>/ha/yr while Eucalyptus is grown for electricity poles on a 13 year rotation with an expected MAI of 23 m<sup>3</sup>/ha/yr. The current planting is expected to yield 154,000 m<sup>3</sup> of wood products over the next 10 years. It is an objective to reduce the rotations of each crop by 10-20% over the coming years.

*Carbon*

**GRL's Idete Forest Project has been developed** under the Clean Development Mechanism (CDM) and is reforesting more than 5,000 ha of land whilst contributing to sustainable development in the region. The project is validated pending host country approval and setting of the Tanzanian forest definition. The project is being developed as a voluntary project. A volume of 50,000 tCO<sub>2</sub>e is expected to be delivered and sold following a 2012 verification and 650,000 tCO<sub>2</sub>e in 2017. The project was validated under the CCBS in 2011.

*Community development*

In Idete village Green Resources has constructed a nursery school and built two of four **classrooms and a teacher's house at Msingi Igenge primary school**. We have constructed a community hall, including six offices. At Mkungu primary school Green Resources has built two of seven classrooms and provided accommodation for four teachers at Kiyowela secondary school.

Green Resources has constructed and maintained 42 kms of road and constructed 5 bridges. The company has constructed two shallow wells to provide safe drinking water for Idete village.

Co-ordinates: 8°54'48.78"S, 35°18'52.58"E  
 Altitude: 1,100m -1,550m  
 Average annual rainfall: 1,100mm  
 Mean temperature: 16°C  
 Main rains: December-April  
 Pine: 21m<sup>3</sup>/ha/yr MAI, 21 year rotation  
 Euca: 23 m<sup>3</sup>/ha/yr MAI, 13 year rotation



Idete plantation

MWENGA, TANZANIA

The Mwenga plantation (including Mapanda) is located on top of the Mufindi Escarpment, in the Eastern corner of Mufindi district, Iringa region. The plantation was initially started in the villages of Chogo and Mapanda, but does now also include areas in Ukami village. To the west, the plantation borders Division IV of Sao Hill Forest Plantation (SHFP), a Government owned plantation of mature pine trees.

**SHFP is East Africa's largest forest plantation.**

There are fast growing small-scale forest plantations owned by local farmers in the area around the well established parts of the Mgugwe plantation.

The Mgugwe plantation covers 16,228 ha, out of which at least 8,563 ha are plantable, with the remaining land is set aside for conservation and infrastructure. The net planted area to date is 3,667 in Mgugwe. The main pine species in the project are *P. patula*, *P. caribaea*, *P. elliotii* and *P. taeda* representing 82% of the total area planted. The main Eucalyptus species planted include *E. camaldulensis*, *E. grandis*, *E. saligna* and *E. globulus* representing 18% of the total area planted.

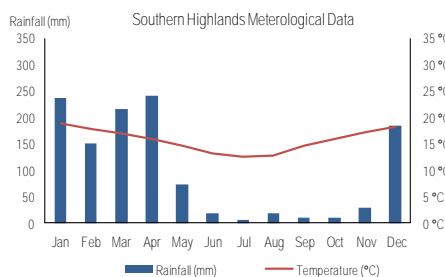
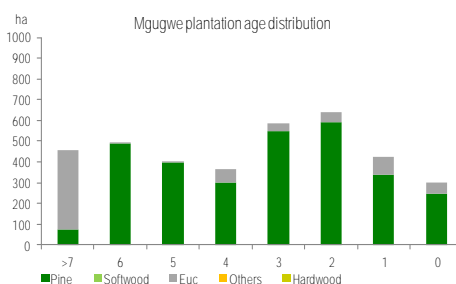
The seedlings are supplied by Green Resources' Mapanda nurseries, but in the future, some of the planting material will also be supplied from Green Resources modern Makungu nursery.

The plantation will produce pine for sawlog production, with a focus on high quality pruned pine logs. The plantation is located within 60-70 km from the main centre of the private sawmilling industry in Mufindi district, the largest in East Africa. The first significant volumes of logs coming from second thinnings are ready **next year and these will be processed at GR's Sao Hill Industries (SHI), 80 km away.** Following a doubling of the existing plantation, a separate sawmill will most likely be established for medium and large sawlogs within Mgugwe, while the small sawlogs still will be **processed at SHI's highly efficient small log HewSaw.** Green Resources is in the process of establishing a 2,000 tons per year retort charcoal plant at Mapanda for start up in 2013, which will be fed with raw material from **thinnings in Green Resources' own forest and the many small private forests established around**



Eucalyptus plantation, Mapanda

In ha	Pine	Euc.	Other species	Total
1997-2007	962	386	-	1,348
2008	301	66	-	367
2009	548	40	-	588
2010	593	46	-	638
2011	340	86	-	426
2012	248	52	-	300
<b>Total</b>	<b>2,991</b>	<b>676</b>	<b>-</b>	<b>3,667</b>
<b>In %</b>	<b>82%</b>	<b>18%</b>	<b>-</b>	<b>100%</b>



the Mgugwe plantation.

The plantation is 80 km from the main tar-mac road at Mafinga and 650 km by the main road to Dar es Salaam. Plantation altitude ranges from 1,400-1,760 m with an annual average rainfall of 1,050 mm and a rainy season falling between December and April. GRL was issued a 99-year renewable title deed for the Mapanda/Chogo plantation with a total area of 6,258 ha, while the remaining land is in the process of getting the final title deeds.

Mapanda forest, along with Uchindile, achieved FSC certification in 2008 and in 2009 the plantation was registered under the VCS and CCBS schemes together with the Uchindile plantation. The first registered VCS carbon credits worldwide were sold to the Carbon Neutral Company in 2010.

Pine is grown for sawn timber on 21 year rotations with an expected MAI of 21 m<sup>3</sup>/ha/yr, while Eucalyptus is grown for utility poles on 13 year rotations with an expected MAI of 23 m<sup>3</sup>/ha/yr. The current planting is expected to yield 122,000 m<sup>3</sup> of wood products over the next 10 years.

**FSC™:** Certified FSC-C015169, August 2008  
**VCS:** Reg. and issuing ID 142, July 2009  
**CCBS:** Validated, October 2009  
**Carbon credits for 2012—2013 sold**

*Carbon*

**GRL's Mapanda plantation is part of the flagship Uchindile and Mapanda forest carbon project, which became the world's first registered and verified forest project in 2009 and 2010, respectively.** The project is reforesting 10,000 ha of land, with 3,000 ha coming from Mapanda and Chogo, whilst contributing to sustainable development in the region. It has so far issued and sold approximately 140,000 tCO<sub>2</sub>e of carbon credits with 40,000 from Mapanda. A carbon volume of more than 200,000 tCO<sub>2</sub>e is expected to be delivered from the project between 2012 – 2015 and sold to The CarbonNeutral Company, with 90,000 tCO<sub>2</sub>e from Mapanda. The project is validated under the CCBS, which certifies the project delivers net-positive benefits across these aspects. A CCBS verification will take place at the next VCS verification later this year. The project has shared 10% of the carbon revenues from the first carbon sale with local communities, which has been used for additional community development initiatives.

*Community development*

**At Kihansi secondary school, teacher's house accommodating four teachers has been constructed.** Green Resources has expanded the dispensary, including a maternity ward **washing facilities and a nurse's house.**

In Chogo Green Resources has doubled the capacity of the primary school, adding two **classrooms and built the first teacher's house.** The company has also built a village hall with six offices.

Green Resources has constructed over 20 kms of road and 4 bridges in Mapanda and Chogo villages.

Co-ordinates: 8°29'16.08"S, 35°41'38.99"E  
 Altitude: 1,400m-1,760m  
 Average annual rainfall: 1,050mm  
 Mean temperature: 14°C  
 Main rains: December-April  
 Pine: 21m<sup>3</sup>/ha/yr MAI, 21 year rotation  
 Euca: 23 m<sup>3</sup>/ha/yr MAI, 13 year rotation



LINDI, TANZANIA

Located in the Southern part of Lindi region of Tanzania, the plantation is well situated along the main tarmac road from Dar es Salaam to Mtwara, 40 km from Mtwara deep water port and 60 km from Lindi town, and 410 km to Dar es Salaam. The average altitude is 110 m and annual rainfall of 950 mm. The area is flat and the soils are sandy loam to sandy clay loam subsoil.

The Lindi plantation totals 2,043, of which 1,359 ha have been planted while the remaining land is set aside as conservation with areas of indigenous forest and the remaining for infrastructure. Lindi Forest's objective is to grow eucalyptus for utility poles and renewable energy.

Green Resources believes there is significant potential for establishing forest plantations in the Southern coastal areas of Tanzania, focused on a mixed objective of poles and building markets for the local market and wood chips/ pellets for the export market. Logistically, the plantation area is well situated, with easy access to the main domestic market in Dar es Salaam and ideal location for potential export ports. However, difficulties in obtaining suitable land have set a stop for the further expansion of the project.

In 2011, a record 757 ha of new forest was established, but planting was brought down to less than 20 ha during the last season due to lack of available land. 53% of the planted area is occupied by Eucalyptus species mainly *E. camaldulensis* and *E. tereticornis* but also a large proportion of *Eucalyptus grandis x camaldulensis* clones. Of other species 47% is teak and some indigenous hardwoods have also been planted. The teak is showing mixed success and the recent plantings have been focused on eucalyptus. FSC pre-assessment

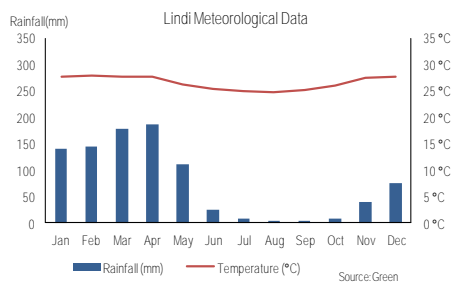
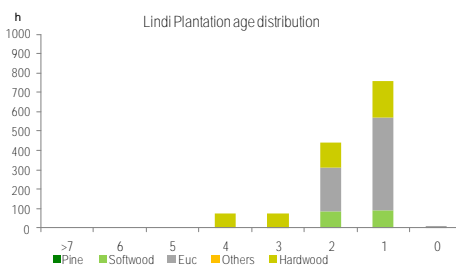
Lindi, standing plantation by year of establishment				
In ha	Pine	Euc	Other species	Total
<2007	-	-	-	-
2008	-	-	76	76
2009	-	1	73	74
2010	-	224	216	441
2011	-	482	275	757
2012	-	12	-	12
Total	-	719	640	1,359
In %	-	53%	47%	100%

FSC™: Pre-assessment completed April 2012

was completed in April 2012.

Community development

The company has constructed a new secondary school in the region, built a dispensary in Ruaha and a village office in Njonjo. The biggest priority for villagers in the Lindi region is access to fresh water. The company is assisting in this. Green Resources has paid for a geophysical water survey and contributed towards an existing World Bank project (Hingawali Water project).



Co-ordinates: 10°11'3.15"S, 39°49'21.23"E  
 Altitude: 0-220m  
 Average annual rainfall: 700mm-1,100mm  
 Mean temperature: 28°C  
 Main rains: March–April  
 Euca: 18 m<sup>3</sup>/ha/yr MAI, 12 year rotation



Nursery, Lindi

**BUKALEBA, UGANDA**

The total area is 9,165 ha, out of which 4,182 ha is standing plantation forest comprising of 78% of *Pinus caribibaea*, 18% of *Eucalyptus* spp and 4% of indigenous hard woods. Recently, all new eucalyptus planting has been with hybrid *Eucalyptus* clones. In 2011 and 2012, 889 ha of new forest have been planted. Approximately 4,500 ha are plantable and 4,000 ha are set aside for conservation, 165 ha for roads and other infrastructure, with 500 ha set aside for community forest activities. **Bukaleba was Green Resources' first plantation in Uganda. Raw utility pole harvesting started in the form of 'high thinning' in 2007 for sale to a third party, and in 2009 we started harvesting for our own electricity pole plant, and recently some poorly stocked compartments were sold on the stump to third parties.**

The plantation is almost fully planted up but there is still potential to improve the quality of the forest by replanting ca. 400 ha of the existing plantation. **GR's own nursery supplied the plantation with all its seedlings, as well as selling to third parties. The Bukaleba nursery became the first in Green Resources to produce its own hybrid *Eucalyptus* clones at the start of 2011.**

It is located on a flat or slightly hilly area on the shore of Lake Victoria in Mayuge district, with good road conditions 120 km east of Kampala, the capital of Uganda, 40 km south-east of Jinja and 120 km from the Kenyan border, further to the East. Bukaleba is believed to be the second largest forest plantation in Uganda and is it located closer to the capital than any of the other large plantations and is the best located plantation for exports to Kenya. Jinja is an industrial centre of Uganda that has seen strong growth over the last ten years with several wood consuming industries: panel boards, vegetable oil production using firewood and steel production using charcoal. Green Resources has its own elec-

Bukaleba, standing plantation by year of establishment

In ha	Pine	Euc	Other species	Total
1996-2007	1,038	301	99	1,438
2008	358	96	-	454
2009	637	60	65	761
2010	547	93	-	640
2011	449	171	-	620
2012	227	41	-	269
Total	3,256	762	164	4,182
In %	78%	18%	4%	100%

**FSC™:** Certified FSC-C106074, April 2011  
**VCS:** Reg. and Verified ID 799, March 2012  
 All carbon credits for sale—current volume available: 25,350 VCUs

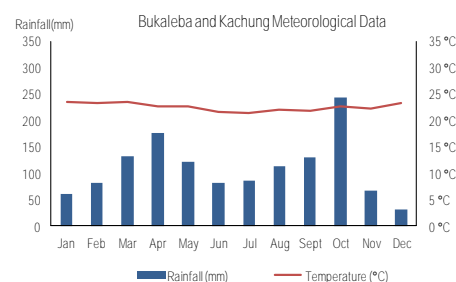
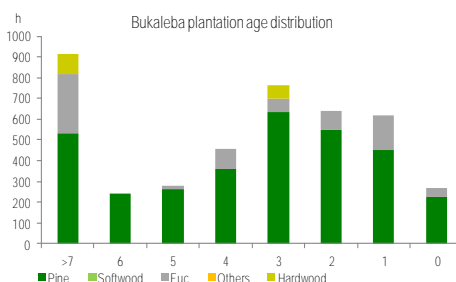
Pine is being grown for sawlogs on 20-year rotations with an expected MAI of 21 m<sup>3</sup>/ha/yr m<sup>3</sup> per year and eucalyptus is being grown for utility poles on an average of 11 year rotations with an expected MAI of 26 m<sup>3</sup>/ha/yr per year. The growing conditions in Bukaleba are exceptionally good and it is expected that rotation will be reduced and MAI increased over the coming years. Bukaleba has received partial grant finance and technical support from the EU/Norway-funded Sawlog Production Grant Scheme for 1,000 ha forest.

*Carbon*

Bukaleba plantation was validated and verified under the VCS at the start of 2012, delivering more than 25,000 tCO<sub>2</sub>e of carbon credits. GR is now starting to market the credits and expects to have a sales agreement by mid-2013. The project is expected to deliver 100,000 tCO<sub>2</sub>e from 2012 – 2015.

*Community development*

The plantation is located within an old forest reserve and rented from the Government. Thus, Green Resources Uganda does not have the same community development obligations as is the case in Mozambique and Tanzania. However, the company has provided medical equipment for health centers, expanded a dispensary, drilled two bore holes to provide drinking water, and supports female education by sponsoring girls through secondary education. With financial support from NORAD, the company has implemented HIV/AIDS awareness activities. Seedlings are given away to local communities along with basic training in tree establishment, but the relative high population density has led to moderate uptake.



tricity pole and charcoal briquetting plants in Jinja and a charcoal plant and a small sawmill at Bukaleba.

Bukaleba is a Ugandan leader in eucalyptus, with a large proportion of the planting prior to 2005 been focused on eucalyptus. Furthermore, it is the oldest of the recently established plantations, and the early harvested wood will be supplied into a market with little competition from other plantation forests. Uganda is a land locked country where there are few overseas export opportunities. However, the local market has been growing fast and, as a result of this, Ugandan wood prices are among the very highest in the region. The plantation is well located for export to the neighboring countries in the Lake Victoria region.

**Bukaleba became Uganda's second FSC certified forest plantation in 2011.** The company holds a renewable 50-year tree planting license, issued in 1996 by the National Forestry Authority (NFA) for 5,165 ha of the land in Bukaleba Central Forest Reserve. In 2007 the license area was expanded to include 4,000 ha of adjacent land originally licensed in 1996.



Eucalyptus plantation, Bukaleba

Co-ordinates: 0°25'42.87"N , 33°23'47.08"E  
 Bordering Lake Victoria to the South  
 Altitude: 1,100m  
 Average annual rainfall: 1,250mm  
 Mean temperature: 23°C  
 Main rains: March–May  
 Pine: 21m<sup>3</sup>/ha/yr MAI, 20 year rotation  
 Euca: 26 m<sup>3</sup>/ha/yr MAI, 11 year rotation



KACHUNG, UGANDA

The license area covers a total of 2,669 ha, of which approximately 2,130 ha are plantable with 517 ha set aside for conservation and 73 ha for infrastructure. In 2011 and 2012, 530 ha of new forest was established, making the total plantation size 2,021 ha mainly consisting of *Pinus caribea hondurensis* (90%) and various *Eucalyptus* species (9%). The plantation is fully planted. The company nursery supplied the plantation with all its seedlings, as well as selling to third parties.

The plantation is focused on sawlog production. The wood will be sold on stump to local sawmillers, or Green Resources will establish its own medium to large log sawmill in Kachung. 20,000 ha of new pine forest has been established in Uganda over the last 5-10 years, and we expect a small log sawmill that can take most thinnings from these pine forests to be established in Uganda over the coming years.

Kachung Forest is located in the Dokolo District, 30 km south of Lira, on the Mombasa, Kenya to Juba, South Sudan main road. It is 345 km by road from Jinja and 380 km to Kampala, 258 km to the border of Kenya and 227 km to the South Sudan border. The road connections are good in all directions. The plantation is based on a tree planting permit issued by the National Forest Authority (Permit 4230) in 1999 and occupies most of the Kachung Central Forest Reserve. 1,060 ha of Kachung have benefited from financial and technical support from the EU/Norway-funded Sawlog Production Grant Scheme.

Kachung received FSC certification in 2011, half a year after the sister plantation in Bukaleba.

Kachung, standing plantation by year of establishment

In ha	Pine	Euc	Other species	Total
2006-2007	154	30	-	184
2008	226	63	9	298
2009	318	-	19	336
2010	646	27	-	673
2011	338	35	-	373
2012	132	26	-	158
Total	1,813	181	27	2,021
In %	90%	9%	1%	100%

FSC™: Cert FSC-C106074, November 2011  
 CDM: Reg. project number: 4653, April 2011  
 CCBS: Validated, June 2011  
 All carbon credits sold

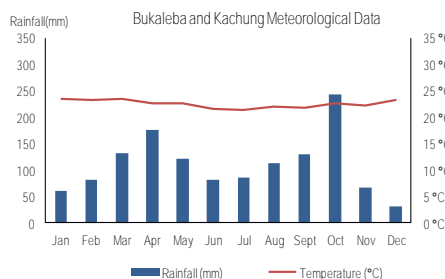
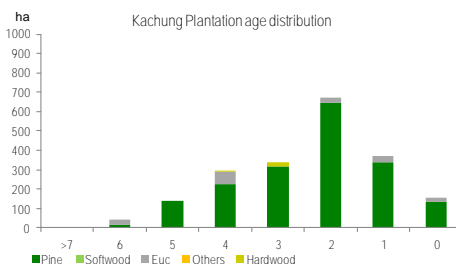
Pine trees for saw logs are being grown on 20-year rotations with an expected MAI of 21 m<sup>3</sup>/ha/yr while *Eucalyptus* for utility poles is grown on 10-year rotations with an expected MAI of 23 m<sup>3</sup>/ha/yr. Excellent import and export access is provided by the Mombasa (Kenya) – Juba (Sudan) road traversing the plantation.

Carbon

Kachung Forest Project became the company's first CDM project to be registered by the UNFCCC in 2011. The project was only the 5<sup>th</sup> A/R CDM project to be registered in Africa and was the first registered large-scale CDM project in Uganda. Carbon credits have been sold to the Swedish Energy Agency (SEA) in what is expected to be the world's longest carbon transaction, with carbon contracted from 2012 through to 2032 in a deal worth over USD 4 mn. The project is expected to deliver 30,000 tCO<sub>2</sub>e of carbon credits in 2012 and 240,000 tCO<sub>2</sub>e in 2017; all replacement credits will be bought by SEA as two 'strings'. The project was validated under the CCBS in 2011.

Community development

The plantation is located within an old forest reserve and rented from the Government. Thus, Green Resources Uganda does not have the same community development obligations as is the case in Mozambique and Tanzania. However, the company has constructed a children's ward at the local health centre, protects and renovates local water sources and with grant funding from NORAD the company has conducted a comprehensive HIV/AIDs sensitization program. 154,000 seedlings have been distributed, along with training for local woodlot establishment.



Pine stand, Kachung

Co-ordinates: 1°47'51.82"N, 33°11'16.24"E  
 Altitude: 1,000m  
 Average annual rainfall: 1,250mm  
 Mean temperature: 28°C  
 Main rains: August-October  
 Pine: 21m<sup>3</sup>/ha/yr MAI, 20 year rotation  
 Euca: 23 m<sup>3</sup>/ha/yr MAI, 10 year rotation



NIASSA, MOZAMBIQUE

Niassa, the north-western province of Mozambique has become a centre for forestry plantations in the country. At least five international companies have established almost 32,000 ha of new pine and eucalyptus forest in the province, initially supported in their establishment by a regional development organisation, Malonda Foundation. Green Resources Niassa is not the largest provincial plantation, but it is well located and in 2011 and 2012, 1,272 ha of new forest were planted, taking the established plantation to a total 1,825 ha. The plantations mainly consist of Pine (69%) and Eucalyptus (31%) species. The plantation has been supplied by seedlings from its own nursery.

Green Resources Niassa became Mozambique's first FSC certified forest plantation in 2011.

The objectives of the plantation are to grow trees and harvest the wood products for sawn timber and utility poles while simultaneously mitigating climate change. Pine species are grown for sawn timber on 21-year rotations with an expected MAI of 18 m<sup>3</sup>/ha/yr and Eucalyptus species are grown for poles on 13-year rotations with an expected MAI of 24 m<sup>3</sup>/ha/yr. The forest company is also seeking carbon certification under the CDM.

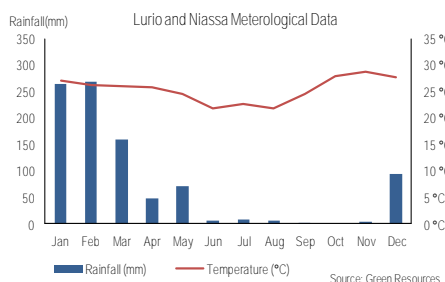
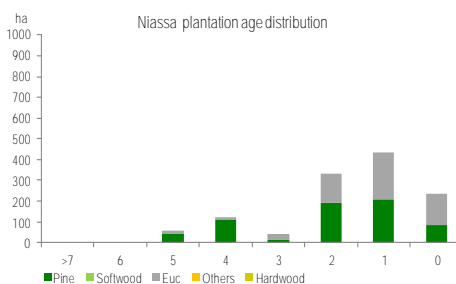
Niassa plantation is located in the Sanga, Muembe and Lichinga districts, 65 km north of Lichinga, the capital of the Niassa province in Mozambique. A railway line runs from Lichinga to the port of Nacala 795 km away. There are already smaller, reasonable looking, mature plantations of both eucalyptus and pine in Niassa, providing some raw material for a small local wood processing industry. We expect a larger solid wood product industry to emerge in Niassa over the next 10 years, mostly aimed at overseas export markets.

A DUAT (Direito de Uso e Aproveitamento de Terra—Land Use Right) for 40,360 ha has been secured through the Malonda Foundation. However, more than 50% consists of natural forest and GR is in the process of swapping some of these titles for land suitable for forest planting. It has been agreed that Green Resources will hold 20,428 ha and will seek additional plantable land of about 16,808 ha to secure the land area approved by government.

Carbon

Niassa Green Resources has been developed to the CDM and CCBS through support from Norad covering 50% of the PDD development costs. The PDD is complete and will be

In ha	Pine	Euc	Other species	Total
<2007	43	15	-	58
2008	113	8	-	121
2009	15	27	-	41
2010	194	138	-	332
2011	543	226	-	769
2012	357	146	-	503
<b>Total</b>	<b>1,264</b>	<b>560</b>	<b>-</b>	<b>1,825</b>
<b>In %</b>	<b>69%</b>	<b>31%</b>	<b>-</b>	<b>100%</b>



Pine plantation, Niassa

**FSC™:** Cert. FSC-C107952, October 2011  
 CDM: Undergoing validation, 2012  
 CCBS: Undergoing validation, 2012  
 All carbon credits for sale

submitted for validation once the Mozambican forest definition is set – expected in 2012. The project will deliver 50,000 tCO<sub>2</sub>e of carbon credits in 2014.

Community development

Green Resources has been supporting communities within the Niassa vicinity with agricultural production through the agricultural programme. Supplying seeds, support and advice to smallholder farmers.

At the secondary school in Sanga, Green Resources has constructed an IT classroom, equipped with computers and donated desks. The company has also provided the community with a grant to build a maize mill. In Lichinga the company is constructing a market place.

Co-ordinates: 13°17'57.83"S, 35°14'15.77"E  
 Altitude: 1,100m  
 Mean annual rainfall: 1,200mm  
 Mean temperature: 26°C  
 Main rains: December - February  
 Pine: 18m<sup>3</sup>/ha/yr MAI, 21 year rotation  
 Euca: 24m<sup>3</sup>/ha/yr MAI, 13year rotation

LURIO, MOZAMBIQUE

The Lurio plantation is our largest with an objective to establish 126,000 ha of eucalyptus plantations in Nampula province, Northern Mozambique. Green Resources believes Lurio has the potential to become the best new large scale forest plantation in Eastern and Southern Africa. In 2007 GR was invited to carry out an assessment of the potential for a large-scale forest plantation in northern Mozambique. Following a successful feasibility study and proposal an agreement was reached with in December 2009 to carry out the project. The government of Mozambique has granted a 50-year renewable land use rights (DUATs) for 126,000 ha of land.

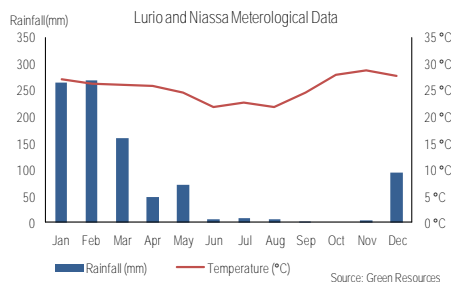
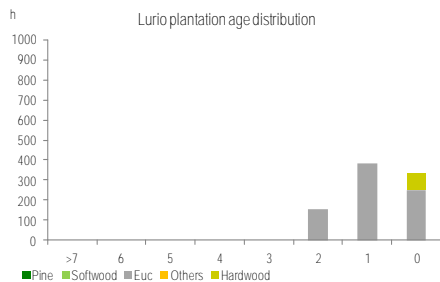
Until now, the operations have had the character of trial plantings, but Green Resources has successfully introduced new highly mechanised plantation methods and intensive silviculture practices. The result has been high growth rates despite of less than optimal timing of the planting. In 2011 and 2012, 719 ha of new forest have been established, of which 90% was eucalyptus, bringing the total to 871 ha. A wide variety of eucalyptus seedlings and clones have been planted. GR is investing in infrastructure and a large new advanced nursery is near completion.

The plantation areas are flat or relatively flat, with sandy soils similar to those at major new planting regions in Brazil. There will be mainly eucalyptus species on a range of rotations with MAIs to rival similar good tree growing areas around the world, but somewhat slower than the best areas in Brazil.

The plantation will be wrapped around the

Lurio, standing plantation by year of establishment

In ha	Pine	Euc	Other species	Total
<2007	-	-	-	-
2008	-	-	-	-
2009	-	-	-	-
2010	-	152	-	152
2011	-	384	-	384
2012	-	249	87	335
Total	-	784	-	871
In %	-	90%	-	100%



existing railroad and a new tarmac road 200-300km inland from the deep water port of Nacala. Nacala is possibly the best natural harbour on the eastern shore of Africa between Durban and the Suez channel. The railroad and harbour are in the process of being expanded to facilitate the export of more

FSC™: Pre-assessment Sept 2012  
 CDM or CCBA, VCS: Seeking PDD development funding

than 20 million tons of coal per year.

The objective of the project is to establish fast-growing plantations on short rotations with the aim of supplying the timber industry with a range of products including pellets, wood chips, timber, poles, charcoal, pulp wood etc. Green Resources believes Nacala is a very good location for a future pulp mill and expects significant wood chipping and/or pellet production to start well ahead of a pulp mill.

Community development

Green Resources will implement an extensive community development program as part of the plantation establishment. To date, the activities have focused on agricultural support, where inputs and market access for new high yielding crops and varieties were provided for almost 1,000 farms last year. Focus will be given to accessing to clean water, school classrooms and health facilities to support the local communities needs.

Co-ordinates: 15° 5'9.01"S, 39°15'51.33"E  
 Altitude: 200-600m  
 Mean annual rainfall: 1,000m  
 Mean temperature: 24°C  
 Main rains: November - April  
 Pine: 18m³/ha/yr MAI, 21 year rotation  
 Euca: 24m³/ha/yr MAI, 13year rotation



Eucalyptus plantation, Lurio

LANDSCAPE PLANTATION AND CARBON PROJECT

Green Resources is developing landscape, plantation and carbon projects in Nampula province, Mozambique and the Southern Highlands of Tanzania. The Lurio Forestry Project, Mozambique, will establish 126,000 hectares of forest plantation for carbon sequestration, as well as producing wood for building materials, energy and pulp. In addition to the main commercial forest plantation, Green Resources will assist in the establishment of 54,000 hectares of forest by local smallholders and companies to develop the forestry sector in the region and support community development. Green Resources will also support a number of other initiatives in the region, including an agriculture development programme which is part of the overall landscape approach, and a sustainable charcoal production/ household energy programme working with smallholder communities.

The Mynera Forestry Project, Tanzania, will establish 20,000 hectares of forest plantation as well as a smallholder outgrower programme and sustainable charcoal production facility to supply clean charcoal both to local communities and to the market. Both the landscape projects have significant conservation potential, protecting natural forest and

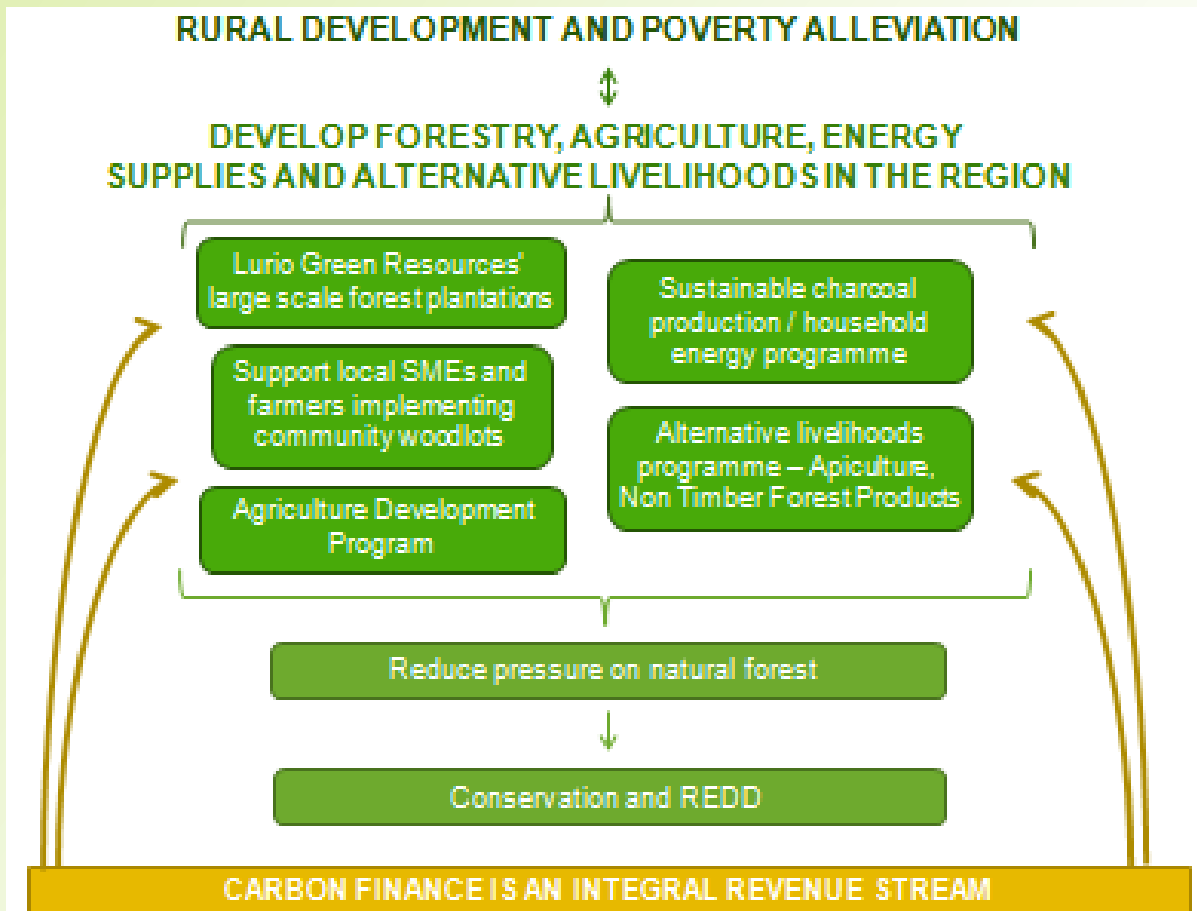


Example illustrating landscape approach

areas of conservation value, while reducing the pressure on remaining natural forest in the region, and therefore providing an opportunity for Reduced Emissions from Deforestation and Degradation (REDD). This will be enhanced with an alternative livelihoods programme, which will specifically target drivers of deforestation.

*Landscape development*

Landscape planning is imperative for large scale forestry and land use projects. Such planning helps optimize project benefits as well as mitigate projects risks and establishing safeguards through understanding the landscape dynamics.





*Carbon finance*

Carbon finance is an integral revenue stream for all of Green Resources' projects. As a project developer, the company has the world's largest portfolio of Afforestation/ Reforestation (A/R) carbon projects, including a number of CDM and VCS registered projects. Green Resources will be using carbon finance for each of the different activities within the landscape. Green Resources is regarded as a world leader in forestry based carbon, and all forest plantation activities will be integrated with FSC® certification. The company is already the leader in FSC certified plantation forestry in Africa (excluding South Africa and Swaziland).

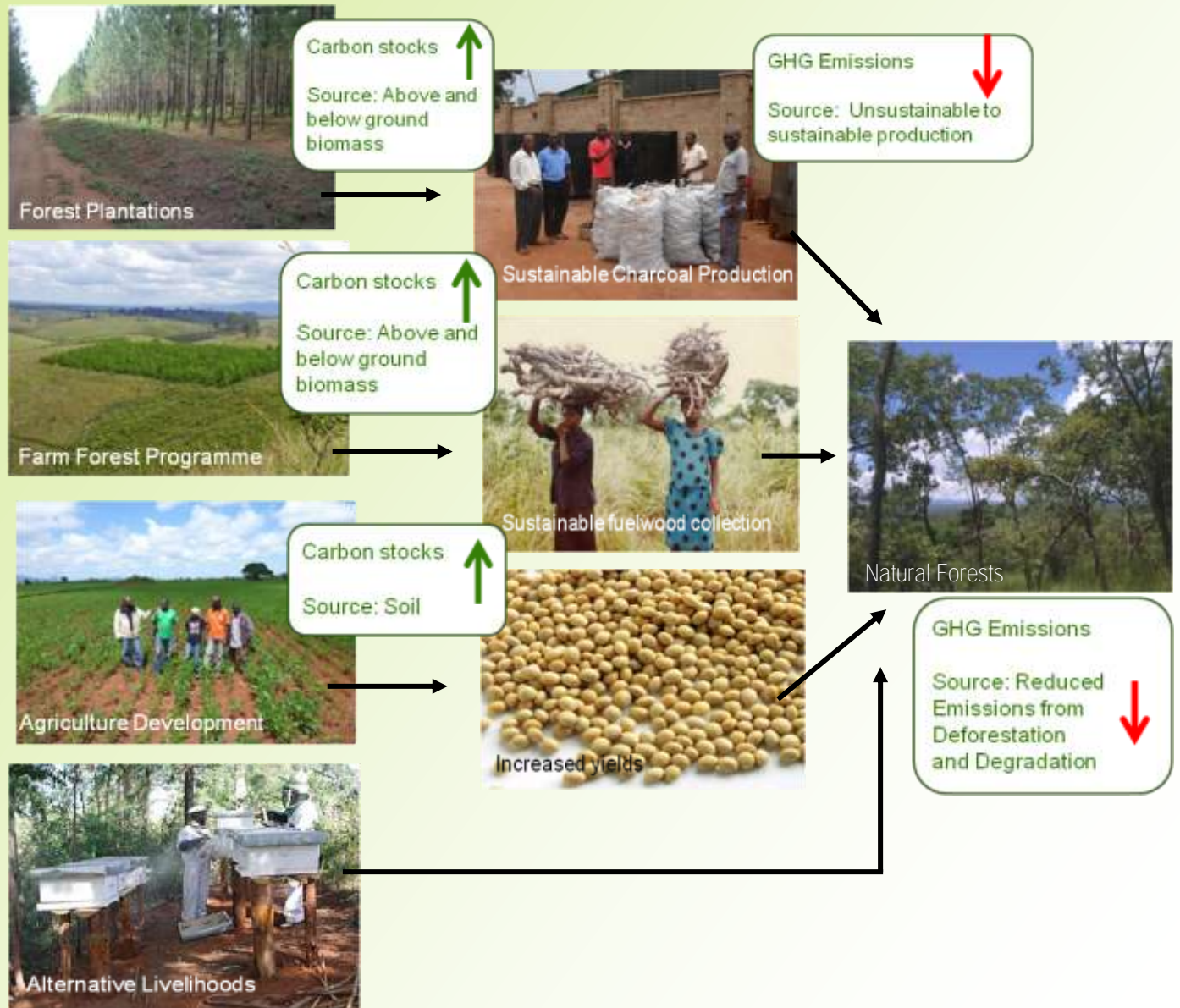
*Carbon methodologies*

As with all its A/R projects, Green Resources is developing the Lurio and Mynera Forestry

Projects to the CDM and VCS (both standards are being used due to land eligibility variations), in addition to applying the CCBA standard. Furthermore, Green Resources will utilise the carbon finance through clean and sustainable charcoal production, improved agricultural practises and REDD. The clean and sustainable charcoal production will be supported by carbon finance based on a new CDM methodology and a PoA that Green Resources is developing through the UNFCCC. The improved agricultural practices and REDD components will use VCS approved methodologies to harness carbon finance. The projects will utilize all possible carbon finance opportunities within the landscape to ensure that the maximum value is obtained from each activity and in turn the landscape delivers the most compelling benefits to the different stakeholders involved.

*Green Resources Landscape, Plantation and Carbon Projects*

- The key components of the Landscape Carbon Projects are the following:
- A/R commercial forestry plantation (CDM and VCS)
- A/R outgrower forestry plantations (CDM and VCS)
- Agriculture development programme (only for Lurio) – increasing soil carbon stocks (VCS)
- Sustainable charcoal production – reducing emissions from traditional charcoal production (CDM)
- Conservation of natural forest - REDD (VCS)



AFRICAN LEADER IN FSC®  
CERTIFICATION

Green Resources is committed to complying with FSC principles and criteria throughout all its plantations and operations as stated in the company byelaws. Currently 45,634 ha of GR land is FSC certified, of which 17,475 ha is **plantation forest**. One of the company's stated aims is to achieve certification of its remaining plantations. 2011 was a landmark year for our FSC certification, as we completed the certification of our forest in Uganda and achieved the first ever FSC-certified plantation forest in Mozambique.

We are the African leader (excluding the Republic of South Africa (RSA) and Swaziland) in FSC-certified forest, we have the most plantations certified and are the only company with FSC certification in three operating countries. Certification was first achieved in 2008, with the Mapanda and Uchindile Plantations in Tanzania, continued with Idete, Tanzania in 2010, Malulu, Mozambique in 2011 and Bukaleba and Kachung, Uganda in 2011.

Auditing and pre-assessment for certification on additional plantations is currently underway. The pre-assessment of Lindi Forests in Tanzania took place in April 2012; the pre-assessment for Lurio Green Resources, Mozambique, took place in September 2012.

Importance of FSC

FSC certification ensures responsible forest management. The FSC label indicates that the forest products are from responsibly harvested and verified sources. This provides the prerequisites for an incentive in the market place for good forest stewardship. Consequently FSC certification is valuable in engaging new markets and has become increasingly important in selling wood products globally, as governments and other worldwide organisations specify FSC-certified products in their purchasing policies.

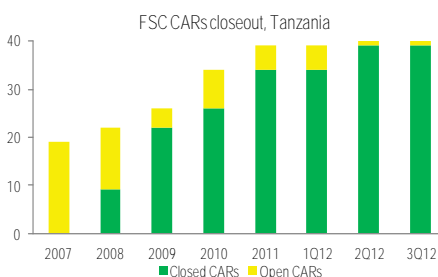
FSC certification in Africa

In Africa, outside of the Republic of South Africa and Swaziland, Green Resources is leading the way in FSC-certified plantation forest, with FSC-certified plantations in three African countries. Of the overall 58,231 ha of certified forest plantation land within Tanzania, Mozambique and Uganda, 70% is owned by Green Resources. The balance belongs to New Forests Company, Uganda, and Global Woods, Uganda. We are unquestionably pioneering the way for FSC certification in Africa. We know of only one other FSC-certified plantation in Africa outside Eastern and Southern Africa, a small plantation located in Ghana.

Total FSC™ certified land	
Country	Certified area (ha)
Tanzania	30,042
Uganda	10,282
Mozambique	5,310
<b>Total</b>	<b>45,634</b>

Planted FSC certified and audited area

Country	Certified	Audit in process	Non audited	Total	% Audited
Tanzania	9,631	1,352	2,992	13,975	69%
Moz.	1,284	0	1,506	2,790	46%
Uganda	6,111	0	0	6,111	100%
<b>Total</b>	<b>17,026</b>	<b>1,352</b>	<b>4,498</b>	<b>22,876</b>	<b>74%</b>
In %	74%	6%	20%	100%	n/a



Working the Corrective Action Requests

Corrective Action Requests (CARs) are the formal documents which detail non-compliance with the FSC standard, and specify actions that must be taken to achieve compliance. CARs are issued by third-party certification bodies, like SGS and the Soil Association. Green Resources uses the CARs to ensure that continuous improvement is taking place in its operations. The graph above illustrates the progression in the resolution of existing CARs and the continuous improvement and compliance with FSC certification regulations of CARs in Tanzania. The team continues to work on open CARs, constantly improving forest management in accordance with FSC guidelines.

FSC must increase the focus on Africa

The chairpersons of the board and the Director General of the FSC visited Tanzania and Uganda in September 2012, their first visit to East Africa. The leading forest plantation companies of the region, Green Resources, The New Forest Company, KVTC and Global Woods, which combined have established 50,000 ha of new forest since the mid-1990s, welcomed the FSC to the region. The com-

mercial forestry companies made a joint statement where the following points were highlighted:

1) The FSC needs to increase the focus on Africa. Of the 1,125 FSC certificates issued worldwide, only 47 have been issued in Africa (outside of South Africa). Of the African certificates, only half a dozen are for plantations, with the rest being natural forest concessions.

2) The FSC should urgently establish a regional office in East Africa to promote certification and assist plantation owners —both large and small— with obtaining FSC certification.

3) The FSC aims to build its certification criteria on local conditions and criteria. There are no national standards for FSC certification in Africa, but the FSC has recently successfully established a regional standard for the Congo Basin, which covers six countries. We strongly advocate that the FSC develops a regional standard for East Africa, and aggressively raises funding for this project.

4) Free, prior and informed consent (FPIC) is a prerequisite for the establishment of sustainably managed forest plantations. However, FPIC is a complicated concept and must become a practical instrument. The rules regarding FPIC must be workable in all parts of the world, both for natural forests and plantation forestry.

5) To facilitate the expansion of plantations, it makes sense to convert low-quality and degraded forests into plantation forests. Extensive irresponsible deforestation has taken place in Africa and other parts of the world during the last twenty years, leaving extensive wastelands, both economically and environmentally. **The FSC's 1994 rule does, however,** make it difficult to establish certified plantation forestry in these areas. This is a particular problem in Africa where the lack of new plantation forests adds to the pressure for further deforestation. The FSC must play an active role in the process of determining what type of conversion is acceptable, based on the principles of sustainable forest management and other FSC principles.



Team responsible for FSC certification





Green Resources employees at the Jinja pole plant, Uganda

Green Resources has two industrial operations, Sao Hill Industries (SHI) in the Southern Highlands of Tanzania and Bugosa Forest Company's (BFC) pole and charcoal plant in Jinja, Uganda. The two operations are primarily supplied with logs by third-party companies, but are increasingly processing the company's own logs.

*Tanzanian operation*

Sao Hill Industries is East Africa's largest sawmill, consisting of a traditional large log sawmill and a modern small log sawmill that was completed in 2012. It is also the largest electricity pole plant in East Africa, a facility that was completed only three years ago. The small log sawmill saws logs with top diameters from 10cm to 24cm of both pine and eucalyptus. During the last four years, SHI has built up Tanzania's largest pallet business and there is a small door factory at the plant.

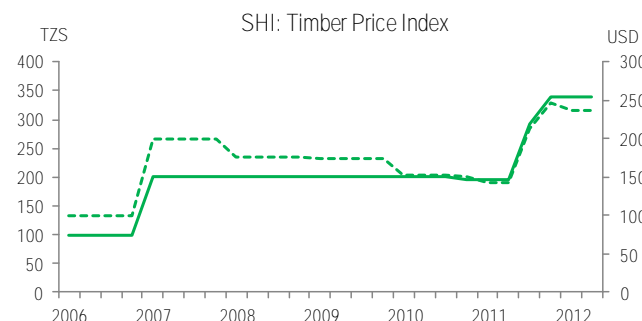
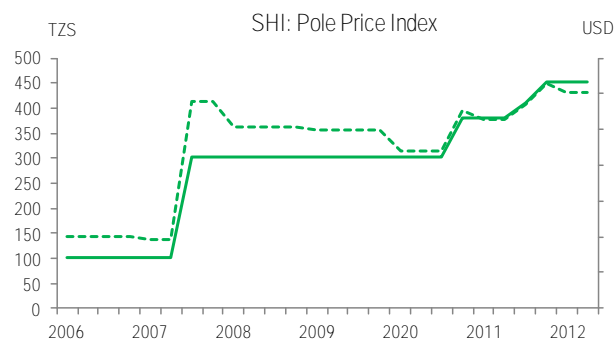
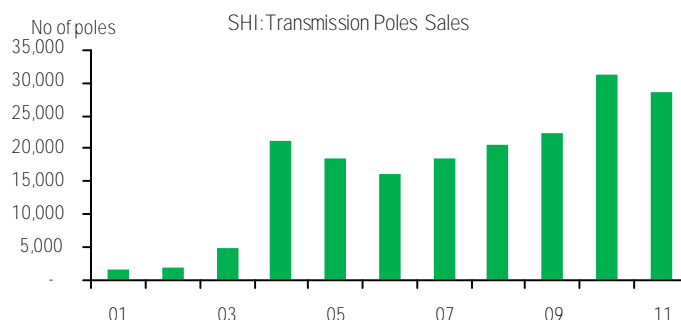
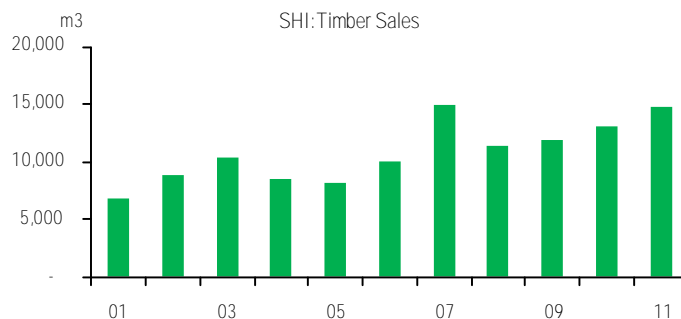
The Tanzanian operation is vertically integrated. SHI has its own logging operations and haulage of logs to the mill. The products are transported on rented trucks, but most of the sawn timber is sold through the company's own four timber yards.

*Ugandan operations*

In Jinja, Green Resources operates a pole treatment plant. There has been a recent addition of an integrated charcoal production with retort charcoal kilns and a charcoal briquetting plant. A simple sawmill started up during 3Q 2012 to saw second thinning from the company's own pine forest.



Unloading treated poles, Sao Hill, Tanzania





**AFRICA'S MOST MODERN SAWMILL**

Sao Hill Industry (SHI), a subsidiary of Green Resources, started up a HewSaw sawmill in June 2012. This is the result of a four-year, USD 10mn industrial investment project at SHI. More than three-quarters of the 30-year-old sawmill has been renewed; increasing sawing, treatment and kiln drying capacity, and as a result, the production capacity has tripled.

The state-of-the-art mill is budgeted to produce 60,000 m<sup>3</sup> timber in 2014, out of a total forecast production of 84,000 m<sup>3</sup> at SHI. **The mill is believed to be Africa's largest sawmill outside of South Africa.** It has a production capacity of three times the budgeted volume with minor de-bottlenecking in the timber sorting area and three-shift operations. Production is set to increase over time, providing significant upside potential for the company. The HewSaw mill will produce the best-quality timber in East Africa and is well equipped to satisfy customer demand in the fast growing regional market, as well as starting selective, high-value overseas exports.

Importantly, the utilisation of the wood resources will improve through better yield. The sawmill will enable SHI to saw smaller dimension timber, down to 10 cm diameter compared to the previous 14 cm, and provide a sawmill recovery rate of 45% for a 16 cm log, compared to the previous 35%. The sawmill is particularly well suited for sawing thinnings from GR's own growing forest. The mill is fitted with powerful motors such that it can saw hardwood timber, improving the utilisation of the eucalyptus log harvest and provide industrial-quality supplies of hardwood timber for joinery products.

The sawmill, kiln and value-added investments will produce high quality raw material for the Tanzanian building and furniture industry, enabling these industries to compete effectively in the regional market and help replace imported products. The Tanzanian furniture industry will, for the first time, have access to kiln-dried world-class **softwood timber, and thousands of new 'downstream' jobs are likely to be created.**



The intake to the log sorting line with the control room in the middle and the scanner to the left. A crane for offloading logs from the incoming trucks will be mounted at the very right, significantly reducing operation costs.

Eleven 6x8 trucks, ex-UK army with low mileage (5-20,000 km), particularly well-suited for forest operations, and 60%+ higher carrying capacity than the existing systems. Despite this, fuel consumption is only marginally higher than the existing Scania semi-trailers, at 1.7 km per litre, compared to 2.0 km per litre for the Scantias. Six specialised, heavy duty, trailers have been built which enables six trucks to transport logs for the budgeted sawn timber production. The trucks have a multilift system, which allows multi-function use, for example use as fire, fuel, seedling or workshop trucks.



Trials at the 140 m long, 32-pocket log sorting line where the scanner measures each logs and the logs are sorted into separate bins depending on size before they are transported to the sawmill. The log sorting line is supplying both the existing and the new sawmill, and will be supplying the large log sawline that SHI is planning to build.



The sawmill building from the back, with the log intake to the left and timber sorting line to the right.



The 100 m long HewSaw sawline, with a potential three-shift capacity of 180,000 m<sup>3</sup> sawn timber per year. The mill provides a high recovery rate for 9-26 cm diameter logs. The new high-tech scanner is seen in front of the control room. The guard of the debarking machine is seen to the very right where bark is separated.

Log in-feed with bark out-feed from the debarker to the left. The cleanly separated bark will be used for energy and soil substrate/soil compost.



The entire sawline is operated from the control room.



The main sawing unit of the HewSaw where the log is chipped into squares and the residual chips are directly made into pulp/panel board chips, while at the same time the central cant is sawn into board. The saw has two separate sawing units (the second saw, where further re-sawing can take place, is to the right not seen on this picture), with a board separator between them. The two-saw configuration increases the recovery rate and output compared to a conventional single saw HewSaw. The motors are over-sized such that hardwood (eucalyptus) can be sawn along with the softwood.

There is a second sawing unit where further re-sawing can take place, increasing the yield and making specialised timber products.



A new high-tech saw maintenance section has been established, where it is possible to sharpen carbon-tip saw blades, a first for Tanzania.







Modern sawing technology separates bark, chips and sawdust from the sawn timber. This allows 100% utilisation of the logs. There is no waste as clean bark is suitable in composting or energy production. Clean chips are first-class raw material for paper or panel board production and clean sawdust is for briquette and pellet production.



Dry kilns (3x150 m<sup>3</sup> and 2x60 m<sup>3</sup> chambers) and the new 2.1MW boiler. The new kilns will provide high-quality dried timber for glue-laminated sheets, doors, furniture and other value-added production. The lighter dried timber is also reducing the transport costs to the market. The boiler has sufficient capacity to supply hot water for a doubling of the kiln capacity.



Wood products are delivered to customers



Local school children celebrate the inauguration



Tanzanian Vice President, H.E Dr. Mohamed Gharib Bilal opens the sawmill



REGIONAL WOOD DEFICIT; SAO HILL FOREST PLANTATION INVENTORY

In the spring of 2011, Indufor, the Finnish consultancy, published a report on the inventory and harvesting at Sao Hill Forest Project (SHFP), the government forest located in Mufindi, and where Sao Hill Industries (SHI) gets most of its raw material. The report projected that SHFP would be 'empty' by 2017. The outlook for tree-planters in Tanzania's Southern Highland in particular, and East Africa in general, is very good, with looming wood shortage. However, the planting is too low, and the Tanzanian government and donors should stimulate increased planting in order for the forest industry to continue to grow in Mufindi, East Africa's main plantation forest area.

Wood deficit in Tanzania

The reported annual harvest in the Tanzanian government forest's rose steadily during the last decade from about 200,000 m<sup>3</sup> per year to around 600,000 m<sup>3</sup> by 2005 and to more than 1.2mn m<sup>3</sup> by 2009. SHFP accounted for 80-90% of all the Tanzanian government forest harvest, but from 2010 onwards, SHFP accounted for well above 90% of the government forest harvest.

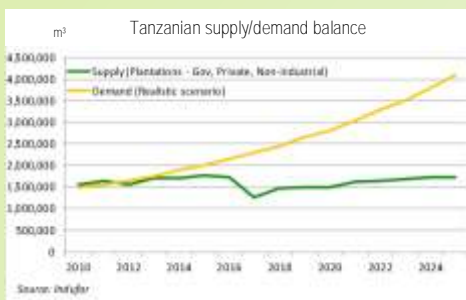
Indufor's 2011 study forecast a dramatic reduction in harvesting from SHFP in 2017. It was assuming harvesting of 1mn m<sup>3</sup> from 2011 to 2016. In 2017 harvesting in SHFP will be less than 200,000 m<sup>3</sup>, of which more than three-quarters will be first and second thinning. Indufor forecasts that final felling will only rise in 2021, bringing the total harvest above 300,000 m<sup>3</sup> per year from then onwards.

Private forests will make up much of the shortfall as the government forests are being exhausted. Private companies are set to supply 600-800,000 m<sup>3</sup> per year from 2017, according to Indufor. Non-industrial private forest owners already contribute about 200,000 m<sup>3</sup> per year and will double over the next decade based on Indufor's forecast. GR believes both figures are conservative. Natural forest will continue to supply about 100,000 m<sup>3</sup> of industrial roundwood. Green

Resources is likely to become the largest single supplier of industrial roundwood into the Tanzanian market by the end of this decade.

Indufor provided three scenarios for market growth: base case, realistic and optimistic, with 2025 market demand increasing from 36% to 450% compared to the current level. The realistic scenario is based on continued economic growth (7% pa 2000-10), urbanisation (27% in 2010, up from 15% in 1980) and population growth (2.1%). Tanzania had a meaningful sawn timber export during 2006-08, about 50,000 m<sup>3</sup> per year (FBD), mostly to Kenya, but has fallen since then and is unlikely to recover. Indufor's realistic scenario is leading to 3.7x increase in wood demand from 2010 to 2025. This leads to a market shortage of 2.5mn m<sup>3</sup> roundwood in 2025, as forecast by Indufor.

Green Resources stands to be the major beneficiary of the forecast wood shortage in



Tanzania. While the company's plantations and industrial operations are well positioned for export markets, there will be little need for contemplating exports during the next ten years.

Tight situation in Uganda

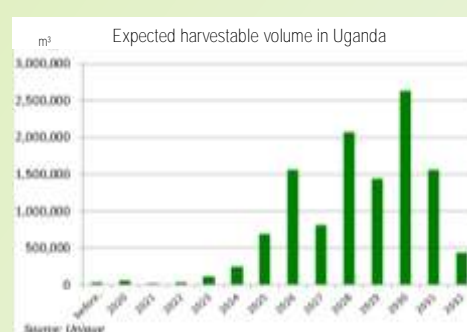
The SPGS market study by Unique from 2010, forecasts negligible harvesting of plantation forests in Uganda through 2023, at about 50,000 m<sup>3</sup> per year on average. Including tea and other private plantations, we believe the actual number is somewhat higher. BFC, our Ugandan plantation, will harvest 20,000 m<sup>3</sup> of pine per year from 2012 onwards, in addition to a similar amount of eucalyptus, increasing further from 2017 onwards. BFC will be the single largest supplier in the Ugandan market during this period.

There are currently close to 40,000 ha of plantation forest in Uganda, of which small private owners supported by SPGS own 12,000 ha, NFA (the government) has 7,000 ha and four corporate planters have close to 20,000 ha. Two-thirds of the forest is less than five years old and some is in a poor state. Significant growth in harvesting is forecast to

start in 2024, reaching about 1.5mn m<sup>3</sup> per year from 2026 to 2031, but with a decline in harvesting thereafter.

Ugandan consumption of industrial roundwood was 1.3mn m<sup>3</sup> in 2008, forecast by Unique to reach 1.7mn m<sup>3</sup> in 2030, mostly supplied from the unsustainable harvest of natural forests, domestically or in neighbouring countries. Consumption was 1 mn m<sup>3</sup> of hardwood and 350,000 m<sup>3</sup> of softwood in 2008, according to FAOstat 2010. With 3% annual market growth (less than half of GDP growth) and 30% industrial recovery rate (increased from the current lower rates), market demand is forecast at 1.7mn m<sup>3</sup> in 2030. Despite these very modest demand forecasts, there will be a significant shortage of supply of wood until 2025, followed by six years of market balance before there is renewed shortage.

Green Resources was the only significant commercial planter in Uganda at the end of

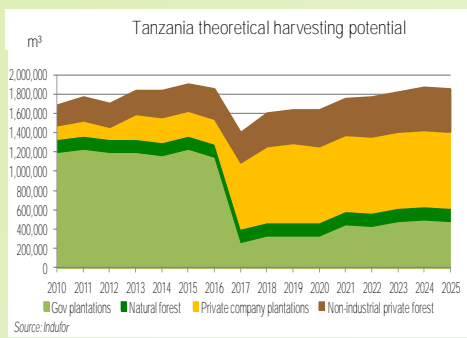


the 1990s and the main planter in the mid 2000s. It is well positioned to benefit from the wood shortage over the next decade, and will focus on the domestic market.

Net import to Mozambique

Southern Mozambique is mostly supplied with wood products from nearby South African and Swaziland plantations and wood processing industries. There are no meaningful plantations in Southern Mozambique, and the wood products are supplied from Manica and South Africa. South African suppliers dominate the market including relatively simple products like structural timber and transmission poles. A new wood chip mill started up in Maputo in 2012, based on wood supply from South Africa and Swaziland, illustrating how integrated Southern Mozambique is with its two neighbouring countries.

Central Mozambique, with the Beira corridor, includes the Ifloma Plantation in Manica (owned by Komatuland, South Africa), which includes about 10,000 ha of mature pine and some eucalyptus plantations. The Manica plantations are close to the forest plantations



in Zimbabwe, from where a large part of the production is exported to South Africa. Thus, the Manica plantations are also part of the greater Southern African timber market. The annual allowable cut from the 10,000 ha of plantations is believed to be well below the current annual demand for timber in Mozambique.

In Northern Mozambique, a new industry is emerging; currently there are no industrial wood supplies. The small, but fast growing local market is supplied from Manica and South Africa. Within the next five to ten years, local supply will outstrip demand by a wide margin, and Northern Mozambique will be a supplier to the wider Southern African and Indian Ocean markets.

*Kenya—largest market, good prices*

**Kenya is East Africa's largest market for wood products;** it consistently has higher prices than Tanzania. There is a steady export of wood products from Tanzania to Kenya, but this trade is believed to have slowed over the last two years in response to higher prices in Tanzania.

The Kenyan wood-product markets are supplied by commercial forests owned by the tea industry and private wood lots. There are about 50,000 ha remaining of government forests, spread over three larger and several smaller forests. There has been a formal logging ban in the government forests for about a decade, but some extraction is believed to continue. Eucalyptus and other hardwoods account for an increasing share of the raw material supply. Ever-younger pines are harvested for sawn timber.

*Green Resources conducts independent study of SHFP*

The inventory department within Green Resources Ltd, undertook an independent satellite-based study of SHFP, combined with some ground data. The outcome suggests that the situation is not as dire as indicated by Indufor, but sufficiently serious for it to be likely that wood prices will continue to rise. This plantation is particularly important for

Green Resources because it still supplies most of the raw material for our industrial operations.

The cost of this study was about USD 50,000, mostly in the form of satellite images and work. We have made the study publicly available, and will account for it as a **'community development programme'**. The IFC has initiated an expanded study where the main stakeholders, including Green Resources, are participants. In addition, Green Resources is attempting to raise donor funding for an annual update of its own satellite-based study, taking place in July each year. Previous inventory data have been unreliable and hard to come by. Green Resources would provide a valuable independent verification of the standing stock and harvesting level in SHFP and enable the authorities to check this with the revenues.

***GRL's own inventory study recommends the way forward for SHFP***

The SHFP plantation is currently estimated to have 32,646 ha of standing forest, the largest in East Africa. The original plantation was 42,000 ha, but there has been a reduction in size due to lack of replanting of harvested areas and fires. Total standing volume is estimated at 7.8mn m<sup>3</sup>, compared with 10.2mn m<sup>3</sup> in the Indufor/SHFP inventory from 2008-09.

During the last three years, actual harvest has been higher than annual allowable harvest based on sustainable management. Almost 2.5mn m<sup>3</sup> has been harvested since the 2008-09 inventory. Most of this harvest was in older age classes. However, 0.6mn m<sup>3</sup> was in the age class 20-25, or trees that are still growing and could produce increased future volumes.

Assuming an annual harvest of 1mn m<sup>3</sup> of sawlogs per year in SHFP, which was the allocated harvest by SHFP during 2007-08 to 2010-11, there will be an acute shortage of wood in 2019, with little wood available for the industry thereafter. If non-mature forest is harvested, the wood shortage will emerge sooner. This compared to a forecast by Indufor (2011) of acute wood shortage in 2017. Pine trees decrease in growth after 20 years

and the growth comes to a halt at around 30 years. Currently 86% of the total standing volume is older than 20 years, suggesting an acute need to renew and increase the growth of the forest.

A scenario analysis concludes that the ideal harvesting rate that will avoid future shortage, but also allow substitution of over-mature forest stands by younger stands, is 750,000 m<sup>3</sup> per year, compared to the 2011-12 allocation of about 850,000 m<sup>3</sup> harvest by SHFP. Under the ideal scenario, the existing old forest is harvested by 2023, by which time new forest from SHFP and private forest owners can supply the forest-processing industry.

*Better utilisation of the raw material*

There is currently large waste of raw material in SHFP. With an optimal use of the available raw material and an appropriate use of the pricing policy, it will be possible to increase the output of the forest-products industry in Mufindi despite a smaller logging volume.

During June 2012, SHI started up a highly efficient and technologically advanced sawmill that separately produces sawn timber, clean wood chips, sawdust and bark. This will enable higher sawn timber yield and overall sharply increased utilisation of the wood raw material if the market mechanisms are allowed to work properly. If these new markets for wood chips do not materialise, SHI/SHE might utilise the wood chips to fuel a 15MWel CHP, a low-value utilisation of high-quality wood chips.

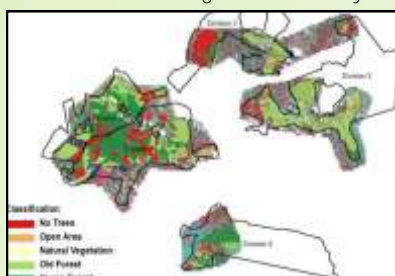
*Private participation in planting at SHFP*

The total area of the SHFP is 97,585 ha, of which only one-third is planted with trees. Much of remaining land is wetland and natural forest, some areas are encroached, but more than 25,000 ha is estimated to be available for planting of new forest.

It is strongly recommended that SHFP, in cooperation with private companies and local individuals, dramatically increase the planting within SHFP, and plant at least 2,500 ha per year of new forest in addition to replanting the harvested area.



Detailed map of the locations of the four Divisions of SHFP in relation to GRL projects.



Overview of image of SHFP, where black lines show the project boundary of SHFP, this area can potentially be planted.



Satellite image showing remaining standing forest and contrasting 'no tree' area





Retort charcoal kilns Bukaleba

## CLEAN AND EFFICIENT CHARCOAL PRODUCTION

July 2012 saw the commissioning of Green Resources first pyrolysis charcoal kilns in Jinja, Uganda. The process involves highly efficient and methane-free retort kilns and a high-capacity, automated charcoal briquetting line. This is the first industrial-scale clean tech charcoal production in East Africa. The yield of this production process is three times higher than traditional charcoal burning, leading to a dramatically reduced need for wood raw material for each unit of charcoal produced. This is the first stage of a plan to introduce the same kilns in Tanzania and Mozambique utilising developmental grant funding to share the risk of the projects.

### *Production process*

The process used is a 'retort process'; meaning that the greenhouse gases (GHG's), intensive pyrolysis gases emitted during the carbonisation process, are channelled into an ignition chamber where they are combusted. This achieves two objectives: energy efficiency is increased as a result of the recovered energy products and, a very high share of the methane emissions resulting from the pyrolysis process are destroyed in this combustion process. Additionally the process can use eucalyptus and pine off-cuts from industrial processes (off-cuts and rejects from pole plants and sawmills) as well as harvesting and thinning residues, limiting waste wood and optimising biomass productivity.

Wood is chopped to a uniform size and loaded into trolleys that are then placed in the kilns. To start the carbonisation process, a small amount of biomass is used to light the ignition chamber; the heat that is generated is then channelled into the pyrolysis chamber. After the wood is dried it begins to undergo the pyrolysis reaction and gases are released. These gases are channelled back to the ignition chamber where they are ignited and then provide the 'fuel' to maintain the fire in the ignition chamber. Once operating correctly there is excess heat provided by the ignition chamber that is channelled into the second kiln, to dry wood, also loaded in trolleys, prior to undergoing the drying and carbonisation process.

This new kiln type even allows for the production of metallurgical charcoal, enhancing our client base and bargaining position. Additionally, charcoal briquettes are more conveniently transported, giving access to higher market-value markets, and are easier to handle and have better burning characteristics (higher calorific value per volume unit) making charcoal briquettes the preferred form of charcoal in urbanised areas.

### *Carbon offsetting*

GR is in the process of trying to obtain carbon financing for the projects with the support of a specialised consultancy. GR has developed a new carbon-accounting methodology specifically geared towards this charcoal business and currently awaits its approval by the UNFCCC. By transitioning to higher-efficiency charcoal production technologies and sustainable harvesting, greenhouse gas emissions can be reduced by 45-66%. This form of charcoal production will generate emission reductions from methane avoidance (compared to traditional methods) and biomass switching; the raw materials used are grown in sustainably managed forests, replacing charcoal produced from natural forest and fossil fuels. The very high carbon reduction potential of this form of production will generate up to 2.7 carbon credits per tonne of charcoal produced and will be a significant contribution to profit/income.

### *Funding from three grant programmes*

The charcoal projects have been developed with grant financing, a prerequisite to investing in capital-intensive, clean-tech charcoal production. The Bukaleba charcoal project in Uganda aims to produce 7,500 tonnes per annum of sustainable charcoal; this is 40% financed (EUR 350,000) by the Nordic Climate Facility (NCF). The charcoal and community fuel wood projects (in both Mozambique and Tanzania) have an estimated production of 7,500 tonnes of charcoal per annum in each country; in addition to the charcoal plant these projects will promote the planting of 2 ha woodlots by local farmers, organised through a network of Tree Grower Associations (TGAs). Projects have been financed with 45% grant finance by the EDF (European Development Fund) through the ACP EU renewable energy grant, totalling EUR 2.4mn. A separate fourth project in Mapanda, Tanzania, has received 50% grant finance by the EEP (Finland and Austria); this project aims to produce 2,500 tonnes per annum of charcoal, capable of supplying 3,000 households a year.

### *The importance of sustainable charcoal production in Africa*

The African continent depends on wood and charcoal for cooking and heating homes in sub-Saharan Africa charcoal fulfills the heating and cooking needs for over 80% of the population, as it is the most affordable source of household energy. The traditional use of charcoal is not forecast to change (due to current economic conditions and energy infrastructure in Africa) but instead to increase with the increasing population; the trend is towards greater charcoal use in Africa. Currently over 90% of charcoal in Africa is produced by the informal sector, using inefficient pits or traditional kilns, releasing high levels of



greenhouse gases. Furthermore, wood is often collected from unsustainable sources, **making charcoal production one of Africa's largest deforestation threats**; charcoal produced from plantation forests is a prerequisite for the reduction in the rate of deforestation.

Project advantages are manifold: reducing pollution, avoiding deforestation, providing a sustainable energy source and reducing **negative health risks. We believe GR's fuel wood and charcoal projects are among the most important renewable energy and carbon projects in Africa.**

#### *Future charcoal development*

The excess amount of wood gas collected from the retort kilns can be used to provide heat for drying operations e.g in the agricultural industry or for kilns used for drying wood. The excess wood gas can also be used to produce electricity, either via a steam process, gas or diesel engine with a diesel engine providing the simplest technology and operation. This would be particularly attractive in off-grid locations. Such an application would further increase overall energy efficiency of the charcoal process and create important additional social, economic and environmental benefits.

#### FUTURE FOR CHP

Sao Hill Energy developed a detailed engineering plan for a 15MW and a 7MW Combined Heat Power (CHP) plant at Sao Hill during 2009 to 2011 in cooperation with, and part funded by, IFC and Norfund. This is an excellent plan, which would enable full utilisation of the lowest-quality wood generated from the forest activities of the Southern Highlands, material that currently is being wasted. The plant would provide much needed improved electricity supply for Sao Hill Industries, and would provide electricity to the Tanzanian grid for less than a third of the prices the government utilities are paying to fossil fuel-based power generators. Furthermore, the steam produced could create the basis for an efficient agro-processing industry in the agricultural heartland of Tanzania.

However, several circumstances have changed during the last three years:

1. Despite severe power shortages in Tanzania, tariffs offered for long-term (as opposed to emergency) generators in Tanzania are well below those in most African countries, holding back investments in generating capacity.
2. The Tanzanian DNA has not approved the project as a CDM carbon offset project, and it is withholding approval for a number of other energy projects.
3. Indufor, the Finnish consultancy, recently undertook a review of the harvesting potential of the Sao Hill Forest Project (SHFP), concluding that the total mature forest volume is significantly lower than previously expected. The Ministry of Natural Resources has reduced the annual allowable cut from SHFP from 1mn m<sup>3</sup>

to less than 800,000 m<sup>3</sup>, in line with the recommendations from Green Resources.

4. At the same time, the demand for the **wood residues ('firewood') for charcoal production and industrial boilers** has increased, leading to rising prices for the lowest-quality wood.

5. There have been large gas discoveries on the Tanzanian coastal shelf, suggesting that large-scale, relatively low-cost gas-generating capacity will be available in Tanzania within six to eight years, reducing the long-term price potential for electricity in Tanzania.

6. Alternative electricity production has become more attractive, with the capex for Photo-voltaic power production, which meets the requirement of wood-processing industries, falling sharply to less than USD1.5 mn per MW, or half of the cost of bio-mass based power production.

Green Resources still believes the CHP is a good project with the right conditions:

1. There needs to be a general increase in power tariffs such that the profitability of Tanesco and the company's ability to pay its suppliers is improved.
2. A technology-based feed-in tariff for renewable energy is implemented in Tanzania, as is the case in many other countries.
3. The CHP project receives DNA approval as a CDM project.
4. Half of the wood supply must be secured through a 5,000 ha fast growing energy wood plantation located close to the prospective plant at Sao Hill.

**EAST AFRICA'S FIRST RETORT CHARCOAL KILNS**

Busoga Forestry Company (BFC), a subsidiary of Green Resources, started up four retort charcoal kilns in Jinja, Uganda in July 2012. The raw materials for the kilns are residue from the industrial operations and thinnings and harvesting residue from our own sustainably managed plantations. The kilns provide a 35% yield, about three times higher than traditional earth kilns and even better

than the Katugo kilns Green Resources has installed in Tanzania. In addition, the kilns burn the available methane and other wood gases to heat the kilns and avoid emission of these serious greenhouse gasses into the atmosphere. These might be the most efficient and environmentally friendly charcoal kilns operating in Africa.



The charcoal kilns are lifted into place at GR Uganda's industrial site in Masese, Jinja. Each set of kilns weighs 13.5 tonnes. The kilns will be fed with off-cuts from the electricity pole production and other wood waste. The plant is located 90 km from Kampala, the Ugandan capital, where prices have doubled since the assumptions for the project were made, and within 1 km of the country's potentially largest industrial charcoal users.

The two first sets of third-generation, highly efficient and clean retort charcoal kilns were installed and put into operation at GR's pole treatment plant in Jinja, Uganda in July 2012. Each set of kilns has a capacity of 500 tonnes charcoal per year. The briquetting plant building is in the background.

GR will install 18 sets of kilns at two ongoing projects in Uganda and Tanzania, and a further 28 kilns at two other projects in Mozambique and Tanzania. 50% grant funding is a vital part of these projects.



Three trolleys are packed with split fire wood and are loaded into each kiln.



The commissioning of the first kiln was started using firewood to raise the heat inside the combustion chamber to 900°C and inside the kilns to 450°C. The hot flue gases are first transferred to the first (left) kiln, then pass at lower temperature through the second kiln before being emitted through the right chimney into the atmosphere. Water vapour leaves the kilns through the pipes.







After eight to 12 hours the wood is dried in the first kiln. Pyrolysis starts at approximately 260°C, and gases flow into and are burnt, inside the fire chamber. No more fire wood is needed to maintain the process.

When the pyrolysis has started in the second kiln, excess gas flows directly to the afterburner, producing significant amounts of excess heat. This energy can, in the future, be used for additional drying processes or off-grid electricity production. GR is working closely with the equipment supplier to develop a system for processing the excess gas and converting it into electricity.



After the charcoal has cooled down completely to ambient temperature, Sarah Nassuuna (right), the Industrial Manager of Green Resources Uganda, opens the first trolley and the charcoal can be removed.



The first nine sacks of charcoal are inspected by the team, headed by Isaac Kapalaga, MD of Green Resources Uganda (far left). Industrial history has been made with the successful production of the first industrial-scale, environmentally clean charcoal in East Africa.



Briquetting plant, before completion.



Briquetting machine (left) , packing line (above) and final briquettes (right).



Natural forest and conservation area

## CARBON OFFSETTING

2011 was a successful year for Green Resources' carbon credit business. Key achievements included the registration of the company's first Afforestation/Reforestation (A/R) Clean Development Mechanism (CDM) project, demonstrating the demand for the company's high-quality carbon credits by agreeing new sales contracts. Based on the carbon stocks of Uchindile, Mapanda, Idete, Kachung and Bukaleba – GR's most advanced forest carbon projects – the carbon business accrued a total of USD 0.6 mn in revenue for 2011. But, unlike 2010, no cash revenues were received.

The carbon market has experienced a turbulent period, with depressed prices in Europe and elsewhere. Despite this situation, we are very pleased to see that demand for voluntary carbon offsets is holding up well. It is also encouraging that the prices of forestry credits have been stable during this period. While the international climate change negotiations have made little progress, some material improvements were made during the last year: the EU is limiting new CDM projects to the least-developed countries and in late 2011 COP17 in Durban extended the CDM system.

GR is an African leader in combating climate change and a world leader in forestry-based carbon credits. In 2000, it pioneered forestry-based projects that sequester greenhouse gas emissions, receiving the first international third-party certification of a carbon project, by SGS. Other achievements include:

- Registering and receiving issuance for the world's first Verified Carbon Standard (VCS) forestry project in 2009 and 2010 respectively;
- Registering the first large-scale CDM project in Uganda in 2011 and signing what is believed to be the longest carbon sales contract;
- Selling credits from 2012 through to 2032 for the A/R CDM, Kachung Forest Project;
- Achieving higher than market average carbon credit prices for CDM and around average for VCS projects, demonstrating the high-quality credits from its forest carbon projects; and
- Preparing GR's clean charcoal projects to deliver up to 20,000 tCO<sub>2</sub>e of carbon credits per year.

GR produces carbon credits through forestation, avoided deforestation and renewable energy projects, including bioenergy. The company develops large-scale projects that should have a significant impact on climate change and sustainable development. The com-

pany's carbon offset business is estimated to generate over 100,000 tonnes of carbon offsets by the end of 2012, over 1 mn tonnes by 2015 and more than 3.5 mn tonnes by the end of 2020 from its forestation projects alone.

GR's A/R carbon projects are presented in the *Plantations* section of the company report.

### Advantages of carbon forestry

GR believes carbon forestry is the most efficient way of mitigating climate change in Africa, whilst simultaneously contributing positively to sustainable development. Carbon forestry projects have a unique advantage over other carbon project types for the following reasons:

- The majority of the project costs are left in the host country, in contrast to other project types, in particular, renewable energy, where the capital equipment and engineering is often imported.
- Forest plantations are established in rural areas on degraded land where soils are poor quality and the poorest part of the population is usually living. Such rural communities are the main beneficiaries of the plantation activities.
- Forest plantations are the most effective instruments against deforestation in the 'dry tropics', including East and Southern Africa. Forest plantations provide a sustainable source of building materials and energy, reducing or replacing the need for unsustainable harvesting in natural forests, which is the main source of deforestation.
- Modern forest plantations, such as GR's, positively contribute to

Carbon credit issuance, tCO<sub>2</sub>e

('000's)	Standard	2012	2013	2014	2015	2016	2017	Total
Uchindile & Mapanda	VCS	35	65	40	94	68	100	427
Idete	CDM	50	-	-	-	-	625	675
Bukaleba	VCS	25	25	-	54	-	60	189
Kachung	CDM	30	-	-	-	-	250	280
Mynera	CDM	-	-	-	390	-	-	390
Lurio	CDM	-	-	-	300	-	-	300
Lurio	VCS	-	-	-	100	80	105	285
Niassa	CDM	-	-	80	-	-	-	80
<b>Total</b>		<b>140</b>	<b>90</b>	<b>170</b>	<b>938</b>	<b>148</b>	<b>1,400</b>	<b>2,626</b>



biodiversity conservation: directly by following the mosaic principle, whereby approximately 50% of the land area, including natural forest and wetlands, is protected; and indirectly through reducing pressure on natural forest outside the project area through providing a sustainable supply of wood products.

Additionally, the advantage for forestry projects is clear: carbon finance often contributes to around a quarter of the project cost, whereas it is often less than 5% for other project types.

*CDM background*

The outcomes of the UNFCCC's COP 17 in Durban at the end of 2011 kept alive the possibility of a new agreement to cut emissions that would include all countries. It was agreed to negotiate a legally binding treaty by 2015, which would then come into effect in or after 2020. The treaty would, for the first time, include the largest emerging economies, such as China, India and Brazil. In addition, a second commitment period of the Kyoto Protocol was agreed, which means CDM will be extended to 2017 or 2020 (to be decided in COP18 in Qatar at the end of 2012); however, with emissions caps for this period undetermined, the extent of demand is uncertain.

Furthermore, national and local initiatives are gaining strength and present a way forward in addressing climate change. One example is California's cap-and-trade scheme, which is set to begin operating in 2012 and is expected to allow Reduced Emissions from Deforestation and Forest Degradation (REDD+) credits to be traded. This may present a new market for GR's Afforestation/Reforestation (A/R) carbon credits in the future. Other schemes being developed include the Western Climate Initiative (WCI; Canada and USA), China's seven pilot ETS (five cities and two provinces) and South Korea's national ETS.

*Carbon offset market*

The carbon credit market is dominated by two major exchanges: the UN's Clean Development Mechanism (CDM) and the voluntary market. The requirements for each are quite different and the demand and prices also differ. Initially it was thought CDM projects would dominate the market, but recent evidence suggests the voluntary market may provide better long-term prospects.

Following five years of fast growth and a slowdown in 2010, the overall value of the carbon market grew in 2011 to USD 176 bn with a volume of 10.3 bn tCO<sub>2</sub>e traded, driven mainly by hedging and arbitrage. Average prices decreased throughout the year largely

influenced by an oversupply of credits in the EU ETS and by the remaining effects of the recession, which has led to lower industry GHG emissions and thus lower compliance obligations and uncertainties regarding the market beyond the end of the first commitment period of the Kyoto Protocol.

*CDM and EU ETS compliance market*

In 2011, compliance demand and prices decreased mainly as a consequence of the economic downturn in 2008-09 followed by a slow recovery, emissions of GHG in Europe declined creating an oversupply of allowances.

The European compliance market, the EU ETS, still makes up the largest segment of the total carbon market, accounting for 84% of the global market trading in 2011. EU Allowances (EUAs) represent a risk-free, fully-tradable, guaranteed right to emit one tCO<sub>2</sub>e within the EU ETS. Certified Emission Reductions (CERs) from CDM-certified projects can be bought as substitutes for EUAs in the EU ETS as well as by individual governments to meet their compliance requirements. Forestry is still not included in the EU ETS but A/R CDM credits can be purchased directly by EU governments to meet their compliance requirements.

In 2013, the EU ETS will enter its Phase III introducing substantial changes including an expanded scope for the emissions cap, to include CO<sub>2</sub> emissions from petrochemicals, ammonia and aluminium, as well as other GHGs and a significant increase in the level of auctioning (over 50% as opposed to less than 4% in Phase II). Furthermore, carbon credits generated from projects registered after December 31, 2012 will only be eligible if they come from a project in a Least Developed Country (LDC) or a country with which the EU has signed a bilateral agreement. This restriction on supply being limited to mainly sub-Saharan Africa means regular CDM projects (renewable energy, energy efficiency etc) in these countries will be a major positive driver of demand. To date, LDCs only account for 0.02% of the issued CERs. GR's bioenergy projects are therefore well positioned to access long-term carbon finance from the EU ETS.

*Voluntary market – forestry doing well*

The voluntary carbon market (VCM) has steadily increased in market value since 2005, reaching USD 576mn in 2011, up 33% compared to 2010. The market's demand is driven mainly by pre-compliance buyers, or companies and individuals who wish to offset their emissions voluntarily. This is a strong indication that voluntary buyers will continue to show

(\$ billion)	2005	2006	2007	2008	2009	2010	2011
EU ETS	7.9	24.4	49.1	101	119	120	148
Other Allowances	0.1	0.3	0.3	1	4.3	1.1	1
Primary CDM	2.6	5.8	7.4	6.5	2.7	1.5	2.9
Secondary CDM	0.2	0.4	5.5	26.3	17.5	18.3	22.3
Voluntary	0.3	0.3	0.8	0.7	0.4	0.4	0.5
Total	11	31.2	63	135	144	142	176

Source: World Bank

	2008	2009	2010	2011
EU ETS	3,093	6,326	6,789	7,853
Primary CDM	404	211	265	292
Secondary CDM	1,072	1,055	1,275	1,822
Other Allowances	210	1,061	373	228
Total	4,779	8,653	8,702	10,195

Source: World Bank

	2008	2009	2010	2011
Voluntary OTC	57	55	128	93
CCX	69	41	2	-
Other Exchanges	0.2	2	2	2
Total	127	98	132	95

Source: Ecosystem Marketplace

interest in offsetting their emissions and greening their supply chains.

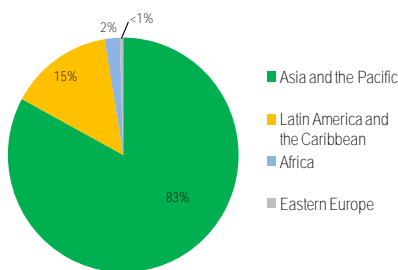
Within the voluntary carbon markets, afforestation and reforestation projects had a strong showing in 2011, with transacted volumes doubling compared to 2010, reaching a total of 7.6 MtCO<sub>2</sub>e. This represents the second-largest project-type volume transacted within the voluntary carbon markets. This is in contrast to REDD projects, which recorded transactions of 7.3 MtCO<sub>2</sub>e, a significant decrease from 2010's record 19.5 MtCO<sub>2</sub>e. This preference for forest plantation projects in the voluntary carbon market is driven by the tangible and compelling sustainable development aspects of such forestry projects. GR's use of CCBS and FSC means its projects' carbon credits are of top quality.

Prices for forestry-based credits also remained strong with the average price of AVR credits at USD 9 per tCO<sub>2</sub>e and REDD credits increasing to USD 12 (from USD 5 in 2010). The demand for African-sourced credits is also growing. In 2011 it had the third-largest volume and value: 7 MtCO<sub>2</sub>e and USD 60 mn respectively, of carbon credits coming, more than double that of 2010.

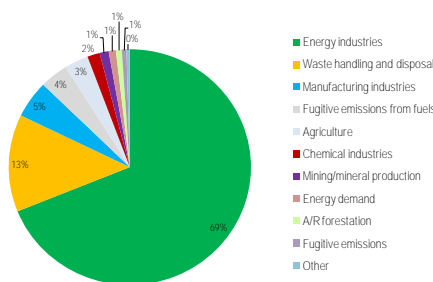
*CDM unsuccessful for Africa*

CDM for Africa has overall been a failure with less than 2% of registered projects. This was initially due to Africa missing out on the benefits of large industrial gas projects. Recently, there has been rapid growth in CDM projects from the energy sector, where Africa also is missing out because of the relative low activity in this sector in Africa. Forestry provides Africa with a large opportunity for accessing CDM finance, but forestry projects are the most difficult CDM projects to implement.

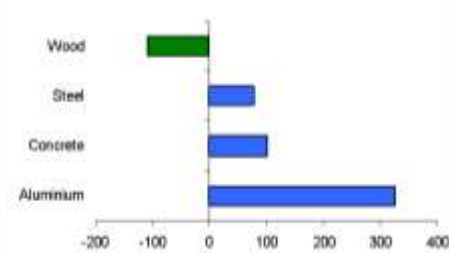
Registered CDM projects by region



Registered CDM projects by activity



Building beams: CO<sub>2</sub> production



Source: Global Environment Fund

In terms of supply by region, Africa still represents a small part of global supply for forest carbon credits, with major constraints on the CDM, though the region is seeing an increase of projects in the pipeline. Specifically, East Africa has excellent conditions for the development of successful forest carbon projects.

*Additional downstream carbon balance*

The focus in the existing carbon crediting systems has almost entirely been on 'upstream' forestry. That means a focus on the sequestration effects of establishing new standing forests – the creation of new carbon storage. However, the positive downstream effects are also large. The indirect effect on reducing deforestation is the one-sided effect of establishing new forests.

The main downstream effect is in building materials. Wood has a positive substitution effect with respect to CO<sub>2</sub> emissions when used for building materials. Wood has a positive CO<sub>2</sub> contribution, and is a significantly better building material than competing materials like steel, concrete and aluminium from an environmental point of view. The positive effect comes as a result of stored CO<sub>2</sub> in the wood which outweighs the CO<sub>2</sub> emissions in relation to moulding the material.

There is a similar situation in textiles, where rayon / dissolving pulp competes against plastic-based fibres and cotton. There is also a growing micro-particles industry based on wood fibre, competing with a range of other products from non-renewable sources



Pine plantation, Bukaleba, Uganda



HUMAN RESOURCES

**Green Resources' multicultural and locally recruited workforce** continues to be one of its major strengths. Its senior managers are recruited mainly from East Africa, distinguishing the company from competitors who employ primarily expatriate senior managers. This distinction gives the company valuable local insight and understanding, as well as providing the best levels of experience and knowledge of unique national and international operations and working practices. GR recruitment efforts continue to attract the best foresters in the countries where it operates, combining this skilled workforce with recognised world-wide expertise in forestry originating from Brazil, Estonia, Finland, Norway, Uruguay and Zimbabwe.

Total headcount as of 30th June, 2012 was 3,539 employees (permanent and seasonal) which is a decrease of 240 from year-end 2011. **Permanent employees' headcount has increased by 3% from 1,046 at the end of 2011 to 1,073 whilst seasonal employees' headcount has reduced by 23% from 2,733 to 2,466.** Ten key positions were recruited, with three successful female applicants. The group employs 16% female employees, down from 18% at the end of 2011. The reduction in headcount has been as a result of an improved and enforced recruitment policy, cost-control awareness, as well as seasonal trends.

Fredkorpset, Norway, has continued its approval of GR as a partner institution since 2009. This involves the funding of an exchange programme between operations and locations including employees from functions such as accounting, nursery management, pole treatment, sawmill operations and plantation management, as well as inventory and mapping during a period of at least 12 months. Participants benefit not only from a wider business experience, but also cultural exchange experiences they would otherwise not have had exposure to. The business benefits from a workforce that has experienced differing working practices, leading to a sharing of best practice and cultural diversity awareness and

group-wide understanding.

Regrettably, despite continued and increasing focus on health and safety in the workplace, during 2011, GR had two fatalities due to one road traffic accident and two fatalities during the second quarter of 2012 due to a sawmill industrial accident and a felling accident. There were a further 23 minor injuries requiring medical treatment. The number of serious accidents has remained at a very low level compared to previous years despite increased activities and operations. The company continues to focus on accident prevention, health and safety training, hazard avoidance and providing as safe a working environment as possible. Training has increased with courses on health and safety awareness, first aid, hazard and risk assessment, chain saw operation safety, driving safety and personal protection equipment usage being attended by new and existing staff.

HR systems and infrastructure have continued to develop. During 2011, the HR Database Snowdrop database was used to register more than 900 employee records and a payroll software package, Sage Pastel Payroll, will be implemented in Mozambique, with other territories to follow during the third quarter 2012.

The company also continued to develop its training programmes, particularly for operations and plantation staff, including key training activities on fire prevention and fire fighting, environmental awareness, HIV awareness and prevention, water safety and water-borne disease prevention. A total of 935 training activities took place during 2011 along with new employees also receiving induction training. A total of 416 training activities have taken place, in 2012, including hazard identification and risk assessment, occupational health, safety and environment and CCBA awareness. There have been no disciplinary or grievance incidents reported.

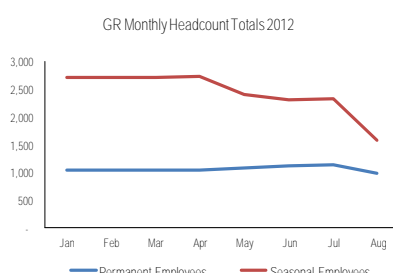
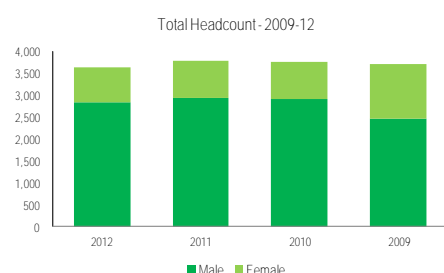
The company granted study leave to two employees in Tanzania who are undertaking **Masters' degrees, and one employee in Uganda** who is undertaking a MSc in Procurement and Supply Change Management.



Our accountants in Tanzania and Uganda also undertook further professional accountancy qualifications with support and assistance from the company. An HR manager in Tanzania successfully completed a Business Skills Professional Development course run by the British Council in Dar es Salaam. The company remains committed to providing sabbatical leave and financial support in order to encourage all staff to seek opportunities to develop their professional qualifications, skills and knowledge to the full.

A totally revised Employee Handbook was completed and training sessions to highlight and explain new policies and procedures commenced towards the end of 2011. **The additional policies included the company's required standards on human rights, quality management, health and safety, labour relations, biodiversity and the environment.**

The human resources organisation and structure headed by the HR Director with eight HR Managers was completed with HR managers partnering each business, providing a functional support service to local managers and employees, as well as working collaboratively across the group on company-wide initiatives such as training employees, recruitment procedures, improved payroll facilities, national employment regulatory issues and **implementing the groups' overall HR needs.** In the second half of 2012, a Uganda-based HR hub will be established, with the Ugandan Group HR Manager working across plantation companies to improve collaboration and **implementation of the company's HR initiatives.**





Uchindile Primary School classrooms and office, Tanzania

Green Resources supports socio-economic development and poverty alleviation in the rural areas in which it operates by creating employment, building schools and health centres, improving local infrastructure and an assortment of other development projects. Positive partnerships between GR and the surrounding communities are integral to the functioning of plantations and industrial operations. We are determined to maintain existing relationships and build on them further; for this reason there has been a recent focus on diversifying and establishing new social responsibility programmes throughout all corporate activities.

#### COMMUNITY DEVELOPMENT

Since the company's inception in 1995, GR has concentrated on four primary community development goals in East Africa; improving education, healthcare, infrastructure and food/income security. GR recognises the need for community interaction when planning and implementing development projects, and each plantation company has its own community development team which works closely with the surrounding villages and village leaders to decide on development projects that will best benefit the individual communities. All development programmes are a reflection of the needs of that specific community as prioritised by stakeholders.

In 2011 there was a strong focus on two more recent schemes— an agricultural programme in Mozambique and community tree farming initiatives in Tanzania. The agricultural programme enables and supports farmers to start up profitable agriculture activities and create strong links to market. Development discourse suggests sustainable agriculture is the best route out of poverty for the majority of Africa's

rural poor.

Tree farm initiatives in Tanzania, expanded to include Mozambique in 2012, promote the cultivation of trees by smallholder farmers with plots of extra land; this ensures reliable income generation, a sustainable and affordable fuel source and helps combat deforestation. Therefore by partaking in such schemes local communities are helping to secure their own future, as well as that of the indigenous forest.

#### *Investment in education*

Throughout all its plantations GR has continued its long-term plans to establish and improve education facilities within and around plantations. Since 2008, GR community development contributions have funded the construction of new classrooms and schools and teacher and student accommodation, as well as the improvement of existing schools. **GR's accomplished education projects in Tanzania include** the following constructions: two classrooms, a teachers office and one dormitory with 48 beds and toilet facilities at Uchindile secondary school; the finishing of six classrooms at Uchindile and Kiyowela secondary schools; **five classrooms, a teacher's office and teachers accommodation** at Uchindile primary school (Kihata); two classrooms at Mapanda primary school; three classrooms at Idete primary school; three classrooms and teachers accommodation at Chogo primary school and **two classrooms at Makungu primary school**. The teachers' houses at Chogo and Uchindile primary schools were funded by 10% of the carbon revenue which is set aside for community development. In Uganda, GR has been sponsoring young girls through secondary and tertiary education, through its Girls' Education programme.

#### *Improved rural healthcare*

Company-funded healthcare projects have involved constructing health centres and dispensaries, constructing accommodation for healthcare professionals, supplying equipment and medicine to dispensaries and hospitals, and HIV/AIDS awareness campaigns.

Health facility construction in Tanzania has included a nurse's house in Mapanda (funded by 10% carbon revenue) and one maternity ward at the Mapanda dispensary. In Kitete village, a dispensary and two nurse's houses have been constructed and recently handed over to the community. In Uganda, GR has funded the construction of a fully-equipped maternity ward in Nkombe village, Bukaleba. GR periodically supplies the centre with essential drugs and medical equipment, which is also distributed to four health centres and one main hospital in the Mayuge district. In the Dokolo district, GR has constructed a children's ward, and installed solar panels at Bardyang health centre.



School children, Mkungu, Tanzania



All healthcare projects were prioritised by the communities involved, interviews within the communities have shown that improved healthcare still remains a stakeholder priority. Improving healthcare facilities and accessibility to primary healthcare will remain a key development goal for GR.

### *HIV/AIDS awareness*

In Uganda and Tanzania, GR has been running HIV/AIDS sensitisation campaigns, focused on informing and supporting plantation workers, their families and the surrounding community. The awareness campaigns involve training peer educators and coordinators on HIV/AIDS and related topics; this includes the provision of information and dissemination materials and organisation of awareness events. Testing and treatment are provided at local dispensaries and health centres and a counselling service is available throughout plantations and villages. Information about the needs and concerns voiced during the workshops is fed back to governments with the intention of improving future policy and practice.

### *Improved infrastructure*

GR continues to build and maintain roads,

bridges, community amenities and water access throughout its plantations and surrounding areas. In many cases, there is a lack of community or administrative facilities.

In the Southern Highlands of Tanzania, the company has built over 100 km of village and district roads, these are regularly maintained by the company. In Tanzania the lack of government offices within villages has had the effect of compromising villagers availability to land rights documents, resulting in their rights not being formally recognised, this then limits access to other services (e.g bank loans). By providing offices and community buildings, the company creates a central place for officials to meet and land registration to take place, hence an overall improvement in village governance. In Idete and Chogo community halls and six offices for village officials have been constructed. In Kitete, Hingawali and Njonjo smaller offices have also been completed.

Stakeholders often prioritise access to clean water as a development goal. GR is continually improving access to water by drilling boreholes, implementing hand pumps, renovating community water points and funding hydrological surveys. In the last year, GR has installed two shallow wells in Idete village and drilled a

borehole including water pumps in Uchindile. In Bukaleba, Uganda, the company has renovated a water spring, in addition to the two boreholes established in previous years.

Other community development projects have involved the promotion of energy-efficient cook-stoves (in order to reduce fuel wood utilisation), where community members are trained on construction, use and maintenance of cook stoves using locally available materials, as well as community beekeeping.

### *Microfinance*

GR has set up a micro-lending and financial support mechanism, the Mbao Saving and Credit Cooperative Society (SACCOS), originally set up for Sao Hill employees but now expanded and catering for all GR employees in Tanzania. The number of members increased from 50 in 2008, to 300 in 2011. Members can borrow three-times the amount of a deposit. This financing is used by members to purchase plots of land, agriculture inputs, school fees, home industries and trading operations. Mbao SACCOS is believed to provide the lowest-cost micro-finance lending in Tanzania, while maintaining healthy profitability.



Kitete village hall and offices



Bridge built and maintained by GR, Mapanda



Receiving medical supplies, Bukaleba, Uganda



Idete village hall



Maternity ward, Mapanda



Nurses' houses, Kitete



Nurse's house, Mapanda



Primary school children, Chogo



Teacher's accommodation, Uchindile primary school



Uchindile village farmers woodlots, Tanzania



Idete village nursery managed by the community in preparation for the next planting season, July 2012.

FARM FORESTS

Since 2009 GR has been implementing smallholder tree growing programmes throughout Tanzania. This has been facilitated by establishing Tree Growing Associations (TGA's) across ten villages in Tanzania; the reason for such associations is to create community support and advocacy associations that will enhance members' social capital, enabling them to become independent actors in forestry practices and wood-product markets. This means that tree growers can retain independence, and do not become reliant on large-scale industrial plantations and processors, which is often the case with out-grower schemes.

GR acts as a facilitator in the process, providing guidelines and training on nursery establishment, woodlot establishment, woodlot management and biodiversity conservation. Training is provided through written material and practical, in-field demonstrations and nursery inputs. Seedlings and other equipment are also provided by the company.

Currently within the ten villages, the TGA's reach 771 farmers, 262 of which are women. Each TGA has a chairman, secretary and treasurer, all of whom were democratically elected in village meetings. These projects have resulted in the planting of 410,000 trees

on 370 ha; the project was co-funded by FIN-NIDA.

Seedlings are provided to farmers from the TGA nurseries as well as by GR directly. Between April 2010 and April 2011, a total of 215,700 pine seedlings were supplied by GR; an additional 194,300 came from the TGA nurseries. Once seedlings have been provided extension visits are carried out and workshops are held in order to ensure optimal growth.

Seedlings produced and distributed, Tanzania 2011			
(000's)	Seedlings produced by TGA's	Seedlings supplied by GRL	Total
Kidabaga	50	-	50
Lulanzi	13.5	37.5	51
Kiyowela	15	33	48
Idete	8	28	36
Nundwe	19	17	36
Vikula	10.8	25.2	36
Mapanda	14	22	36
Chogo	12	24	36
Uchindile	22	21	43
Kitete	30	8	38
<b>Total</b>	<b>194</b>	<b>216</b>	<b>410</b>

GR is using findings from Tanzania to develop a model of good practice as it expands its work to more communities living in and around GR plantations.

In 2012 the company will be focusing on expanding these projects, through the 'Sustainable Wood and Charcoal Production in Rural Mozambique and Tanzania' project. This project, co-financed by the EU, aims to establish a further 4,000 ha of eucalyptus fuel wood plantation by 2,000 farmers in Kilombero, Mufindi and Njombe districts in Tanzania and in Namina, Nampula and Ribaua districts in Mozambique.

The project will be organised through a network of TGAs and extension foresters managed by GR. It will also work to expand the existing Tanzanian smallholder plantations and provide more extensive support for existing farmers of TGA's. In Mozambique, the project will build on GR's existing agricultural extension programme that includes more than 1,000 farmers. The TGA's will provide guidelines, training and seedlings to the participant farmers and will support farmers in registering their land rights. During the 2012/13 planting season GR will produce and distributed 1.8mn seedlings among the initial 1,000 project participants.

The EU-funded project also includes the establishment of a highly efficient, methane-free retort charcoal plant, in each country with a production capacity of 7,500 tonnes charcoal per year each.

Each successful participating household will receive one tonne of charcoal (satisfying their annual fuel needs), one small solar lighting system and an improved charcoal cooking stove. These three elements will not only dramatically improve the composition and quality of the energy use among the participating farmers but will also work as an incentive for farmers to establish and maintain a high-quality forest. Furthermore, significant health problems are created by use of open wood fires indoors, and a transition to charcoal has large health benefits.

TGA member distribution Tanzania 2012

Village	Male	Female	Total
Kidabaga	29	16	45
Lulanzi	45	18	63
Nundwe	40	10	50
Vikula	34	19	53
Mapanda	105	43	148
Chogo	74	56	130
Uchindile	60	20	80
Kitete	43	26	69
Idete	42	20	62
Kiyowela	37	34	71
<b>Total</b>	<b>509</b>	<b>262</b>	<b>771</b>



A participating farmer's plantation, Bukaleba



AGRICULTURE

There is huge potential to increase agricultural production in East and Southern Africa. This can be achieved through both the application of improved farming techniques and growth in the amount of land devoted to agriculture, each of which is strongly supported by Green Resources, with the aid of changing donor priorities and better co-ordinated national policies. Socially responsible investment in agriculture is important for Green Resources for a number of reasons, including:

- A small proportion of the land we are awarded is well suited for agriculture and 'too good' for forestry;
- Agricultural development is the most important income-generating activity we can encourage in the communities in which we operate; and
- Improved food supply and a better diet are critical for the health of our workers and their families.

Out-grower programmes sponsored by commercial agriculture and forestry companies have a significant role to play in growing the amount of land devoted to agriculture and the introduction of improved farming techniques in several areas, including:

- Access to finance, through banks and via crop insurance, to enable purchase of effective inputs;
- Provision of appropriate seeds;
- Help with cultivation, including education and the provision of machinery and equipment;
- Creating scaled production (often combined with commercial farms) and providing processing facilities;
- Opening up new markets for produce; and
- Providing continuing support and education to local communities

For the last two years, Green Resources has operated a large agricultural out-grower in Mozambique, supported by seed production at our own tree nursery. In Tanzania, we have developed our own farm, and in a joint venture with AgDevCo and associated entities, have attracted USD 1.1mn of equity to the developing of Sao Hill Agriculture (SHA), our Tanzanian agriculture business. SHA is starting a significant out-grower programme in the Mafinga area of the Southern Highlands.

*Sao Hill Agriculture expansion*

SHA is a company jointly owned by Green Resources and AgDevCo of the UK, and affiliates established in 2012. GR is contributing an

existing farm and AgDevCo is contributing USD 1 mn in cash and additional management. **SHA's principal asset is Musugulika Farm**, a 1,000 ha property located near Mafinga in the Southern Highlands. Arable production is being diversified from dryland and seed maize to include soybeans and wheat, and garlic for export is being grown on a trial basis. Once the area has received power grid access, SHA plans to install irrigation pivots. Longer term, SHA is proposing to leverage any steam/power generating capacity developed by SHI to create environmentally sustainable and commercially attractive agricultural processing capacity.

SHA is establishing the Sao Hill Outgrower Programme (SHOP). SHOP is initially engaging with some 125 local farmers, rising to 5,000 within five years, in the supply of onions, soybeans and garlic to SHA for post-harvest **processing, complementing SHA's nucleus farm production**. In 2013, SHOP anticipates using its warehouse in Mafinga to dry onions sourced from local farmers, sharing with them the benefits of price smoothing from an effectively processed local crop.

*Out-grower programmes in Mozambique*

In 2010, GR started a pilot agricultural programme in Lurio, Mozambique. The project is focused on providing smallholder farmers with the support and equipment needed for commercially viable and productive cropping systems. The programme was established with the aim of contributing to the food security of the local communities, increasing income, and as an attempt to steer local communities away from slash and burn agricultural practices which invariably lead to deforestation.

The first year of the programme resulted in widespread planting of soybeans: soybean was used as the initial crop due to its dual purpose (food and income), favourable market prices and its capacity to improve soil fertility. The initial planting was supported by TechnoServe with the provision of seeds, manuals and soil inoculants. Stages of the programme involved area selection, farmer enlistment, technician recruitment, tool distribution and the establishment of soybean committee. Farmers received free soybean seed and tools (hoes and machetes) under credit and mechanical equipment was also made available to farmers. Some 20ha were planted on a trial basis, with the entire crop being successfully sold by the participants.

Following the lessons learned in the initial year, improved planning and implementation has resulted in further success as additional farmers have enlisted, and currently 1,045 smallholders are benefitting from the scheme.

Farmers are now planting a wider variety of crops (groundnut, sesame, cowpea and maize) and further development plans for irrigation dams and fruit tree nurseries are currently in discussion. Green Resources has established its own soya seed farm which will provide for 100% of the outgrower programme's soya seed requirements.

In addition to the facilitation role that GR plays, the company acts as a broker between buyers and smallholders ensuring fair market prices that smallholder farmers do not often have access to.

Following the successful implementation of the programme in Lurio, Green Resources implemented a similar agricultural programme in Niassa. Soybean is the only crop being grown for the Niassa programme; it is better suited to environmental conditions and has a greater net profit per tonne in the region. During the agricultural season running 2011-12, 150 farmers in the region signed up to take part in the programme.

The company has established two demonstration plots within the first year of the programme, this will increase to five in the next agricultural season. Demonstration plots provide a training tool by which outgrowers receive training and technology demonstrations.

Currently Technoserve is providing 75% of the soy seed, **Green Resources' seed farms** will be able to provide 100% of the seed required in the next two years. 20 tonnes of seed were harvested from our own farms (20ha) for the 2011-12 season, the yield is expected to increase to 1.5 tonne/ha.

Lurio outgrower production, current and forecasted					
(ha)	2010	2011	2012	2013	2014
Soybean	106	256	556	1,006	1,506
Sesame	-	38	238	538	898
Groundnut	-	185	485	935	1,535
Maize	-	28	128	278	478
Cowpea	-	89	289	539	839
Soroco bean	-	-	80	180	330
Total (ha)	106	596	1,776	3,476	5,586
No. Farmers	357	1,045	2,900	4,200	5000



Farm employees with GR's thriving soya seed crop

ENVIRONMENTAL SUSTAINABILITY

Green Resources continues to be a leading company in the fight against climate change. Company planting plans ensure that ten times as many trees as are harvested are planted. As our plantations grow, the amount of carbon sequestered increases, making GR's plantations invaluable carbon sinks in East and Southern Africa.

Natural habitat conservation

All of GR's operations are carried out following sustainable forest management practices; this ensures that highest level of conservation and environmental protection of all indigenous eco-systems. These may be areas that are home to rare or endangered species, water sources or areas of cultural significance. Natural habitats and water sources have been mapped, demarcated and indigenous flora and fauna recorded; rare, threatened and endangered (RTE) species and their natural habitats are specified and protected. For example, large areas of natural grassland in the Tanzanian Highlands have been set aside for the blue swallow (*hirundo atrocaerulea*), a threatened intra-African migrant bird species, endemic to sub-Saharan Africa.

The establishment of conservation areas differs according to local species and requirements, these areas are established by experts

and in some instances conservation corridors are established to link key habitats for plants and animals.

High Conservation Value Forest

The company is currently working towards defining High Conservation Value Forest (HCVF) areas, these are forest areas, defined by the FSC, that have any one of the following characteristics; i) contain globally, regionally or nationally significant concentrations of biodiversity values, ii) areas with rare, threatened or endangered ecosystems, iii) forest areas that provide basic ecological services in critical situations (eg. water flow quality, protection against erosion or natural disasters, pollinators); or iv) forest areas fundamental to meeting basic or bio-physiological needs of local communities (e.g. subsistence, health). This is achieved by following a Biodiversity Monitoring Plan, which includes the formation of Natural Permanent Sample Plots (NatPSP's) around the plantations that are continually assessed and evaluated to monitor the growth and status of natural vegetation and abundance of fauna.

Water conservation and monitoring

River valleys and water sources are protected by conservation buffer zones that are a minimum of 60 metres from any water source, where no tree planting or human activity is



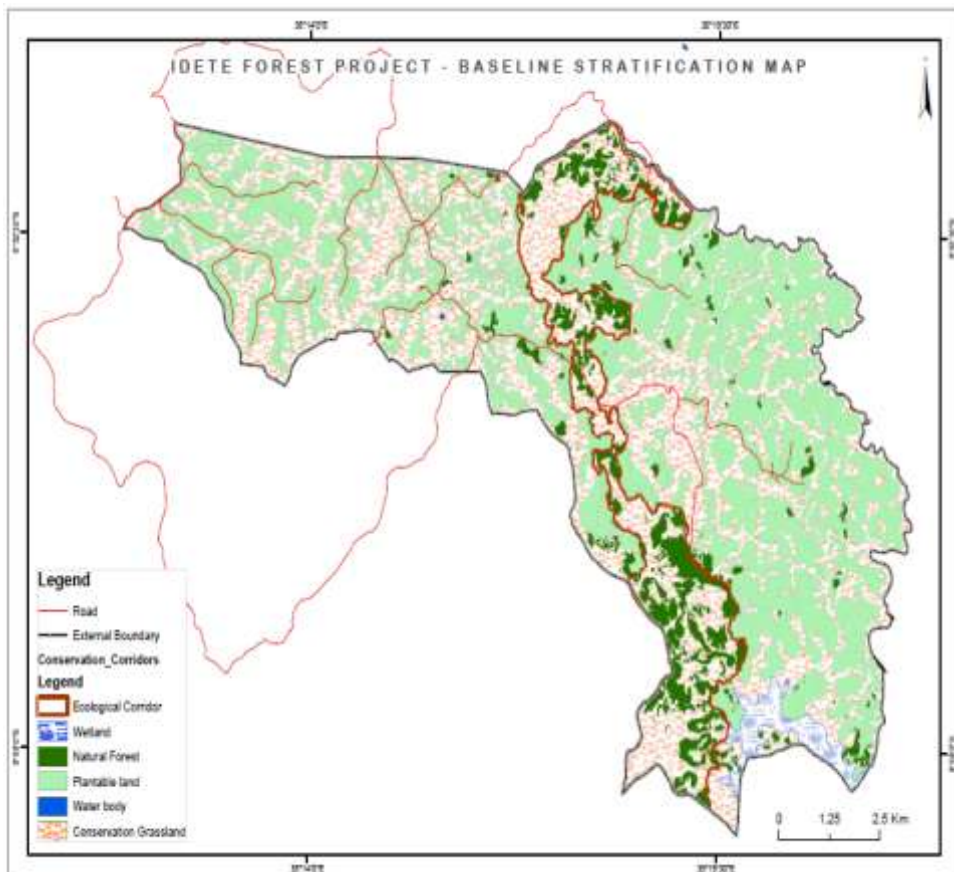
Blue swallow conservation area, Uchindile

allowed to take place. Surface and ground water levels and quality are constantly assessed throughout plantations to ensure water quality and quantities are not being altered by forest activities. Limiting erosion through deliberate tree planting, buffer zone protection, road alignment and drainage and conservation area demarcation are all part of GR environmental management objectives.

Certification

The development and implementation of environment, health and safety management systems (ISO 14001&OHSAS 18001) across GR's subsidiary companies in Tanzania, Uganda and Mozambique; is part of the company's aim to ensure operations are conducted in compliance with legal requirements, taking measures to prevent pollution whilst taking care of its employees by preventing and/or minimising work-related injuries and occupational health and safety problems associated with our operation activities.

This is done through undertaking environmental and occupational health and safety risk assessments of the operations and addressing any gaps, thereby resulting in proactive management of environmental and occupational health and safety aspects/hazards of operations, products and services rather than reactive responses to problems and issues.



Idete conservation area, including ecological corridor



Idete conservation area



## FORESTS FOR A LIVING PLANET

Forests are fundamental to the future of the globe, but deforestation continues at a devastating rate, despite of positive signs of increased biomass stocks in the OCED, China, and some other areas. More forests are needed to provide energy for the poor (and now also for the rich), environmentally-friendly building materials, secure biodiversity and to mitigate climate change. However, very little is done to address these serious issues, and we believe most of the action currently taken has huge leakage effects and provides poor value for money. Proper analysis is a key to understand the importance and complexity of forestry issues.

Last year, WWF started publishing the first chapters of the WWF Living Forest Report. This is the clearest and most comprehensive analysis we have seen on these issues, and we bring some of the highlights from this report below.

Note: we have not attempted to make a summary of the report and aimed to give a review of the report, but rather highlight some of the key issues that have been raised. We encourage readers to send us other examples of thoughtful research on forestry issues.

Full report available from: [panda.org/livingforests](http://panda.org/livingforests)

The following text has been drafted by Green Resources based on WWF's Living Forest Report. Where WWF is directly quoted this is marked with quotation mark.

## FORESTS: WHAT FUTURE DO WE WANT?

*A world rich with healthy, vibrant forests, pulsing with life.*

**'Many forests are ancient, living monuments to the Earth's long history. Others are still young, growing quickly over once-degraded land, holding deserts at bay. Pure rivers run through them. A proportion of the world's forests are managed, sustainably and with care, for timber, food, medicines, as sources of livelihoods and as places to relax, or valued for their rich cultural and spiritual associations. Throughout the world, secure and healthy forests have helped stabilize the climate. Responsibly-managed, supplying fibre for materials and energy and sharing the landscape with wild forests, towns, productive farms, and nature reserves. Maintaining forests is a cornerstone of national and international policies.'**

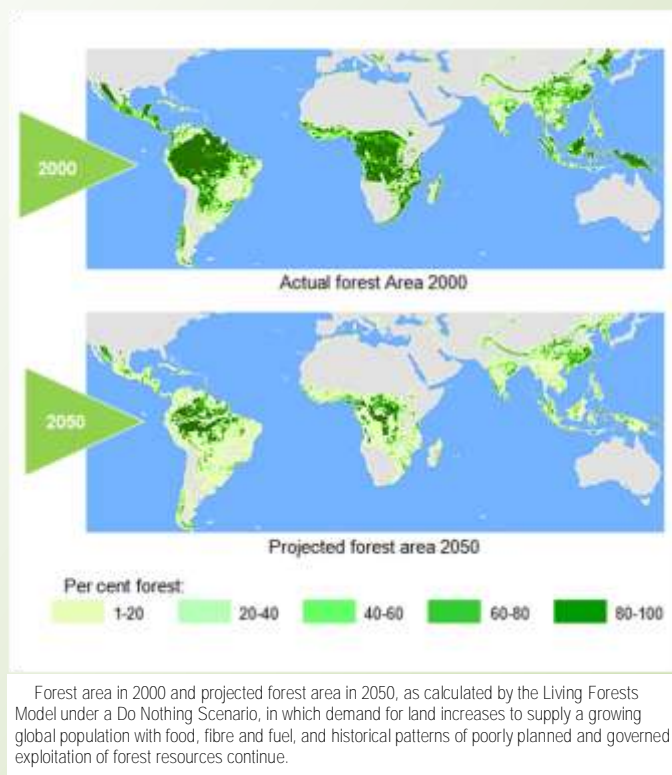
*Or consider the reverse.*

**'Most of the Amazon, Asia-Pacific, and Congo forests are a distant memory, and the crops that replaced them have been destroyed by droughts and fires. The world's poorest billions struggle for food and water; rich and poor alike are battered by extreme weather. Deserts encroach on farmland and towns. Lists of extinct species grow longer by the day. Energy crises cripple industry and isolate communities.'**

Huge swathes of boreal forest have died, further accelerating climate change. Wars over natural resources are affecting half the nations on the planet.'

## THE LIVING FORESTS VISION

**'The Living Forests Report is the centrepiece of WWF's Living Forests Campaign. The campaign does not start by knowing all the answers and seeking to impose a solution. Rather, it aims to convene a conversation among people who are sympathetic to the idea of halting forest loss, but who may be concerned about potential implications for human well-being, economic development, and the**



**wider environment. WWF aspires to a future where humanity's global footprint stays within the Earth's ecological limits and the planet's natural resources are shared equitably. People everywhere can lead happy, healthy lives using their fair share of the Earth's resources, leaving space for wildlife and natural landscapes [...]**

**According to WWF 'the Living Forests Campaign envisions allocation of a greater share of the world's food, energy, and materials to meet the needs of the poor. Rich nations and individuals will need to find ways to live more lightly on the Earth. Emerging economies will need to find new models for sustainable growth that allows them to continue to improve the well-being of their citizens in ways that the planet can sustain [...]**

**WWF advocates 'Zero Net Deforestation and Forest Degradation by 2020(ZNDD) as a target that reflects the scale and urgency with which threats to the world's forests and climate need to be tackled. Achieving ZNDD will stem the depletion of forest-based biodiversity and ecosystem services, and associated (GHG) emissions. It addresses many targets of the Millennium Development Goals, Convention on Biological Diversity and UN Framework Convention on Climate Change [...]**

*What is Zero Net Deforestation and Forest Degradation?*

**WWF defines ZNDD as 'no net forest loss through deforestation and no net decline in forest quality through degradation. ZNDD provides some flexibility: it is not quite the same as no forest clearing anywhere, under any circumstances. For instance, it recognizes peoples' right to clear some forests for agriculture, or the value in occasionally 'trading off' degraded forests to free up other land to restore important biological corridors, provided that biodiversity values and net quantity and quality of forests are maintained.'**

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### THE LIVING FOREST MODEL

‘To understand what ZNDD would mean in practice, WWF developed the Living Forests Model with the International Institute for Applied Systems Analysis (IIASA), which forms the basis for the Living Forests Report. The Living Forests Model finds that achieving ZNDD is both possible and urgent. But it will not be easy. [...]’

‘Models help us to develop and compare different future scenarios, look at the implications of particular policies, test assumptions and start conversations. Models are not perfect representations of reality: they inform the debate rather than make exact predictions [...]. The Living Forests Model features the following scenarios:

- The reference Do Nothing Scenario: A projection of what the world could look like if our behaviour continues in line with historical trends. The Do Nothing Scenario anticipates land-use change due to: (a) demands for land to supply a growing global human population with food, fibre and fuel; and (b) continuation of historical patterns of poorly planned and governed exploitation of forest resources
- Target Scenario: ZNDD (with near zero gross rate of loss of natural and semi-natural forest) by 2020 and maintained at that level indefinitely
- Target Delayed Scenario: ZNDD (with near zero gross rate of loss of natural and semi-natural forest) by 2030 and maintained at that level indefinitely
- Half Measures Scenario: Gross deforestation rate declines by at least 50% from the reference rate by 2020. To understand what ZNDD would mean in practice, WWF developed the Living Forests Model with the International Institute for Applied Systems Analysis (IIASA), which forms the basis for the Living Forests Report. The Living Forests Model finds that achieving ZNDD is both possible and urgent. But it will not be easy.

Additional scenarios were developed to explore the impact of variations in the projected demand for animal calories and bioenergy. These affect how much forest or agricultural land the Model assigns to pasture and growing feed for livestock or biofuel crops, and how much wood from forests will be used to generate energy.

i) Diet Shift: The total global consumption of animal calories is maintained at the 2010 global average with convergence in per capita consumption across regions (i.e., those now below the global average consume more in the future, while those now above the global average consume less). This scenario means less future demand for animal calories than the Do Nothing scenario

ii) Bioenergy Plus: Bioenergy feedstock demand is consistent with the 100% renewable energy vision calculated by the Ecofys Energy Model. This contrasts with the Do Nothing Scenario in that it assumes a higher carbon price. This makes bioenergy more competitive relative to fossil fuels, although this is tempered by higher bioenergy feedstock prices as more bioenergy is used.

iii) Pro-Nature: Remaining natural ecosystems are protected (i.e., no further conversion of these ecosystems to cropland, grazing land, plantations or urban settlement) in areas identified as important for biodiversity by at least three separate conservation mapping processes. This scenario assumes that current land uses (e.g., cropland or forestry) in these areas remain constant and continue to

produce food or timber.

iv) Pro-Nature Plus: Remaining natural ecosystems are protected (as defined in the Pro-Nature Scenario) in areas identified by any one of the conservation mapping processes.’

### THE LIVING FORESTS MODEL IN CONTEXT

‘The stark Millennium Ecosystem Assessment conclusion that 60% of the world’s ecosystem services are degraded has led to the development of models and strategies to put us on a different path.

Many offer complementary findings to the Living Forests, and all face the challenge of balancing a growing, high-consuming human population with the resources of a single planet. Some of the biggest decisions of the 21<sup>st</sup> century will be about finding acceptable trade-offs. Below we highlight key projections from various influential models and reports:

- The global population will surpass 9 billion by 2050
- This will require expanding food supplies by 70%
- Climate change will reduce crop yields in many countries
- After 2030 food, fibre and fuel will compete intensively for limited land and water resources
- Demand for wood and fibre products will continue to increase
- 100% renewable energy would need bioenergy from an additional 250 million ha of crops and tree plantations by 2050 plus 4.5 billion m<sup>3</sup> of wood from multiple sources
- Global warming can be kept below 2°C through strategies including reduced emissions from forestry and agriculture; the costs and investment needed are fairly low, but implementation is highly challenging
- Substantial increases from the current approximately 13% of

Forests supply ecosystem services: carbon sequestration; protection against floods, landslides, avalanches, ocean surges, and desertification; provision of clean water, medicines, crops, and fish; space for recreation and exercise; and places sacred to the world’s various faiths. 7% of total forest cover is planted, yet this could provide around two-thirds of global industrial wood production

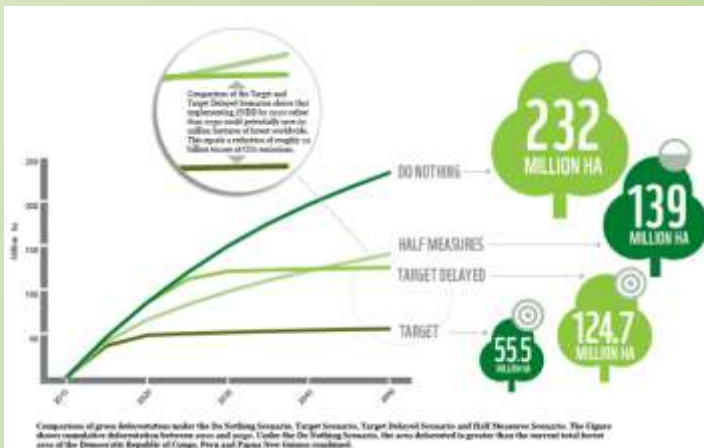


Image © WWF



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**SQUANDERED FORESTS**

According to WWF ‘the Living Forests Model suggests that between now and 2030, around 55% of deforestation in the Do Nothing Scenario can be classified as ‘unnecessary’ – i.e., deforestation resulting from failing to optimize land use in ways that the Model suggests are technically possible.

These forests are ‘squandered’ because social and political constraints mean that not all the optimized land uses proposed by the Model will be achieved. Constraints include lack of knowledge, conflict, poor governance, perverse incentives, shortage of capital and poverty. The resulting sub-optimal land uses include:

- i) Poor forest management: destructive harvesting and poor silviculture leading to declining timber yields, poor regeneration or vulnerability to disease, fire or encroachment
- ii) Inefficient livestock production: either low-stocking density causing more forests to be cleared, or high-stocking density in or near forests leading to degradation
- iii) Unregulated forest conversion: to secure land for crops or settlement, often due to absence or weak enforcement of planning laws and inequitable or insecure land tenure and user rights
- iv) Low-yield crop production: some forms of subsistence or swidden (‘slash and burn’) farming on marginal land or using less productive land to avoid reliance on imported commodities
- v) High-impact fuelwood collection: over-harvesting for domestic use or for commercial trade in charcoal
- vi) Reluctance to use idle, yet suitable land: due to armed conflicts, unresolved land disputes, insecure tenure, and dysfunction

esters changing to more sustainable and productive practices – a task of an unprecedented scale. In theory, a mix of better management, crop breeding, efficient irrigation, and agrochemicals could dramatically boost crop productivity in many regions.’

**HOW WILL ZNDD AFFECT FOOD PRICES?**

‘A ZNDD strategy will have important implications for commodity prices: halting deforestation generally results in higher food prices. However, cost implications vary greatly with particular scenarios in the Living Forests Model.

The Target Scenario alone makes little overall difference to crop prices, though the base price of meat is projected to rise by just over one-third (35%) between 2010 and 2050. However, the Target Scenario coupled with the Pro-Nature Plus Scenario, the strictest biodiversity conservation scenario, projects significant increases in both crop and livestock prices. Price differentials are also heavily influenced by changes in crop productivity, efficiency of livestock production and the proportion of animal calories in the average diet. [...]’

**HOW WILL ZNDD AFFECT THE FOREST PRODUCTS INDUSTRY?**

‘The dual imperatives of ZNDD and meeting global demand for materials and energy pose both challenges and business opportunities for the forest products sector.

Forest products are renewable and, when sourced from well-managed native forests and plantations, tend to have a lower footprint than alternatives like steel, concrete and plastic based on fossil sources. In the future, ‘second-generation’ biofuels from wood and other plant fibres could supply significant portions of the world’s energy demand, although questions remain about the sourcing of these materials. Forestry has a key role in maintaining the planet’s natural capital and responsible companies could expect to benefit. ZNDD is predicated on legality and best practice in forest management, through strong and effective national laws and policies and a range of voluntary certification schemes. Although poor forestry is still widespread, the momentum for responsible forest management is building, and a range of management tools are available and increasingly applied by good forest managers.’

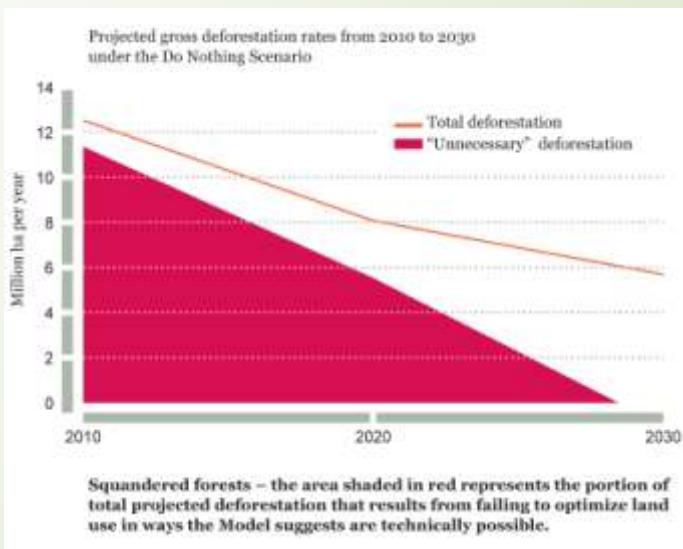


Image © WWF

tional zoning or permit allocation processes’

**Agricultural productivity**

‘The Living Forests Model suggests that maintaining ZNDD beyond 2030 will require higher productivity across large, often sub-optimal, areas of land with hundreds of millions of farmers and for-

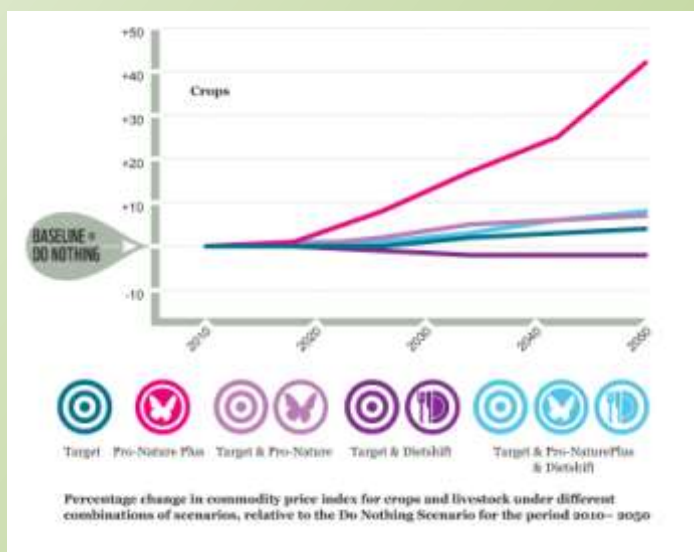


Image © WWF

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*The role of plantations*

'The Living Forests Model anticipates increasing reliance on high-yield plantations for timber, pulpwood, and biomass for energy. A new generation of plantations would need to be established at a rate of 4-6 million ha per year on land that is currently grassland, shrubland, or highly degraded forest. More research is required on the **environmental and social consequences of such plantations.**' WWF leads a New Generation Plantations Project to 'identify and promote better management practices, strong policies, and legal controls, basing sound management around carbon storage and maintenance of water, biodiversity and soils.'

*Will saving forests increase the pressures on biodiversity outside forests?*

'An all-out effort to protect forests could have the unintended side effect of shifting the impacts of development into other biomes containing important biodiversity.

The Target Scenario suggests a significant decline in grasslands and evergreen and deciduous shrub habitats, as agriculture shifts

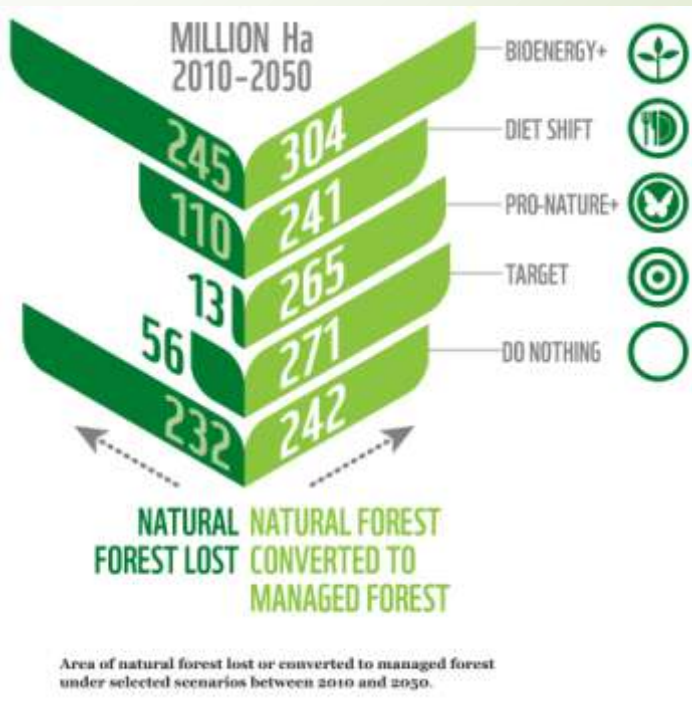


Image © WWF

away from replacing closed forests to replacing these habitats. The Pro- Nature Scenarios reduce but do not eliminate this by restricting the expansion of agriculture into important areas for conservation; however they introduce environmental costs associated with more **intensified agriculture and could push up food prices. [...]**

*Can we achieve 100% renewable energy without deforestation ?*

WWF explains 'wood-based bioenergy can be produced from forests or plantations. Where bioenergy is supplied from fast-growing plantations on degraded lands, using best practice as elaborated by the New Generation Plantations concept, it can provide climate-friendly fuel and increase carbon storage. However, the climate benefits of wood-based bioenergy depend on the current baseline of standing biomass, age distribution, growth rate and intensity of harvesting including disturbance of soil carbon. Intensive management practices, like whole tree harvesting and use of fast-growing exotic species and fertilizers, all have ecological consequences. [...]

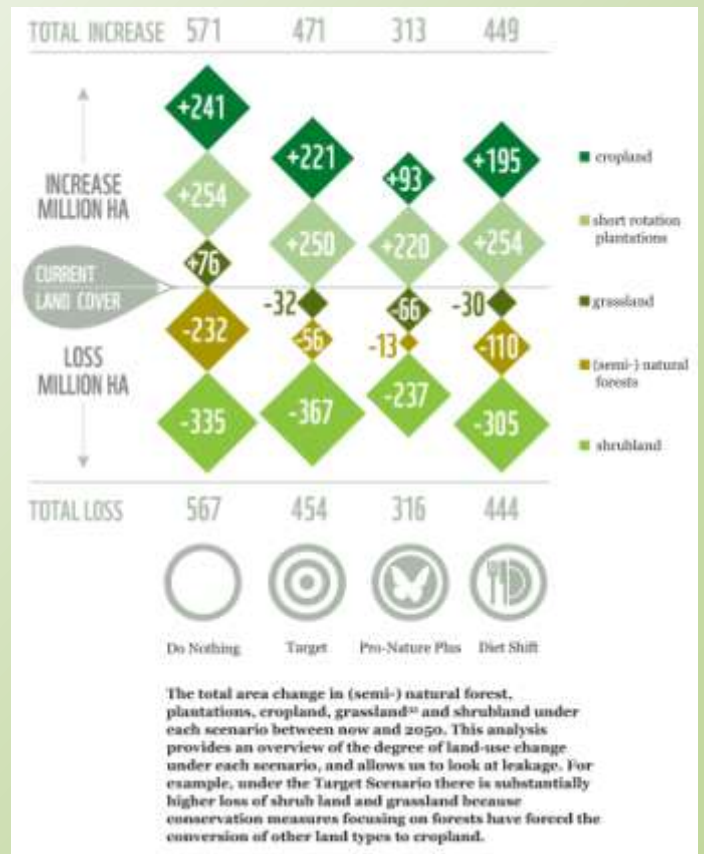


Image © WWF



ATTRACTIVE AFRICAN FORESTRY

Part of the global forest investment universe

From 2007, Southern Africa was included in **Global Forest Partners'** (historically the world's largest southern hemisphere forest investors) investment universe, including Mozambique and Tanzania, but GFP has still not succeeded in establishing an African investment. Mozambique and Tanzania are both among the top 12 timberland investment destinations worldwide, ahead of Latvia, Malaysia and the Central American countries, according to DANA in 2011. No new world-class plantations have been, and probably cannot be, established in any of the other new geographic areas for timberland investments: Central America, Europe and Asia, with the exception of Argentina and Columbia in South America. The Global Emerging Market Forest Funds (GEF, USA), Harvard (USA), ABP (the Netherlands) and the International Woodland Company (IWC, Denmark) have all invested in East Africa since 2007.

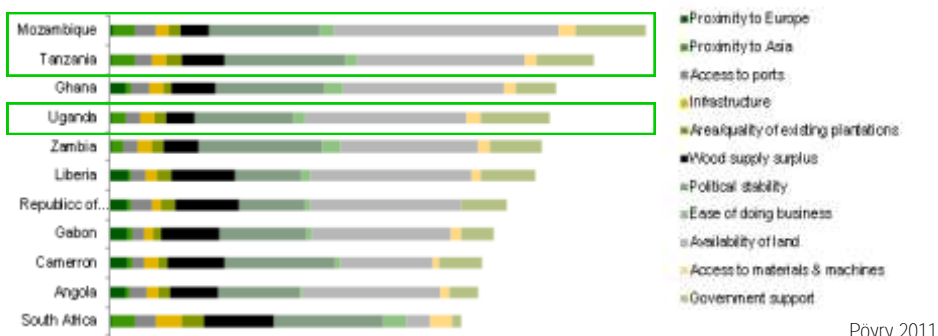
Low-cost position

East Africa has the world's lowest costs for plantation establishment, at a quarter to a half of the cost in major competing countries (USD 1,000 per ha for direct cost of land and planting). A cornerstone of the low-cost position is the long-term leases obtained on public land in return for i) employment in deprived rural areas and ii) significant commitment to community development.

The most attractive parts of Africa

Indufor, the leading forestry consultants, have already identified Mozambique, Tanzania and Uganda as the most interesting African forestry countries for forest investments in their initial Africa presentations five years ago. **GR's operations are located in three of the four most attractive countries for green-field plantation forestry investments, according to the independent study 'A Review of Industrial Forest Plantations in Africa' published by Pöyry in June 2011.** Important aspects as to

Ranking of African countries by greenfield plantation attractiveness



Pöyry 2011

why these countries are highly ranked include: availability of land, political stability, government support and proximity to Asia. GR has a unique platform to grow in the most attractive regions given its history of operating in Africa including: i) experience from negotiating with government officials and ii) understanding which species will perform at selected local sites.

Large potential in Africa

There are six main southern hemisphere forest plantation countries: Australia, Brazil, Chile, New Zealand, South Africa and Uruguay. The size of the forestry sector in Mozambique and Tanzania, each with an annual harvesting potential exceeding 20mn m<sup>3</sup>/yr within 15-20 years, is likely to match or exceed that of the other southern hemisphere plantation countries, except Brazil and Chile, and could be as large as the South African industry.

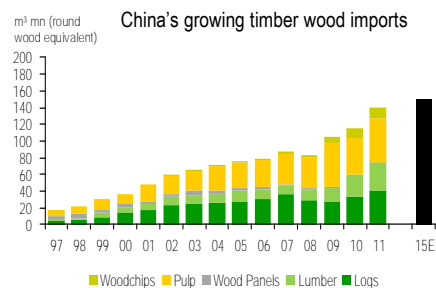
It is interesting to make a comparison with Uruguay, where a significant solid wood products industry and two world-scale pulp mills have been built. The timber industry in East Africa resembles that of Uruguay in the early 2000s: strong productivity combined with low cost of land. The all-in cost of establishing eucalyptus plantations in East Africa is roughly 25–33% of that in Uruguay or southern Brazil. Mozambique and Tanzania each have the potential to establish a larger forested area than Uruguay, and are closer to major growth markets.

Great Asian fibre shortage

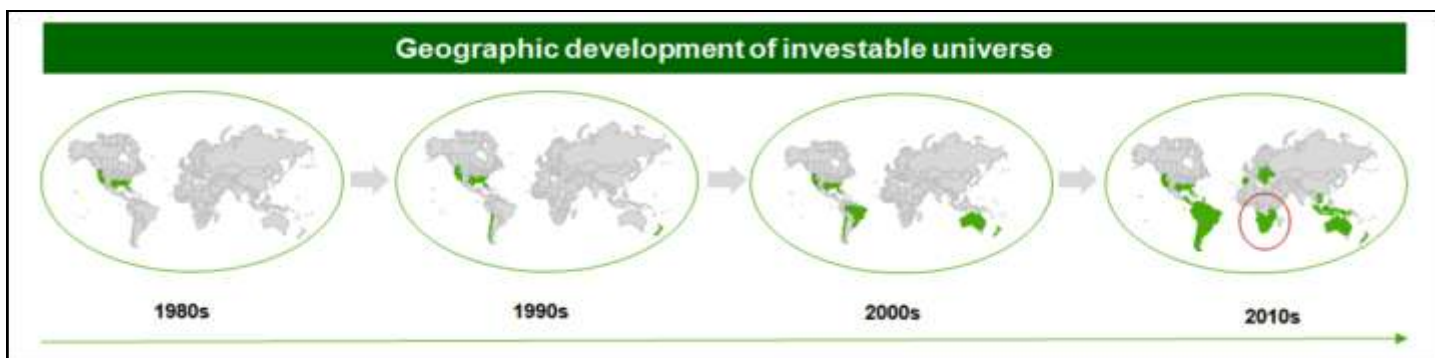
China's fibre supply deficit was more than 130mn m<sup>3</sup> roundwood equivalent in 2011, projected to reach 150mn m<sup>3</sup> by 2015 and 200mn m<sup>3</sup> by 2020. India's timber supply deficit was just over 9mn m<sup>3</sup> in 2009 and projected to reach 15mn m<sup>3</sup> by 2015, the majority of which is expected to be obtained from off-shore plantations. Given India's per-capita consumption of paper and paperboard is less than one-sixth of China's, the growth rate in India's fibre needs is expected to exceed that of China over the next 10 years. East and Southern Africa are ideally located to serve the Asian markets.

Close to Asia

East Africa is only 2,900 km away from India, or half the distances that the major timber producing regions of Latin America and Oceania have to ship their products to reach the major markets. China is 6,500 km away, about the same as from Oceania, and about half the distance from Uruguay/Brazil to China.

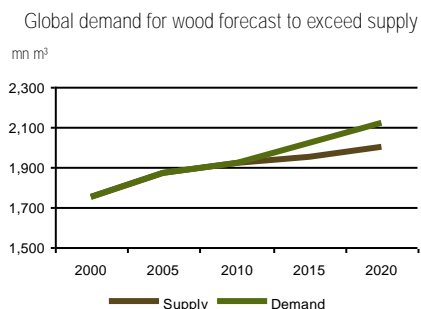


Source: RISI



ATTRACTIVE DEMAND/SUPPLY BALANCE

Global industrial wood deficit of 115 million m<sup>3</sup> per annum in 2020 expected, according to Pöyry, the global leading forest consultancy. Global wood demand is forecast to increase by 44% from 2007 to 2030 driven by population growth and demand from bio-energy. The current supply forecast will not meet global wood demand. Real prices are therefore likely to increase.



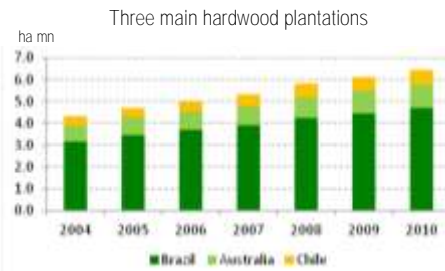
Source: Pöyry

The northern hemisphere currently accounts for 80-85% of total global softwood sawn timber supply. Among these producers, growth rates in the forests are slow and the cost position high. This creates a world market price floor that ensures more cost efficient Southern hemisphere producers generates superior margins.

Escalating costs of eucalyptus planting

Brazil, Australia, Chile and Uruguay were the last world's largest plantation countries during the last decade. Fast rising land prices, appreciating currencies and relative high industry specific inflation has lead to a rapidly increase in the wood costs from these countries. Brazil has been the world's largest forest plantation nation by a wide margin for the last two decades, but planting has fallen since 2008 as large corporates focus on repairing their balance sheets after huge currency losses.

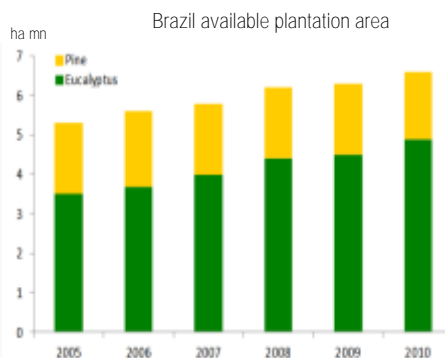
New plantings in Australia came to a halt in 2011 following the bankruptcies of the tax driven MIS schemes, which had fuelled a decade of the world's most expensive plantation establishment in Australia. Chile remains the third largest planting country, but there are limited areas available for new planting in Chile and there has been a sharp drop in the rate of planting since 2005. Uruguay has seen continued planting, but a peak as reached in 2007 and the financial crises was one reason for bringing about the lowest level of planting for decades, despite of large new pulp mill investments and record pulp prices.



Source: ABRAF, ABARE, INFOR

Stagnant supply of pine

While there is good growth in Southern Hemisphere eucalyptus plantations, there has been little or no additions to new pine plantations. There is no addition to the pine plantations in Brazil, the world's largest fast growing forest plantation country, because alternative crops yield higher return. Chile and New Zealand are the two countries that have seen a significant increase in the annual allowable cut for pine during the last decade and a result of large additions to their pine plantations two decades ago. However, the increase in harvesting, has now come to an end, and no resurgence in planting is in sight.



Source: ABRAF, CONSUFOR

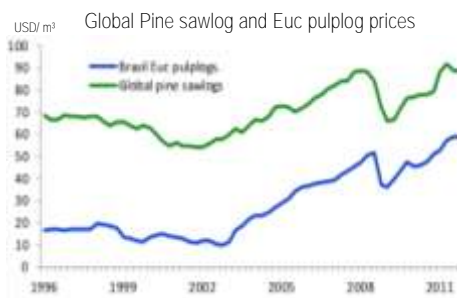
5% pa real growth in wood trade

The global trade in forest products have grown at 8.4% pa during the last 40 years in USD terms, according to FAOSTAT, or more than 5% pa in real terms. Canada and Northern Europe held 60% of the market 40 years ago, a market share that has fallen to about 30% at the moment. Instead, Other Europe, Southern Hemisphere and China have taken market share and exports from these regions are estimated to have grown more than 10% pa in real terms. Africa has seen a falling share of global forest products trade as the relative importance of the natural forest log trade has fallen. However, based on plantation forestry, Africa can become a major forest products exporter.

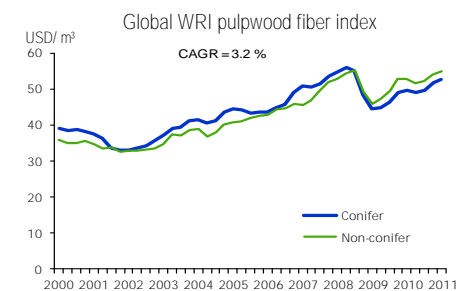
Real price increases

After more or less flat real prices in the

1980s and 1990s, global timber prices have experienced 3.2% pa growth since 2000, or 1% pa real increase. Emerging markets prices have increased faster than prices in developed markets. Prices in China and the Southern Hemisphere locations, where there has been a massive expansion of a world leading processing industry and appreciating currencies, have seen the fastest increases. Emerging market prices are now often higher than prices in North America, driven by more modern and efficient processing facilities in emerging markets and closeness to more attractive end markets. Global sawn timber prices have rebounded sharply from trough 2009 levels, despite continued US housing recession, but there has been some weakness in Asia in 2012. East African prices have also risen fast, and are catching up with global prices. Green Resources expects timber prices in Africa to approach global timber prices by 2020.



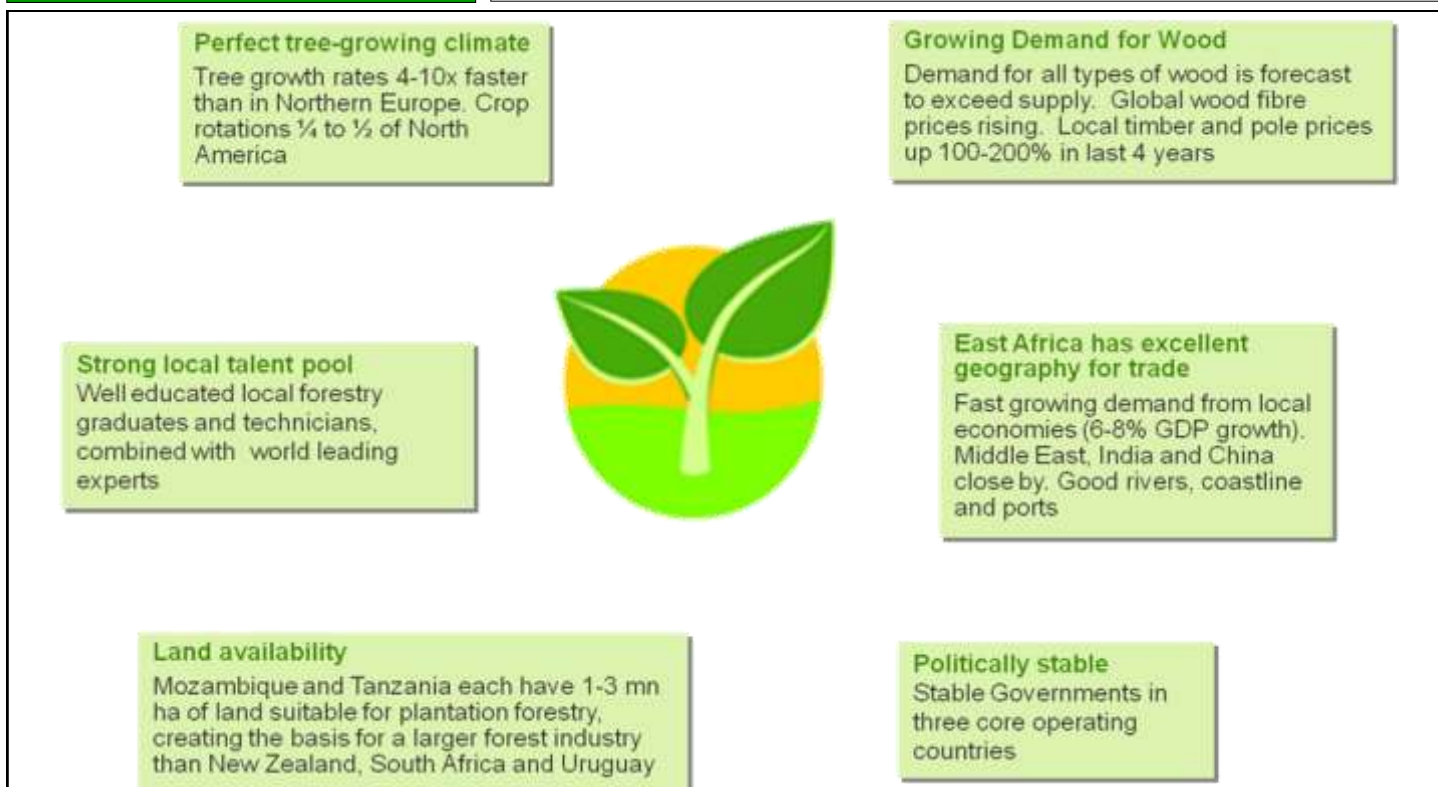
Source: WRI



Source: Wood Resources International, Green Resources  
Note: Converted from USD/ODMT to USD/m<sup>3</sup> at a rate of 2.0x



<p>Strong market fundamentals and regional growth</p>	<ul style="list-style-type: none"> <li>• Increasing world wood demand, driven by fibre deficit in Asia and bio-energy growth, envisaged to pull East Africa into the world trade</li> <li>• Wood prices in East Africa expected to grow strongly and reach world price before 2020</li> <li>• 5.8% p/a growth in local economies – among the fastest-growing economies in the world</li> </ul>
<p>Unique portfolio of land in key forestation region</p>	<ul style="list-style-type: none"> <li>• Strategic position as the largest private owner of forest land in East Africa, in several of the most attractive forestation regions</li> <li>• Low planting costs, with established costs 50-75% lower than main competing countries, natural growth conditions second only to the best locations in Brazil</li> </ul>
<p>Highly experienced organisation with momentum throughout the value chain</p>	<ul style="list-style-type: none"> <li>• Executed by a large organisation of strong local managers and highly qualified technicians</li> <li>• Strong local relationships built on long heritage and strong community involvement</li> <li>• Unparalleled track record in securing attractive land positions</li> </ul>
<p>Proximity to global end-markets supported by regional industrial operations</p>	<ul style="list-style-type: none"> <li>• <b>Short distance to the world's fastest-growing</b> markets in Asia</li> <li>• Industrial operations (solid wood products, bio-energy) enhance the value of the forest and is an attractive business in itself supplying a fast-growing local market</li> </ul>
<p>Uniquely positioned to benefit from carbon offsets</p>	<ul style="list-style-type: none"> <li>• Highly attractive offset projects generating significant cash flow while at the same time securing local employment and attractive climate effects</li> <li>• Current plantation projects expected to generate carbon offsets of 90 million tons of CO<sub>2</sub> with revenue potential of approximately USD 800 mn</li> </ul>
<p>Highly attractive future return profile</p>	<ul style="list-style-type: none"> <li>• Strong envisaged cash generation from harvesting at attractive return on capital</li> <li>• Risk profile ameliorated as the forest matures yielding high returns well above the cost of capital</li> <li>• Further upside through significant land value appreciation seen in the leading forest plantation countries.</li> </ul>



REFORESTATION IS KEY TO FIGHTING DEFORESTATION IN DEVELOPING COUNTRIES

Deforestation accounts for 15-20% of all greenhouse gas emissions in the world, according to UNFCCC, more than the transport sector. Deforestation has received significant attention in recent years, though with modest results. It is difficult to deal with deforestation, but it is crucially important because of its significant contribution to climate change and negative effects on the environment.

According to FAO, 420,000 ha of natural forest in Tanzania are lost annually. TaT-EDO, the Tanzanian renewable energy NGO, claims that charcoal production accounts for the loss of more than 100,000 ha forest every year. The importance of sustainable forest products to people in Tanzania cannot be overstated. Tanzania's National Strategy for Growth and Reduction of Poverty states that 90% of the population depends on biomass energy for cooking, almost entirely from native forests. And forests provide 75% of all construction material in the country, underscoring the importance of wood to the national economy.

While the main cause of deforestation in Asia and Latin America is agriculture, in Africa charcoal burning may be as significant as agriculture. Thus, it is particularly important to create new and alternative supplies of sustainable timber, fuel wood and charcoal in Africa that ensure precious native forest can be protected. There are many ways to reduce the pressure on natural forests, but we believe large-scale tree plantations are the most promising.

Moving agricultural practises away from slashing and burning native forests would probably have the largest effect on slowing deforestation in Africa and must be part of any deforestation strategy. However, this is very difficult to accomplish. More efficient use of fuelwood, through better cooking stoves or gas stoves in the cities, also represents interesting opportunities. A number of non-wood forest products receive a lot of attention as an alternative source of income for people living in and around threatened forests. But the economic value of non-wood forest products - bushmeat, gum, honey, medicinal plants, nuts, oils - is limited. Ecotourism is exciting, but has still created little employment in the developing world.

Sustainable harvesting and management of natural forest is another promising approach to creating alternative livelihoods from the forest. However, even done correctly, we think it is difficult to make sustainably-managed FSC-certified natural forest profitable at today's low wood prices.

Millions of Africans depend on charcoal production. The people engaged in this business, and those who rely on charcoal for cooking food, are among the poorest. Thus, if new forest is not established that can replace the harvest from natural forest, the poorest in Africa will suffer fuel and building material shortages, and become more impoverished.

For all of these reasons, there is a need for large-scale plantations to provide the wood and charcoal to supply Africa's subsistence

demand requirements, and to supply the charcoal market if efforts to halt deforestation of the native forest are to be successful. Establishing new plantations in areas that have suffered from deforestation has huge benefits at the inception of projects because it creates substantial employment opportunities in rural areas and will eventually provide a sustainable wood supply, thereby reducing the pressure to cut natural forests. Community forests, farmers and other small growers can play an important part in this effort. But the advantage with industrial-scale plantations is that they can make a major contribution to increased forest cover more quickly than other forms of forestry activities.

Large-scale reforestation projects will have to play a key role if the main aim is to create more biomass for future use. Green Resources, which has planted 14,000 ha of tree plantations in the last decade, estimates that less than 100,000 ha of new forests have been established by private companies in East and Southern Africa in this period, and about 200,000 ha in all of Africa. This is a drop in the ocean. It represents less than half Tanzania's annual forest loss. For all practical purposes, there is very little reforestation or afforestation in Africa.

Africa could restore forest cover to millions of hectares of heavily degraded land where forest was previously found, and which has been left largely redundant. Governments stopped expanding forest plantations two decades ago as international funding for forestry projects dried up.



Pine, Bukaleba, Uganda



Eucalyptus seedlings



Eucalyptus, Uchindile, Tanzania



CONTINUED STRONG GROWTH

*African Lions*

Sub-Saharan Africa is the world's second fastest growing region; Mozambique, Uganda and Tanzania are among the very fastest growing countries in Africa. Large gas and oil finds in all three countries might push annual growth rates above 10% per annum over the coming decade. During the first half of 2012, the economies in Tanzania and Uganda have cooled somewhat, as Government cash has been tight following stricter fiscal and monetary policies after recent elections.

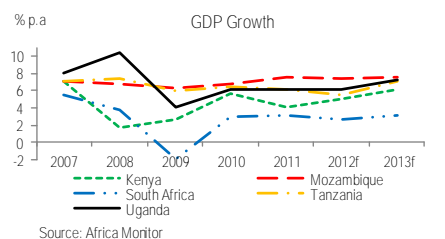
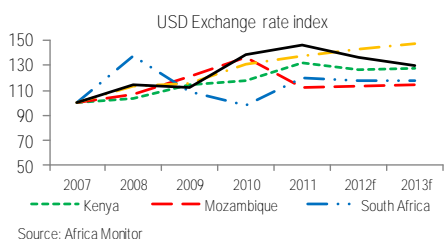
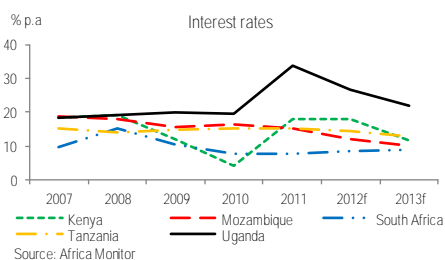
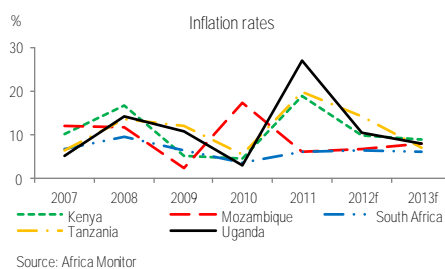
Historically, the construction industry has exhibited faster growth rates than the GDP. The construction industry is the main market for solid wood products, which is the main output of Green Resources' industrial operations. Population growth remains strong and there is a rapidly expanding middle class. Grant-driven infrastructure investments drive electrification and transmission poles, which is another key driver in GR's strategy. Increased GDP growth rates over the coming years will particularly benefit the construction industry.

With its large endowment of minerals, fossil fuels, water and roughly 60% of the world's arable, non-cultivated land, Africa will directly benefit from the continuous high economic growth in Asia. Large gas fields have been found in Mozambique and Tanzania during the last year, while oil has been found in Uganda. In Mozambique, ENI will spend USD 50 bn to enable large LNG exports starting in 2018. In Tanzania, Statoil has made major gas finds which will be developed along a similar time scale.

Collection of taxes is growing rapidly in all countries, which have led to infrastructural improvements in all three countries, including new bridges, better roads and more reliable electricity. Tax revenues are increasing largely due to export-driven growth. For Mozambique and Tanzania, each has seen exports increasing by 20%+ per year for several years led by Tanzanian gold production and Mozambique's coal exports. Uganda has seen a major new hydro-power project sharply increasing the power generating capacity during the last year. This comes before the increases in oil and gas export revenue expected to start in the next 3-5 years.

There was significant inflation pressure during 2011, but inflation rates have fallen, partly as a result of tighter monetary policies. Most currencies continue a slow rate of depreciation against the US dollar and European currencies, but Mozambique experienced a sharp strengthening of the currency, and a reversal

Country data 2012				
Country	Pop (mn)	GDP per capita	Area (km <sup>2</sup> )	Density (ppl/km <sup>2</sup> )
Kenya	42	827	582,650	71
Mozambique	24	363	801,590	30
South Africa	51	7260	945,087	53
Tanzania	46	532	752,614	61
Uganda	36	526	241,038	148



to the 'historic' exchange rate levels.

*Drivers of strong economic growth*

The electrification rate in Sub-Saharan Africa is only 26% and it is as low as 12% in East Africa. This creates significant environmental and health challenges and prevents economic growth, thus making increased electrification a high priority for international benefactors and development banks. Large amounts of donor funding are going towards electrification, in particular transmission lines, and demand for electricity poles is set to increase.

Eighty per cent of the African population rely on biomass – mainly fuelwood - for energy (and up to two-thirds of household income is spent on energy). As the population increases, so does the demand for this wood, but it also increases the deforestation of native forests. As urbanisation increases there is a shift in demand from fuelwood to charcoal. Thus, demand for charcoal is likely to increase even faster than the population growth.

Political and macro-economic stability and microeconomic reforms have created robust domestic African economies. The Tanzanian Forest Service was established in 2011, and the Tanzanian electricity regulator, EWURA, has become well established and functional over the last couple of years, both important microeconomic reforms for Green Resources.

In addition, Africa has experienced a 'productivity revolution', and has seen the emergence of the urban consumer. The Continent is almost as urbanized as China and more so than India. There are as many cities with populations above 1 million people (52), as Europe.

Foreign direct investments in Africa have grown from USD 9 bn in 2000 to USD 84 bn in 2010. E&Y forecasts FDI to increase to USD 150 bn by 2015.

STABLE POLITICAL DEVELOPMENT

Mozambique: Peace agreement in 1992 and first multi-party elections held in 1994. Frelimo won 191 of 250 seats in October 2009. President Guebuza was re-elected with 75% of the votes in 2009, up from 64% in 2004. The next election is in 2014 when a new president will be elected (max two terms). Mozambique is #120 on Transparency International (TI)'s corruption index. It improved 14 places in 2010, but was stagnant in 2011.

Tanzania: Arguably Africa's most stable country since independence in 1961. The first multi-party elections were held in 1995. CCM holds 188 of 239 constituency seats in the

Parliament. In November 2010, President Kikwete was re-elected with 61% of the votes, down from 81% in 2005. Next election is in 2015 when a new president will be elected (max two terms). Tanzania is #100 on TI's corruption index. It improved 10 places on the TI index in 2010 and 16 places in 2011, with only 6 other African countries ahead.

Uganda: NRM holds 263 of 375 seats following the February 2011 election. President Museveni, who has been in office since 1986, won 68% of the votes in 2011. The next election is in 2016. Uganda is number 143 in TI's corruption index for 2011.

LARGE GAS AND OIL FINDS IN 2012

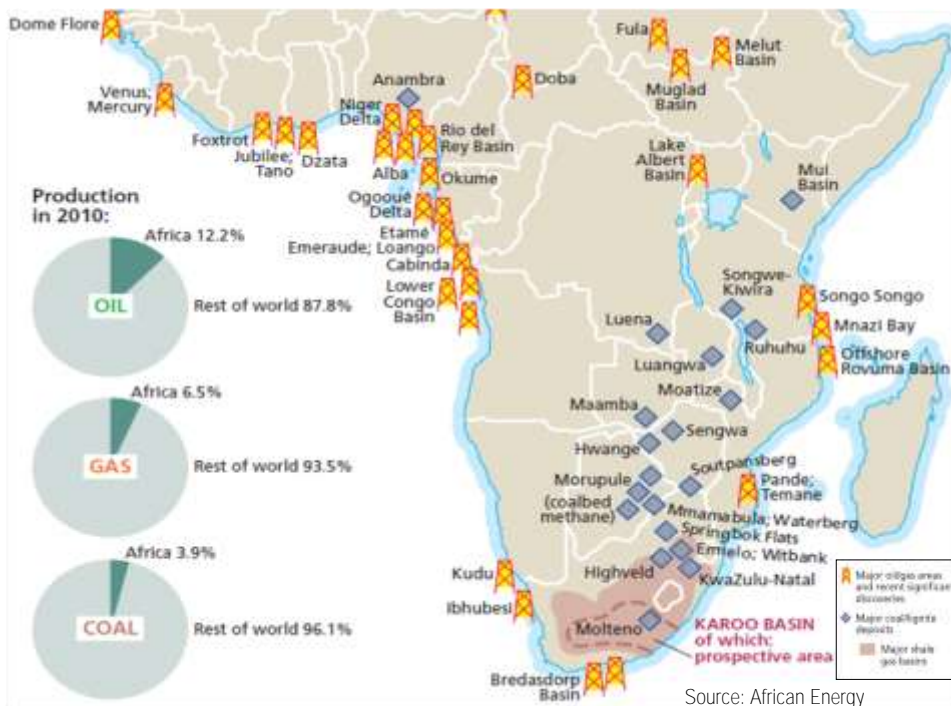
Significant gas finds have been made outside Mozambique and Tanzania during the last two years, ensuring that both countries could become significant exporters of gas six to eight years ahead. Oil has also been found in Kenya and Uganda, potentially making these countries self-sufficient in a product that represents the largest import to the two countries.

The Norwegian oil company Statoil and British Gas are the leading explorers in Tanzania. Statoil holds a 65% stake and ExxonMobile a 35% stake in the two discoveries in the Zafarana and Lavani wells, with combined identified reserves of 9 trillion cubic feet (Tcf), with drilling only starting in the early 2012. British Gas is the second major operator in Tanzania, and found gas in its first well estimated at 3 Tcf. Both operators are continuing a large exploration programme.

Both ENI and Andarko Petroleum have found large amounts of gas in the Rovuma Basin outside Northern Mozambique. ENI's discovery at Mamba North in August was the largest in its history and brought the total estimated potential of the field to 70 Tcf. Andarko's discoveries are estimated to hold 17-30 Tcf natural gas.

Positive effect of gas production

Tanzania has had a small gas production operation for about ten years, with proven reserves of 7.5-10 Tcf, which has had a signifi-



cant positive effect on the country's industries.

Dar es Salaam benefits from important gas-based power production, which accounts for 35% of the country's total electricity supply. About a dozen industrial plants use gas for process heat and, assisted by the access to efficient process heat, regional industrial leaders have emerged, some of which are key customers of Green Resources.

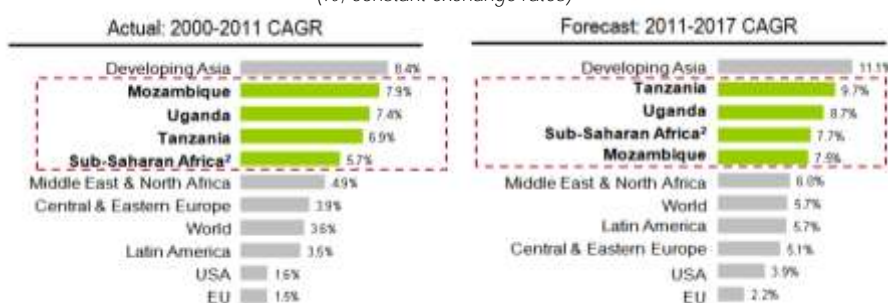
Implication for the wood industry

The oil and gas finds have important implications for the forest industries. Most importantly, the already high economic growth rates are likely to accelerate further. While investment in imported capital goods will take a high percentage of the increase, the construction sector would also grow rapidly, leading to further growth in the market for solid wood products.

The gas is likely to trigger a large expansion of the electricity generating capacity. Tanzania currently has a chronic shortage of electricity and the national utility is suffering from having to pay for expensive emergency power supplies. This is likely to be replaced by abundant

sources of gas-generated electricity, making Tanzania a regional exporter of power. The mechanical wood processing industries should get access to plenty of low cost electricity. With only 12% of the regional population having access to electricity, this is likely to trigger an extensive drive for electrification and demand for electricity poles. On the other hand, long-term electricity prices would be lower than previously expected, making it less attractive to establish biomass-based electricity production.

Compound Annual Real GDP Growth (% , constant exchange rates)





## Consolidated income statement

	Notes	NOK millions					USD millions				
		1H P* 2012	2011	2010	2009	2008	1H P* 2012	2011	2010	2009	2008
Sales		32	66	69	51	54	5	12	11	8	10
Gains from biological asset value	9	47	14	148	103	84	8	2	25	16	15
Gains from carbon offset	10	0	0	3			0	0	0		
Other operating income		3	7	4	1	2	0	1	1	0	0
<b>Total revenues</b>		<b>81</b>	<b>87</b>	<b>224</b>	<b>155</b>	<b>140</b>	<b>14</b>	<b>16</b>	<b>37</b>	<b>25</b>	<b>25</b>
Cost of sales	3,4	-25	-50	-53	-51	-38	-4	-9	-9	-8	-7
Industrial admin and opex	4	-5	-12	-13	-12		-1	-2	-2	-2	
Plantation admin and opex	4	-21	-42	-33	-25	-36	-4	-8	-5	-4	-6
<b>EBITDA</b>		<b>29</b>	<b>-17</b>	<b>125</b>	<b>66</b>	<b>65</b>	<b>5</b>	<b>-3</b>	<b>21</b>	<b>11</b>	<b>12</b>
Depreciation	7	-4	-9	-11	-11	-7	-1	-2	-2	-2	-1
<b>Operating profit</b>	<b>3</b>	<b>25</b>	<b>-26</b>	<b>114</b>	<b>56</b>	<b>58</b>	<b>4</b>	<b>-5</b>	<b>19</b>	<b>9</b>	<b>10</b>
Finance costs	5	-2	-12	-17	-31	-4	0	-2	-3	-5	-1
<b>Profit before tax</b>		<b>23</b>	<b>-38</b>	<b>96</b>	<b>25</b>	<b>53</b>	<b>4</b>	<b>-7</b>	<b>16</b>	<b>4</b>	<b>9</b>
Tax (charge) / credit	6	-15	-6	-42	-22	-21	-2	-1	-7	-3	-4
<b>Net profit</b>		<b>8</b>	<b>-44</b>	<b>54</b>	<b>3</b>	<b>33</b>	<b>1</b>	<b>-8</b>	<b>9</b>	<b>0</b>	<b>6</b>

## Consolidated statement of comprehensive income

	Notes	NOK millions					USD millions				
		1H P* 2012	2011	2010	2009	2008	1H P* 2012	2011	2010	2009	2008
Net profit		8	-44	54	3	33	1	-8	9	1	6
Currency translation differences		0	0	0	0	0	0	0	0	0	0
Other adjustments					-1						
<b>Total comprehensive income for the year</b>		<b>8</b>	<b>-44</b>	<b>54</b>	<b>2</b>	<b>32</b>	<b>1</b>	<b>-8</b>	<b>9</b>	<b>1</b>	<b>5</b>

\* Provisional figures based on management accounts, non-audited and not board approved.

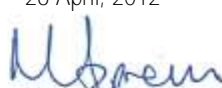
## Consolidated balance sheet

	Notes	NOK millions					USD millions				
		1H P* 2012	2011	2010	2009	2008	1H P* 2012	2011	2010	2009	2008
<b>Non-current assets</b>											
Property, plant and equipment	7	135	127	109	63	62	22	21	18	11	9
Land acquisition cost	8	48	47	34			8	8	6		
Biological assets	9	608	548	515	385	301	101	91	87	67	43
Carbon offset stock	10	2	2	3			0	0	0		
Other investments	11	6	4	2	24	10	1	1	0	4	1
Loans to group companies		0	0	0	0	0	0	-	-	-	-
		799	729	662	472	374	133	122	112	82	53
<b>Current assets</b>											
Inventories	12	25	24	19	13	17	4	4	3	2	2
Receivables and prepayments	13	20	17	28	24	30	3	3	5	4	4
Cash and cash equivalents	19	21	13	51	34	87	3	2	8.718	6	12
		65	54	99	71	134	11	9	17	12	19
<b>Total assets</b>		<b>864</b>	<b>783</b>	<b>761</b>	<b>543</b>	<b>508</b>	<b>144</b>	<b>131</b>	<b>129</b>	<b>94</b>	<b>73</b>
<b>Capital employed</b>											
Share capital	14	208	177	171	165	141	35	30	29	29	20
Share premium		386	319	256	207	84	64	53	43	36	12
Advance towards share capital	14	0	41	63		0	0	7	11	0	0
Translation reserve		-87	-79	-65	-23	25	-15	-13	-11	-4	4
Revaluation reserve		10	10	10	9	10	2	2	2	2	1
Other equity		24	30	27	29	32	4	5	5	5	5
Retained earnings		68	60	104	50	48	11	10	18	9	7
<b>Shareholders' funds</b>		<b>608</b>	<b>558</b>	<b>565</b>	<b>438</b>	<b>340</b>	<b>101</b>	<b>93</b>	<b>96</b>	<b>76</b>	<b>49</b>
<b>Non current liabilities</b>											
Borrowings	15	96	61	66	20	69	16	10	11	4	10
Deferred tax	16	114	99	97	67	55	19	17	16	12	8
		210	160	162	87	124	35	27	28	15	18
<b>Current liabilities</b>											
Trade and other payables	17	25	32	30	18	43	4	5	5	3	6
Short term loans	15	14	26				2	4			
Bank overdraft	19	7	8	4	0	1	1	1	1	0	0
		46	65	33	18	44	8	11	6	3	6
<b>Total liabilities</b>		<b>256</b>	<b>226</b>	<b>196</b>	<b>105</b>	<b>167</b>	<b>43</b>	<b>38</b>	<b>33</b>	<b>18</b>	<b>24</b>
<b>Total equity and liabilities</b>		<b>864</b>	<b>783</b>	<b>761</b>	<b>543</b>	<b>508</b>	<b>144</b>	<b>131</b>	<b>129</b>	<b>94</b>	<b>73</b>

\* Provisional figures based on management accounts, non-audited and not board approved. The Board signatures refers to the 2011 audited accounts.

26 April, 2012

  
Juha Niemela  
Chairman

  
Mads Asprem  
CEO

  
Liane Luke

  
Age Korsvold

  
Kristoffer Olsen

  
Kristen Kleiman

  
Odd Ivar Løvhaugen

  
Elvin Mutuma Merangu

  
Håvard Nesheim



## Consolidated cash flow statement

	Notes	NOK millions					USD millions				
		1H P* 2012	2011	2010	2009	2008	1H P* 2012	2011	2010	2009	2008
Profit before taxation		23	-38	97	25	54	4	-7	16	4	9
Adjustment for non-cash income items											
Depreciation	7	4	9	11	11	7	1	2	2	2	1
Disposal adjustment depreciation	7			-9		0	0	0	-1	0	0
Gains arising on changes in fair value of biological assets	9	-47	-14	-148	-103	-84	-8	-2	-25	-16	-15
Gains arising on changes in fair value of carbon stock	10	0		-3			0	0	0		
Net cash after adjustments		-20	-42	-52	-67	-23	-3	-7	-9	-11	-4
Change in working capital items											
Change in inventories		0	-5	-6	3	-3	0	-1	-1	1	-1
Change in receivables and prepayments		-2	12	-5	6	-8	0	2	-1	1	-1
Change in payables and accrued expenses		-6	6	16	-25	5	-1	1	3	-4	1
Net change in working capital		-9	12	5	-16	-6	-2	2	1	-3	-1
Net cash used by operating activities		-29	-30	-47	-83	-29	-5	-5	-8	-13	-5
Investment activities											
Purchase of property, plant and equipment	7	-11	-33	-77	-27	-20	-2	-6	-13	-4	-4
Land acquisition investments	8	0	-13	-18			0	-2	-3		
Proceed from disposal	7		1	38	1	3	0	0	6	0	1
Purchase of biological assets	9	-13	-34	-44	-43	-20	-2	-6	-7	-7	-3
Other investments/adjustments		-2	-2	6	-14	-9	0	0	1	-2	-2
Loan to subsidiaries			0	0	0	0	0	0	0	0	0
Net cash outflow from investing activities		-27	-81	-97	-82	-45	-4	-14	-16	-13	-8
Financing activities											
New loans		30	61	84	27	68	5	11	14	4	12
Loan repayments, cash		-2	0	-10	-5	-6	0	0	-2	-1	-1
Issue of shares, cash		34	6	85	76	92	6	1	14	12	16
Cash inflow from financing activities		62	67	159	98	154	10	12	26	16	27
Increase in cash and cash equivalents		7	-44	16	-67	80	1	-7	3	-11	14
Cash and cash equivalents at beginning of year		5	48	34	86	16	1	8	6	13	2
Translation adjustments		1	2	-2	14	-9	0	1	0	4	-5
Cash and cash equivalents at end of year	19	13	5	48	34	86	2	1	8	6	13

\* Provisional figures based on management accounts, non-audited and not board approved.

Green Resources AS is a Limited Company established on 26 August, 1995 and registered on 23 November, 1995 in Norway with organisation number 975 879 968.

### Share capital and registration

The Company has issued 41,646,141 freely transferable shares of NOK 5 face value each, all of which are fully paid and issued according to Norwegian law. The shares are registered under VPS, the Norwegian electronic share register, under the International Securities Identification Number (ISIN) NO 000 3100208. The registrar for the shares is DnB NOR ASA.

### Authorisation to issue shares

The 2011 AGM and EGM gave the Board the right to issue up to 3,538,430 new shares with a nominal value of NOK 5 per share up until the next AGM.

### Shareholder policy

**Tree planting is a long term undertaking and the Company's strategy** has been to provide maximum long-term return for the shareholders. The Company has not encouraged liquidity in its shares. However, it is a long-term objective to become a publicly listed company.

### Green Resources' shareholders

31-Aug-12	Beneficial owner	Shares	%
	Phaunos Timber Fund	11,127,645	27%
	NewAfrica	8,007,121	19%
	Steinerud	3,343,885	8%
	Macama	2,755,146	7%
	SBL Direct Investments Ltd	2,653,485	6%
	Verbena	2,224,158	5%
	TRG	2,090,935	5%
	Rybo	1,433,180	3%
	Wilhelmsen	1,172,378	3%
	Høgseth Holding	850,000	2%
	Jotunfjell etc,	790,590	2%
	Gluteus Medius AS	700,684	2%
	Allinvest Unternehmensbet.	633,569	2%
	Juha Niemela	565,971	1%
	Mads Asprem	326,027	1%
	10 owners 100,000 -299,999	1,775,821	4%
	23 owners 20,000-99,999	1,000,122	2%
	30 owners < 20,000	195,424	0%
	<b>Total</b>	<b>41,646,141</b>	<b>100%</b>

### Green Resources share issues 2007 - 2012

Type of issue	Issue date	Proceeds NOK mn	NOK/Share	No of shares
<i>Shares as at 1/1/2007</i>				22,375,239
Employee shares	Feb-07	5.1	11	449,400
Market issue	Jun-07	70	30	2,333,340
Market issue	Dec-08	89.3	30	2,978,198
Employee issue	Apr-09	1.5	30	49,000
Market issue	Oct-10	30	30	1,000,000
Market issue	Nov-10	45	30	1,500,000
Market issue	Oct-09	79	33	2,392,807
Employee shares	Oct-10	2.1	33	64,328
Market issue	Oct-10	122.3	54	2,264,987
Employee shares	Dec-11	0.8	16	50,000
Rights issue	Dec 2011/ Feb 2012	97	16	6,063,818
Employee shares	Jul-12	2	16	125,024
<i>Shares as at 31/8/2012</i>		544.1	28.23	41,646,141

### Dividend policy

Green Resources has not yet paid a dividend. It has significant investment opportunities, which are believed to generate high returns and the Company does not expect to pay a dividend for a further five years.

### General meeting of the shareholders

The Annual General Meeting (AGM) is held annually before the end of June. **The General Meeting of Shareholders' is the Company's** supreme decision making body. The following items, among others, are decided by the AGM:

- i) amendments to the Articles of Association
- ii) elections of the Board of Directors
- iii) issue of new shares and acquisitions of own shares
- iv) adoption of the Accounts
- v) payment of dividend
- vi) **election of the Company's auditors and their fees**

The right to attend a General Meeting of the Shareholders shall apply to any shareholder who is registered as a shareholder of the Company at the day of the AGM.

### Board Committees

Green Resources has three Board Committees. The Audit Committee consists of Liane Luke, Kristoffer Olsen and Odd Ivar Løvhaugen and Hårvard Nesheim, the Remuneration Committee consists of Juha Niemela, Age Korsvold and Liane Luke and the Nomination Committee consists of Liane Luke and Mads Asprem.

### Company signature and Prokura

The Company is signed by the Chairman and one Director. Prokura is held by the Chairman.

*Company By-laws*

1. The name of the Company is Green Resources AS.
2. **The Company's business address is in Baerum.**
3. The purpose of the Company is to invest in financial and productive assets and to carry out production and consulting activities.
4. **The Company's share capital is NOK 208,230,705 divided in 41,641,141 freely transferable shares of NOK 5 each.**
5. The board of directors is to consist of from 5 to 10 members. The board is elected for one year at time. The board members may be reelected. Any shareholder representing at least 20% of the shares can appoint a Director to the Board. **At least half the members of the Board must be elected by the shareholders' meeting.** There may be appointed or elected one personal substitute for a Director of the Board. In case of a tie during votes among the members of the board of directors, the chairman is to have a double vote. The board of directors is to meet at least once per quarter. A board meeting is to be summoned with a minimum of 5 days written notice.
6. The Chairman of the Board and one member of the board jointly will sign for the Company. The Board may issue a limited power to sign, 'prokura'.
7. **The Company's shares are to be registered in VPS** (Verdipapirsentralen).
8. The Ordinary General Meeting is to be held each year within the end of the month of June. Summons is to be sent in writing with **two weeks' notice. The summons is to specify the matters which are to be dealt with.** The General Meeting is to be chaired by the Chairman of the Board, unless another leader of the meeting is elected. At the General Meeting each share has one vote. Shareholders may be represented by written Power of Attorney.
9. At the Ordinary General Meeting the following matters shall be dealt with:
  - i) The Annual Report of the Board of Directors.
  - ii) Adoption of Profit and Loss Account and Balance Sheet.
  - iii) Decision concerning fees for Members of the Board and the Auditor.
  - iv) Use of profits or covering of deficits according to the Balance Sheet and payment of dividends.
  - v) Election of Board and Auditor if applicable
  - vi) Other matters, which according to law or by-laws are to be dealt with by the General Meeting.
10. An Extraordinary General Meeting is to be held when the Board finds this necessary or one shareholder, who represents at least 10% of the share capital, demands it. Summons of an Extraordinary General Meeting must be done with at least eight **days' notice. At an Extraordinary General Meeting only the matters specified in the Agenda included in the summons may be dealt with.**
11. **Green Resources AS' Board of Directors has the right to raise debt** from development finance institutions, working capital loans and loans with a duration of less than one year. Issuance of any other debt requires unanimous approval by the Board of Directors. Green Resources AS shall invest in countries in Southern Africa (SADC) and the East African Community (EAC). Any investment **that represents more than 5% of the Company's invested capital in any one country outside of this region requires unanimous approval of the Board of Directors.**
12. Green Resources will manage its operations in accordance with the **Forest Stewardship Council's standards.**

## FINANCIAL TARGETS

Green Resources (GR) is a profit-oriented private company that aims to maximise the return to shareholders via share price appreciation and, eventually, through the payment of dividends. The company creates important additional value through positive environmental and social impacts. It expects to seek a public listing of its shares.

The company aim to generate 12-15% return on equity, compared to a return target of 3-9% for traditional forest investment companies in the main global markets.

GR believes the interests of stakeholders, including customers, employees, local communities, the environment, host countries, creditors and the shareholders are best served by creating a financially strong and profitable company. The company believes that a business based on sustainability and social responsibility, using renewable, green resources, will yield the highest long-term returns.

## COMPLIANCE WITH INTERNATIONAL GUIDELINES

Green Resources is committed to complying with national legislation and internationally recognised conventions, guidelines and standards related to its businesses, including, but not limited to:

- a) **Forestry Stewardship Council (FSC®)'s Principles and Criteria.**
- b) **International Labour Organisation (ILO)'s declaration on Fundamental Principles and Rights at Work.**
- c) **Objectives of the United Nation's Convention on Biodiversity.**
- d) **International Finance Corporation's Policy on Social and Environmental Sustainability and OECD's Guidelines for Multinational Enterprises** (two largely overlapping guidelines for corporate behaviour).
- e) World Bank Policy on Involuntary Resettlement.
- f) **African Development Bank Group's Involuntary Resettlement Policy.**
- g) **European Investment Bank's Environmental and Social Principles and Standards.**

Both the company and the businesses it engages in shall comply with the **European Development Finance Institutions' (EDFI) and the IFC's exclusion lists of undesirable businesses and practices.**



## BOARD OF DIRECTORS

The Board of Directors is responsible for the governance of the Company and for the proper organisation of its activities in accordance with the legislation and the Articles of Association. The Board of Directors establish the strategy, organisation, accounting and control of the Company and appoint the Managing Director and CEO, who acts in accordance with the orders of the Board of Directors and is responsible for the **day-to-day management of the Company's affairs**. The Board of Directors held five full board meetings and one telephone meeting in 2011.

The subsidiary companies have in-house boards consisting of **Green Resources' employees. The company has advisory boards** with external members in all key countries of operations.

*Juha Niemelä, Chairman*

Joined the Board in 2008 as Vice Chairman. Born 1946. Finnish MSc in Economics and Business Admin., Turku School of Economics, Finland. Dr (Econ) h.c. 2000 and Dr (Tech) h.c. 2004. 1996-04 CEO of UPM-Kymmene, 1993-1995 Executive Vice President, Yhtyneet Paperitehtaat Oy (UPM), 1983-93 Vice President, UPM. Chairman of European Paper Industry Federation (CEPI) 2000-01. Board Member in Merita-Nordbanken (Nordea) 1998-00. Presently Chairman of Veikkaus Oy, the national lottery company of Finland, Board Member in M-real Oyj and Powerflute Oyj, paper and board companies.

*Mads Asprem*

Member since 1995, Chairman 2004-06, Vice Chairman 2006-08. Born 1961, Norwegian. BSc in Economics Wharton School, USA, 1983, MBA, Univ. of Chicago, USA, 1987. First VP, equity analyst and head of the global forest products and paper research team at Merrill Lynch 2000-05. Managing Director and head of forest products and paper global research team of Morgan Stanley 1991-00. Equity analyst CSFB 1990-91. Consultant Monitor Company 1987-89. Portfolio manager Storebrand 1984-85. Met as substitute member to the Norwegian Parliament. Established Green Resources in 1995 and took over as Managing Director in 2006.

*Kristen Kleiman*

Member since 2011. Born 1966, United States. Director of Acquisitions and Investments, FourWinds Capital Management since 2007. Manager of Acquisitions, Hancock Timber Resource Group, 1996-01, Peace Corps Volunteer, Botswana, 1992-93. Financial Analyst, CDC Inc., 1989-92. MS in Forest Ecology University of Michigan, BS in Finance Babson College.

*Age Korsvold*

Member since 2011. Born 1946, Norwegian. Independent Advisor. MBA Wharton, University of Pennsylvania, Philadelphia, USA 1971. CEO of Kistefos AS 2001-11. CEO of Storebrand ASA 1994-00. Previously, ten years as partner of Fondsfinans AS, six years with Orkla ASA as Investment Director, in addition to other positions. Currently Vice Chairman of Orkla ASA, Chairman Scandinavian Insurance Group, Chairman of Atex Ltd and Member of the Board of Aweco Invest.

*Liane Gaumont Luke*

Member since 2008. Born 1951, United States. MBA in Finance, School of Management, Yale University. Managing Director Timber group, FourWinds Capital Management, since 2006. Member, Board of Directors, Phaunos Timber Fund Limited (LSE:PTF) 2006-12. Principal, Greenway Investments, since 2005. Principal and Managing

Director, RMS Forest, 1998-05. Vice President, Hancock Timber Resource Group, 1996-98.

*Odd Ivar Lovhaugen*

Member since 1998. Born 1955, Norwegian. MSc in Forestry, Norwegian University of Agriculture Managing Director of Namsos Trafikklag since 2001. Managing Director of Green Resources 1998-00. Chief Operating Officer of Statskog 1992-98. Senior Forest District Officer 1985-92. Junior District Forest Officer 1981-84. Chairman Statskog Borregaard skogsdrift 1996-98.

*Mutuma Marangu*

Member since 2003. Born 1961, Kenyan/American. BA in Economics, Vassar College, USA, 1984; MPH in Econ & Politics, Cambridge, UK, 1987, MBA, Wharton School, USA, 1989. Market analyst and commodity trader, Glencore 1991-2003, commodity trader trainee, Phillip Brothers, 1989-1990, financial analyst, Morgan Stanley, 1984-86. Investor and Director in numerous renewable and non renewable energy and real estate companies in sub-Saharan Africa.

*Havard Nesheim*

Member since 2011. Born 1960, Norwegian. Independent investor. Norwegian. MSc in Business Administration, Norwegian School of Economics and Business Administration. Head of Research at Handelsbanken 2008-10. Chief Investment Officer at Orkla Finans AS 2000-07, and held positions as Executive Vice President and Portfolio Manager of Storebrand and Head of Business Development Asset Management at Kreditkassen. Board Member of Conceptor AS and held Board memberships in Industrikapital AS, Carl Kierulf AS, Norfond AS, NOM and NFF.

*Kristoffer Olsen*

Member since 1998. Chairman 1999-04. Born 1962 BSc in Economics, Wharton School, USA. MBA, INSEAD, France Chairman of Jotunfjell Parterns, a private equity and advisory company. Senior Partner Innovation Consulting 2001-03. Managing Director Scandinavian Retail Group 1996-98, Managing Director/Finance Director Voice of Europe, 1992-96. Project Manager/Associate McKinsey & Co, 1985-92.

## EXECUTIVE MANAGEMENT

### Mads Asprem – CEO/Managing Director

Norwegian, born 1961.  
(See Board of Directors)



### Olav Bjella - Plantation Operations

Norwegian, born 1963. MSc Forest Economy and Planning, Agricultural University of Norway, 1990. Executive Director National Forest Authority, Uganda 2004-06. Director of Consultancy, Prevista 2001-04. Managing Director Ressordata and positions at Statskog 1993-01.



### Arlito Cuco - MD Mozambique Plantations

Mozambican, born 1960. MSc Forestry from University of Helsinki, Finland, 1991 and BSc in Forestry Engineering from Eduardo Mondalane University (EMU), Mozambique. Joined 2008. National Director of Forestry and Wildlife 1998-06, National Director Lands, Forests and Wildlife 2006-07, Chairman African Forestry and Wildlife Commission 2006-07. Previously worked with IFLOMA, Mozambique's largest forest, and as a Lecturer at EMU.



### Isaac Kapalaga - MD Uganda Plantations

Ugandan, born 1958. MSc in Forest Business Management, Aberdeen University, UK, 1991, BSc Forestry, Makerere University, Uganda. Joined 2009. 2007-08 Operations Manager, USAID Rural Financial Services Project, 2004-06 Technical Services Director, National Forestry Authority, 2001-03 Operations Manager, USAID Enterprise Project, 1988 – to date, Board Chair, Mawotto Plantations, 1992-94 Forest Park Manager and 1981-91 Forest Officer, Uganda Forest Department.



### Jannicke Koch-Hagen - Finance Director

Norwegian, born 1968. MBA, Henley Management College, 1996. Auditor, Handelshoy-skolen BI, 1990. Financial advisor, Oakfield ANS, 2004-06. Held a number of positions in Alpha AS 1990-03, including Director of Business Development, HPI, Director Finance Supply Chain and Controller Supply Chain



### Susan Pring - Human Resources Director

British, born 1960. Joined 2009. Prior to joining, owner of Spanish real estate management and services company, 2003-09. Previously Vice President, Operations Officer for Equity Research Division, Morgan Stanley 1994-03.



### Roselyne Mariki - Executive Director, Tanzania

Joined 1997. Born 1967. BSc Engineering in Chemical and Process, University of Dar es Salaam, Tanzania. 2005-09 Founder of Managing for Impact Ltd, a management consultancy. 2002-09 established and managed Great African Safari, a specialised tour operator. 1999-02 Managing Director of newafrica.com website while also developing Green Resources' carbon business. 1997-98 Analyst with Green Resources. 1995-97 Tutoring Assistant.



### Aadu Polli - Industrial Director

Estonian, born 1977. Bachelor of International Economics, Tartu University, Estonia. Joined 2009. 2007-09 established Construction Equipment Rental Company, Bulgaria. 2005-07 Mill Manager of Alytus sawmill, Lithuanian Stora Enso. 2003-05 Mill Manager of Sauga sawmill, Sylvester and Stora Enso. 2000-02 Finance Manager of Sauga sawmill, Sylvester, Estonia .







# GREEN IMPACT, GREEN PROFITS



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