

# Timber Plantations in Swaziland

Wally Menne



# **Timber Plantations in Swaziland:** An investigation into the environmental and social impacts of large-scale timber plantations in Swaziland

**Wally Menne**  
**Timberwatch Coalition Member**  
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[www.timberwatch.co.za](http://www.timberwatch.co.za)

PO Box 30577, **Mayville**, 4058, South Africa

Tel: 27 82 444 2083 Fax: 27 31 2019958 E-mail: [plantnet@iafrica.com](mailto:plantnet@iafrica.com)

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# Introduction

In many respects, there is very little difference between Swaziland and South Africa. Climate, topography, and geology are similar, so it is no wonder that the natural vegetation is much like that found in the South African provinces of KwaZulu-Natal and Mpumalanga, that virtually enclose the Swazi Kingdom.

Before the arrival of large-scale timber plantations in Swaziland, the area that they now occupy was grassland, interspersed with patches of evergreen 'mist-belt' forest growing in moist, sheltered spots. The characteristic climax grasslands evolved over thousands of years with human influence and fire playing an important part in their development. A mischievous theory has claimed that the whole region was originally forested, and that grassland is a secondary vegetation type that manifests where forests have been destroyed. This has been used to help justify so called "afforestation" which aims to plant alien monoculture timber plantations wherever conditions will allow, in particular in biodiverse grasslands.

It is known that there were San people (Bushmen) in these parts from the evidence of rock paintings. Swazi people farmed cattle and other livestock as well as some food crops. Their domestic crops and animals, hunting, and natural resources from the forest and grassland provided all they needed to survive. Establishment of more than 100,000 hectares of plantations meant the displacement of these people and their livestock to adjacent steep, rocky and dry land, where they could be prone to disease and attack by wild animals.

The issue of industrial timber plantations in Swaziland must be viewed within the larger southern African context. The timber industry in Swaziland could not survive if it was not linked to the extensive (1, 6 million ha.) plantations in South Africa, and heavily dependent on capital from that country. This anomaly is supported by the way the FSC (Forest Stewardship Council) lumps certified Mondi plantations in Swaziland together with those in South Africa. From the FSC website, it appears Mondi has no certified plantations in Swaziland!

About 9% of Swaziland is under timber plantations. Sappi Usutu, owning more than half the plantations in Swaziland (70,000 ha), and the only pulp mill, employs about 3,000 people directly and indirectly. Mondi Peak employs 1,044 people in two sawmills and 19,000 ha of plantations. Shiselweni, the third largest plantation area covers about 12,000 ha. The Mondi and Sappi plantations were originally established about 50 years ago by the Commonwealth Development Corporation (CDC) that also started the Usutu pulp mill at Bhunya. These were sold to the present owners quite recently - Mondi in 1984, and Sappi in 1992. The Shiselweni plantations were established in 1967, also by CDC, but later sold to the Transvaal Wattle Growers Co-operative (TWK) also based in South Africa.

How do these plantations benefit the Swazi people? Swaziland imports most of its finished timber products from South Africa, whilst nearly all of the local timber production leaves the country as logs, pulp or rough cut planks.

The extent to which plantations impact on water resources must surely have had serious consequences for people relying on water from streams and rivers flowing from the highveld catchment area. Some people born in the area before plantations arrived, can remember waterfalls and deep streams that no longer exist.

An analysis of the negative impacts of plantations shows that there are two main categories: Ecological, and socio-economic, or more simply put – impacts on biodiversity and impacts on people. Further analysis shows that within these two main groups, some can be direct or primary, and many others indirect, consequent or secondary. Examples of primary impacts: destruction of natural vegetation; loss of grazing for livestock; loss of medicinal plants, depletion of water resources. Secondary impacts: increase in grazing pressure elsewhere; conflict over access to resources.

Impacts that manifest over time can be described as cumulative, downstream or tertiary – such as the accumulation in organisms of toxic agricultural chemicals, used to kill plants and animals that are an obstacle to plantation establishment; and invasion into wetlands, streams and forests by alien trees and weeds.

All of these impacts come with a cost, sometimes easily quantifiable, but mostly causing long-term losses to the natural environment and to people's health, welfare and wealth, that are difficult to put a value to. Like the future cost of the loss of a wetland, or poisoning of a river, or the effect of toxic fumes on workers in a pulp mill. One thing that is clear however is that the timber industry does not cover these costs. This 'externalisation' of costs by the industry enables them to continue to operate profitably, keeping their shareholders in some distant city happy, and no doubt increasingly wealthy. On top of this, it seems that timber companies have benefited from special deals that exempt them from paying certain taxes, and also receiving cash handouts from government if they plead poverty! All the plantation companies in Swaziland claim to be struggling to remain profitable. If they were to carry the full true costs of their operations, whilst operating on the current basis, it could mean they would no longer be viable.

The reality is that it would be virtually impossible to undo what has been done. However, new approaches that ensure most proceeds generated by the plantations remain in Swaziland and benefit local people are needed. Ownership and control of the plantation resource should revert to the people of Swaziland. Maximum beneficiation at the local level is needed to ensure the greatest possible number of work opportunities is created in Swaziland.

The CDC as well as the companies that are currently involved in plantations in Swaziland should take responsibility for the mess they have helped to create. Ideally they should instigate and finance a process to restore ownership of the plantation areas to the heirs of communities that were displaced. The CDC should fund the costs of restoration of the natural areas that became degraded as a consequence of the establishment of plantations. This could create much needed employment for many people in the future, especially those that suffered as a consequence of losing access to land and water.

# Methodology

The main object of this project is to gather information and to present that information in the form of a preliminary report. This report will also attempt to evaluate the information, to arrive at conclusions, and where possible to suggest actions to address the issues highlighted by those conclusions.

In order to obtain a better understanding of the scale and nature of the impacts of large-scale tree plantations in Swaziland, visits were made to the main timber growing areas, and interviews were conducted with a range of individuals drawn from interested and affected groups. As far as was practicably possible, similar numbers of individuals from each group were interviewed.

Questions to establish whether there was an awareness of impacts, which specific impacts, and how great those impacts were considered to be were asked. In addition, other relevant comments and suggestions were also recorded. The groups from which representatives were interviewed are:

- Community members
- Environmentalists
- NGO representatives
- Government employees
- Industry representatives

As an additional tool to obtain information, a survey form was compiled for completion by selected interviewees and other people that could not be interviewed for various reasons. The survey required the respondent to rate the level (On a scale of 1-10) of a number of impacts classified as either Environmental or Social. A limited number of completed survey forms had been returned at the time of writing this preliminary report, but it is hoped that more will be received and that the responses can be analysed and interpreted to include in future reporting.

Background information was obtained using the 'Google' Internet search facility. This yielded much information, which helped substantially to identify some of the issues covered in this report. Some of the more relevant items accessed via the Internet have been appended. Further information was derived from photographs taken in and around areas affected by plantations.

Extensive personal observation and study of large-scale timber plantations in South Africa, where similar conditions exist, has been used to support interpretation and analysis of the information obtained.

It is recommended that this report be treated as an introduction to the topic, which is vast and complex, and requires much more investigative study.

# Background

Large-scale tree plantations and the associated industrial activities have a long history in southern Africa, starting in the mid-1800s in the Southern Cape. In Swaziland, plantations of *Acacia mearnsii* (Black Wattle) were first established during the early 1900s, mainly for tannin derived from their bark, which was used in the leather industry. Wattle poles were used as mine-props in local tin mines, which were thriving at that time. Later, wattle timber became widely used as building material and fuel wood.

The first large-scale industrial timber plantations were established around Pigg's Peak in the north in 1947. There are now about 30 000 ha in the Pigg's Peak area, made up of approximately 25% pine and 75% eucalyptus. Most eucalyptus is grown for pulp production and is sent by road and rail to the Mondi paper mill at Richards Bay in South Africa ( $\pm$  400km away). The rest of the timber, mainly pine, is planked for construction and furniture at local sawmills. Mondi Peak, a subsidiary of Mondi in South Africa since 1984, owns about 90% of the plantations in the Pigg's Peak area, with Swazi Plantations owning the bulk of the remainder.

The first of the Usutu pine plantations around Mhlambanyatsi in the western part of the country were planted soon after 1950. They have belonged to Sappi Usutu, part of Sappi Kraft in South Africa, since 1988, and now cover about 75 000 ha. Before the Sappi take-over, this vast plantation was controlled by Courtaulds, a British company, and financed by the CDC (Commonwealth Development Corporation). The Sappi Usutu pulp mill at Bhunya, situated on the Lusutfu River, processes the wood produced here into unbleached pulp. Most of the nearly 200 000 tonne annual production is exported to south-eastern Asia via an agent in Hong Kong.

The Shiselweni plantations near Nhlangano in the South, owned by TWK in South Africa, are a mix of pine and eucalyptus, and cover 12 000ha, although FSC (Forest Stewardship Council) has certified an area of 17000ha. Most of the timber produced here is exported to or via South Africa.

As in South Africa, the main industry players in Swaziland are Mondi and Sappi, and their plantations in Swaziland are managed in a similar way to those that they own in South Africa. Whilst Sappi is trying to establish ISO 14001 management systems, before seeking FSC certification, those of Mondi Peak have been certified as part of the Mondi owned plantations in South Africa, and are not shown separately on the FSC website.

Timber plantations cover an estimated total area of almost 120 000ha, which is about 9% of the land surface area of Swaziland. They occur mostly in the high rainfall, deep soiled, Highveld grassland zone in the western part of the country, where ideal timber growing conditions exist.



# The Interviews

The people to be interviewed were selected on the basis of their representing one of the following sectors in Swazi society:

NGO representatives	1 & 2
Environmentalists	3 & 4
Community members	5, 6 & 7
Industry representatives	8, 9 & 10
Government employees	11, 12 & 13

Not all the individuals approached could be interviewed. Notably Mrs Peta Hardy from Sappi, who declined and Mr. Solomon Gamedze, the Chief government forester was not in a position to provide information when interviewed. However it was still possible to include a good range of interests, considering the limited amount of time available for the project.

## **1) Nhlanhla Msweli**

### **Swaziland Campaign against Poverty and Economic Inequality - SCAPEI**

SCAPEI is a network focusing on stimulating progressive thinking on policy issues that affect Swazi people. According to Nhlanhla, worker unions have had difficulty getting established in Swaziland. Privatisation has undermined the effectiveness of the labour movement, and retrenchments and high unemployment have disrupted opportunities to establish stable structures for organised labour.

Around 1997 there were major retrenchments in the timber industry - Both Sappi and Mondi claimed economic hardship as the reason for reducing staff, but at the same time the work was "outsourced" to contractors, who were often ex-employees who had been assisted in establishing their own "contract businesses". This has led to an extremely competitive labour market. Contract work is temporary and pay is very low. Many people from Mocambique, desperate for work, have moved to Swaziland. It is believed that this has contributed to increasing poverty together with the high rate of HIV-Aids infection. There is no clear government policy on how to deal with HIV- Aids, and timber companies have not done enough for their infected and affected workers.

The timber industry has not contributed meaningfully to the economic upliftment of their workers. The system has kept people poor and dependant. Those that accepted retrenchment have been put at a disadvantage due to a lack of sufficient capital and business skills. Outsourcing of activities by companies has not benefited many people, because it is really a way of passing on risks and costs to the new companies that are established. When they eventually fail, and investments made with retrenchment payouts are lost, poverty becomes greater.

The establishment of plantations has caused a reduction in traditional employment e.g. herding of cattle, hunting, harvesting wild plants and growing traditional food. The best land in good rainfall areas is mostly under timber plantations, and subsistence farmers have been forced to move to marginal areas that are poorly suited to agriculture and food production. A new threat to these people is that they are being encouraged to take part in 'out grower' schemes which are likely to cause further depletion of their water resources, and undermine their capacity to produce their own food.

The impacts of air and water pollution, and workplace exposure to toxic substances, are further problems that face communities. In the context of the industry being dependent on foreign capital, it means that Swazi people have lost control of their primary resources, and the products and profits derived from those resources usually leave the country.

*Nhlanhla delivered a paper titled "Impacts of timber plantations on rural people of Swaziland" at a symposium on timber plantations held in Nelspruit on 13<sup>th</sup> Nov 2003.*

## **2) Joseph Mutsigwa** **Yonge Nawe Environmental Action Group**

Survey questionnaire completed.

Yonge Nawe has been in existence for 16 years. It is a membership based organisation with individual, NGO, corporate and other institutional members. It can best be described as a Public Interest Environmental NGO, and is also very active in environmental education. They are pursuing sustainable development in the context of environmental strategising, focusing on Environmental Justice. Also governance of EIA processes and medical waste management issues. (See newsletter and Annual Report)

Issues :

- The Swaziland Environmental Authority (SEA) is in the process of being established as an independent authority.
- Yonge Nawe has objected to the construction of a road through Mlawula Nature Reserve by SNTC (Swaziland National Trust Commission)
- Air pollution at the SAPPI pulp mill at Bhunya, 40km from Mbabane, has been a major concern. A Campaign was held in 2002 to collect air samples to measure Hydrogen sulphide levels.
- Swazi Paper Mills at Matsapha, 18 km from Mbabane, has a bad track record of ongoing pollution of a wetland area next to their factory. Belonging to the Sharma Group of Companies, it uses paper waste at present, but there is still a big problem. It is believed that the company plans to expand their factory to be able to use plantation timber as well as old paper. In terms of the Swazi Land Tenure System, Corporates such as Swazi Paper can obtain 99-year concessions on Swazi Nation Land.

Yonge Nawe is concerned about the impacts of industrial timber plantations but this would have to be added to their work programme at a later stage.

## **Thuli Makama** **Director - Yonge Nawe Environmental Action Group**

Yonge Nawe has not given much consideration to the impacts of timber plantations on communities and the environment in the past. Their focus has been on timber processing mills (pulp & paper) and the pollution that they cause. The government does not respond to issues like pollution.

**3) Rex Brown**  
**ECS – Environmental Consulting Services**  
**Consultant to Government, EIA work etc.**

Survey questionnaire completed.

The plantation industry in Swaziland is an important economic activity that supports both national revenues and provides employment for 100s of Swazis. Forest plantations started in the 1930s when wattle was introduced for the extraction of tannin. The Usutu Forest (now Sappi) and Peak Timbers (now Mondi Forests) were established in 1947, and since then other forestry (plantation) companies, including wood processing industries, have been established.

The establishment of the three main plantations in the country (Shiselweni, Usutu and Mondi) happened with little consideration given to their short and long term impacts on the environment, livelihoods, water and pollution. If we ignore the impacts that would have occurred during plantation establishment, the lingering impacts remain and are not being adequately addressed.

Impacts of major concern are:

The plantations occur in important upland catchments - essential areas for the provision of water for equally important irrigation activities in the Swaziland Lowveld. The plantations appear to act as sponges and partially as a result of their species composition, absorb great quantities of water that is not released into the rivers and streams. This combined with ever increasing water demands within the catchments, leads to annual shortages of water in the catchments.

Contamination of areas adjacent to plantations with plantation species is a form of pollution that the plantation owners appear to have no obligation to redress. If I were to throw my litter onto adjacent properties, I would soon be told to stop.

There is proliferation of plantation species and other invasives in drainage lines. It would appear from visits made into some of the plantation areas, that owners do little to prevent their plantations from entering riverine areas despite legal requirements that prohibit 'developments' within 30m of a drainage line. The impacts on the ecology of these areas must be noticeable and significant.

The Sappi Usutu pulp mill continues to be a significant source of regular water pollution. Spills of chemicals into the river occur on a fairly regular basis - say 6 times a year and the company appears to have no obligation to either prevent these spills or clean up its impacts. Users of the water downstream receive no known warning of contaminated water coming their way nor have they been given any instructions on what they should or shouldn't do when their water supply is contaminated. Hopefully the draft water pollution regulations will place a higher level of responsibility on the company and oblige them to clean up and pay fines in proportion to the damage caused.

#### **4) Kate Braun**

Born in Swaziland and trained as an applied biologist/ecologist, Kate was employed by the SNTC (Swaziland National Trust Commission) for 9 years before moving on to a career in IT (Internet Technology). At present she is involved in updating the checklist of Swaziland flora.

Her view on timber plantations is that there needs to be a pragmatic approach. It is important that alternative sources of timber for fuel and construction are available to rural people in Swaziland. In the Highveld region, wattle has played a role in reducing demand for wood from indigenous trees.

Originally large-scale plantations had wide corridors as firebreaks and these played an important part in providing habitat for and protecting natural biodiversity. Some of these firebreak areas have now been converted into plantations, with negative consequences for the environment.

The Highveld area in Swaziland is of vital importance with regard to water availability in Swaziland, and the numerous small wetlands are of major importance in this regard. The establishment of plantations has impacted on them, but this is only one factor affecting their status.

The reality is that existing plantations are historical, and it would never be possible to re-establish Highveld grasslands. This can be seen at Malolotja where in small fields previously cultivated for food-crops – a far lower impact activity than plantations - the sourveld grassland species have not yet become re-established after a number of years.

Issues associated with the conversion of land into timber plantations are:

- Impacts on water

Water is the big issue. People are not able to grow the food they need. Large multinational seed companies promote hybrid maize that is not suitable for local conditions. In many cases people are already in a cash crisis situation, and the factors discussed here are adding to that. They have to find extra cash to pay for increased inputs such as seed and fertiliser. Working with appropriate people in order to determine priorities, could improve the situation.

- Loss of grazing

Numbers of cattle are already too high in some areas and further loss of grazing land needs to be avoided.

- Alien invasive plants

Scattered pockets of aliens have spread into protected areas. The eradication of alien plants is a complex issue.

- Pollution from mills

No EIA legislation was in place at the time when mills were established. The responsible government department has only 4 staff and there are other issues, which are of higher priority than pollution.

Kate stated she was not in favour of the further spread of timber plantations.

**5) Phillip Vilikati**  
**Principal – Bhunya High School**

Mr Vilikati has been the school principal for 12 years.

Because of the pollution emitted from the Sappi Usutu mill, people with Asthma have had to leave the school. Fumes from the mill enter the school buildings regularly. He moved his home to Mbabane to because of sores in his nose that he believes were caused by the air pollution– and now travels 90 km daily to do his work at the school. The solid waste dump was moved because of fumes affecting another school in Bhunya, but now it overflows into a stream that feeds into the river.

Downstream communities are seriously affected by the water pollution in the river caused by effluent released by Sappi Usutu - especially during drought times. The Sappi Usutu Company is aware of the problems.

Before the change over to Sappi ownership and control the company (Courtaulds) supported the school generously. They paid R5000 for fencing, and R14 000 for repairs to the roof. Children of mill workers make up 40% of those now attending the school. It was 60% before retrenchments. Retrenchment packages were not taxed because people complained that they would not receive adequate payouts.

Sappi Usutu has neglected the school. They have not given computers or scholarships for pupils. Also, the Usutu Forests Independent School at Mhlambanyatsi received much better treatment than the schools at Bhunya, who even had to pay for transport for school outings. Mhlume Sugar (Illovo Sugar) gave generous bursaries to children of employees, but not Sappi.



***Bhunya High School and Sappi Usutu waste dump***

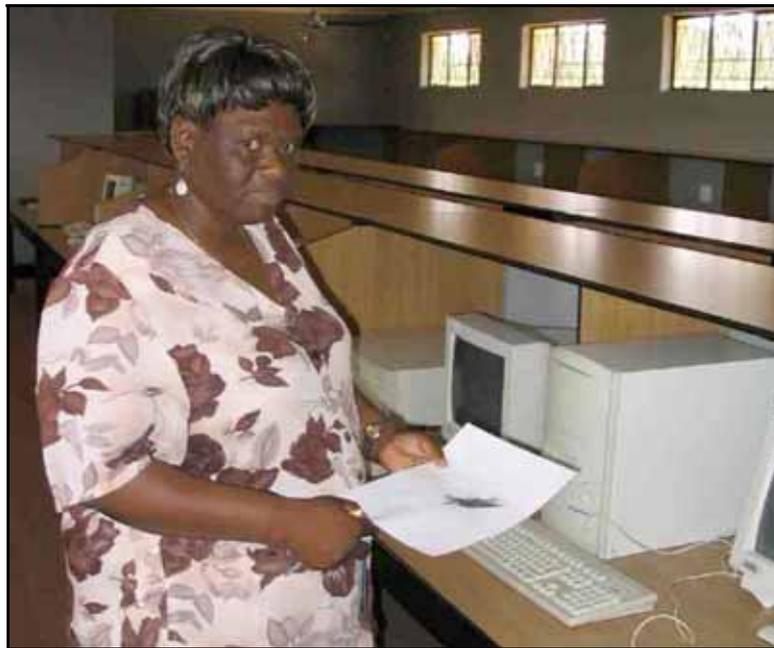
**6) Mrs Nkonyane**  
**Principal - Bhunya Secondary School**

She has worked at School since 1979 - more than 20 years.

There are 350 children attending the school. About 10 % are affected by Asthma. Most children have to wear spectacles, she believes as a result of the pollution from the Sappi Usutu mill. It also causes corrosion of cars and of roofing iron. There is pollution in the form of black dust getting into the new computer lab at the school. There was an article written by Innocent Maphalala in the Times of Swaziland on 16-5-1999 about the sicknesses of teachers at the school.

The old Usutu Pulp Company (Courtaulds) previously gave a lot of support to the school. They renovated toilets; rebuilt classrooms after storm damage; and installed fencing. Also maintained the school and staff houses and provided free firewood & accommodation. Now things are different. Sappi's old computers were given to St Michaels School at Manzini, which is far away from Bhunya. In a letter from BS Shongwe of Sappi Usutu, dated 13-3-1991, the school was informed that all services previously provided free of charge would have to be paid for from then on.

The outside of the school buildings had not been painted for nearly 30 years. Roofs were badly rusted. The roots of eucalyptus trees on the property had damaged toilets. Sappi Usutu should help the school with maintenance. A letter had been written to Mandla Dlamini at Sappi Usutu requesting assistance with various maintenance needs. The work done by teachers is not appreciated, and there is little support from government.



**Mrs Nkonyane showing dust pollution  
in school computer laboratory**

**7) Mrs Duduzile (Matilda) Zwane**  
**Ekuthuleni Primary School (Mondi Peak main sawmill worker village)**

Mrs Zwane has been School Principal for 18 years, and there are presently 8 teachers and 172 children. There is a High school in Pigg's Peak for those children that may wish to continue their education. The Swazi Government built the school buildings, comprising offices and classrooms, with assistance from USAID.

Mrs Zwane held a negative view of timber plantations. She believed that the community had not benefited much from their establishment, either from the point of view of people working in the industry or living in the area. Labourers received low pay although some rations were also received. There had been a strike at the sawmill recently and while the strike was in progress an accidental fire, started by a spark from a welding machine, had ignited sawdust and caused serious damage to the mill. Although the strike had ended, workers were retrenched afterwards. The sawmill was to be upgraded and new technology equipment would be installed. It was an issue that the company used big machines to do work instead of giving more jobs to people

Only bona fide employees and their direct family could use the Mondi health clinic facilities. Others had to use the government hospital at Pigg's Peak. The poverty in the community was causing young girls to become prostitutes. They would accept as little as 2 Emalangeneni (One US Dollar is equal to 6 Emalangeneni) for sex, usually from older men who had jobs at the mill. She added that most girls in the area became pregnant before they reached the end of Standard 5. (The seventh year of school) There was very little done by the company to help the community. No bursaries were offered, and assistance with building a community church had not been forthcoming. The school was in desperate need of more classrooms and teacher accommodation. The general condition of workers homes is very poor. There is no playground at the school and the roads in the village are in a very bad state.

Mrs Zwane stated that she had noticed that rivers in the timber growing areas had dried up over the years. She could remember places where people could swim when she was a child, that are now dry. She also commented that Lantana (*Lantana camara*, an invasive shrub introduced from South America) is a big problem and has spread into areas outside the plantations.



**Learners at Ekutheleni Primary**

**8) Mandla Dlamini**  
**Public Affairs Manager - Sappi Usutu Pulp**

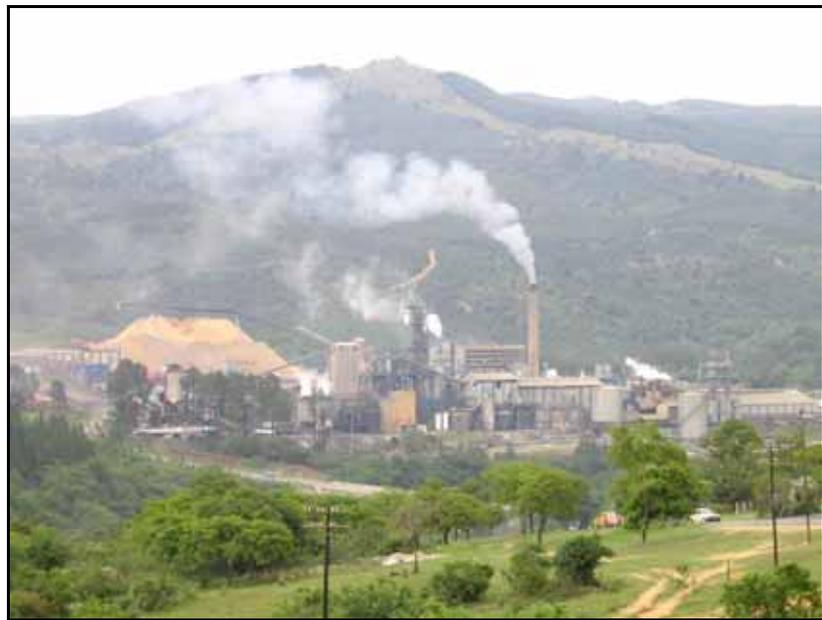
Mandla Dlamini worked as a forester for 20 years, before being appointed Public Affairs Manager, a position he has held for the past 2 years. Mandla listed a number of positive things that he felt showed Sappi's commitment to helping the community at Bhunya.

The community of Bhunya has benefited from the use of Sappi land and infrastructure. The clinic at Mhlambanyatsi serves the entire community.

A footbridge over the Lusutfu River cost the company R100, 000.00 (people could not cross during floods before the bridge was built). They have also helped the schools in Bhunya financially and in many other ways.

Through a 'soccer training and fire prevention' project, R30 000.00 is given to each community adjacent to the Usutu timber plantation estate. The fire prevention was mainly for the benefit of the communities concerned and not because fire was a problem for the Sappi plantations.

The Usutu mill is part of the Kraft division of Sappi – linked to the giant Ngodwana pulp mill in neighbouring Mpumalanga province in South Africa. The company is not doing well at the moment. Several similar mills in other parts of the world have closed during the last 5 years. Due to economic uncertainty Sappi Usutu had considered closure, and if this were to happen, it would affect the community seriously through job losses. A letter had been sent to all personnel explaining that the exchange rate and other economic factors had affected company profitability. Sappi Usutu has about 3 000 employees of which about 800 are permanent and the balance are employed indirectly as contract workers for less technical non-core activities at the mill, such as driving and security.



**The Sappi Usutu Mill at Bhunya**

**9) Shane Perrow**  
**Mill Manager - Sappi Usutu Pulp**

The Company previously owned the entire 77,000 ha timber plantation estate. Ten years ago the land was donated back to the Swazi Nation. Now Sappi Usutu lease it back for a moderate fee. Certain areas such as the mill and staff villages had been retained for the benefit of the company.

There are plans to establish a new waste disposal site. The existing one would be rehabilitated. He agreed that fence around the existing waste disposal site was not in good condition – it was stolen 3 times in last two years. No security guards were on duty, but there was a full time bulldozer driver who would keep an eye on things.

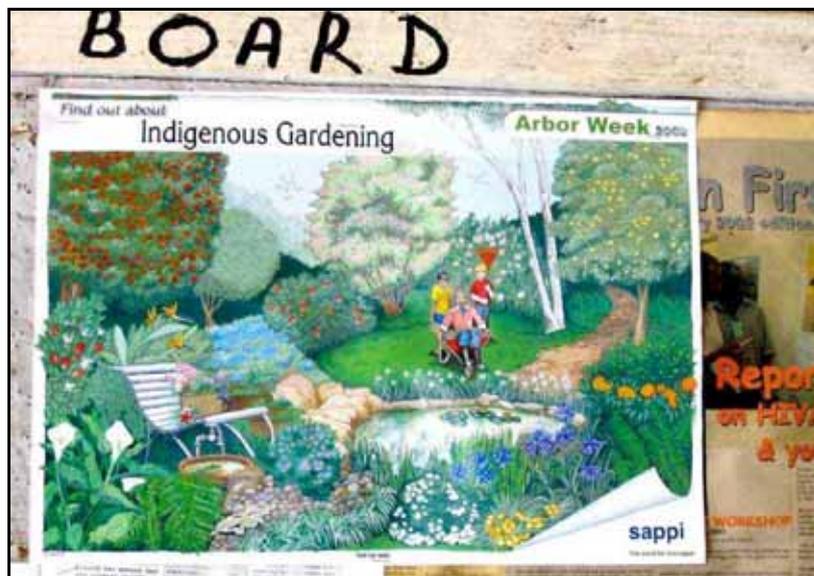
The company was planning to dispose of its staff housing to existing occupants at low prices. This would help people to own their houses on retirement. Some had nowhere to go to when retiring.

The black dust at Bhunya Secondary School was just ash – inert carbon. He conceded it could be a problem and a nuisance. He believed that help with the Secondary school maintenance had not been requested before. The Company would be prepared to consider Mrs Nkonyane's requests.

The company was willing to support small timber growers in the community, but was not actively promoting out-grower schemes.

Pine would be bought for the Usutu mill to process, and eucalyptus would be railed to one of the mills in South Africa.

(Mr Perrow asked for an opportunity to preview the summary of the interview for comment, in order to respond formally. A summary was sent to him by e-mail in February 2004, but there has been no response.)



**Sappi Poster distributed to schools. The company itself has only alien plants in the gardens at the Usutu Mill**

**10) Tony Bold**  
**Mondi Peak Plantation Manager**

**Ricky Pott**  
**Mondi Group Environmental Manager**

Survey questionnaire completed

The Peak plantations were originally established in 1947 and acquired by Mondi in 1984. Mondi Peak, as the local organisation is known, owns 31 584 ha of which about 20 000 ha is under plantations. These consist of nearly 6000 ha of pine and 14000ha of eucalyptus and there is a small area of about 30 ha under Blackwood Acacia. Most of the eucalyptus is exported for pulp production and about 75% of the pine is exported. Over the past ten years there has been a systematic conversion from pine to eucalyptus, which is believed to deliver greater returns due to the quicker rotation, and now makes up 75% of the Peak plantations. The main sawmill, that had burned out recently, would be converting to new technology band saws that would be able to process both eucalyptus and pine logs.

Mondi Peak does not encourage out grower schemes. Members of the local community have approached Mondi for assistance with establishing community timber planting schemes, but the company is not interested at this stage. If a community does propose an out growing scheme, Mondi would require wide consultation and consensus in the local community and with relevant local authorities before considering taking part in such a scheme. Timber that had been offered to Mondi by a local entrepreneur looking for a market for a plantation he had acquired, had been refused because Mondi is presently unable to sell all its own timber.

FSC certification of the Mondi Peak plantations was first awarded in 1996. This is not shown separately on the FSC website, but is included in the total area certified for Mondi in South Africa. The certification is reviewed every 5 years and will come up for review again in 2007. Annual inspections are conducted by SGS, accredited by FSC as its agent in South Africa.

Of the land area owned by Mondi Peak, 63% is under plantations, and the remaining 37% falls under a management plan that aims to achieve the ecological restoration of 'non-afforestable' natural areas. This includes both the marginal land and substantial areas of riparian zones adjacent to riverine systems. Most of the unplanted areas are very rocky and steep, and therefore usually difficult to remove alien invading plants and volunteer plantation tree seedlings that have spread from adjacent plantations from.

A wetland delineation process has been completed and the goal of the company is to remove all plantation trees from wetland areas by 2010.

There is a problem with plantation trees that have spread into adjacent Swazi Nation land. The communities are opposed to the removal of such trees, as they are perceived to be valuable, and belong to the community. Where plantation trees had become established within natural areas on Mondi property, these were classified as temporary or transitional plantation areas, and had been earmarked for removal from 1997 onwards. Trees beyond a certain age were left to mature, for later removal.

The aim of Mondi Peak is to achieve an 80% reduction in weed infestation levels by 2008. There are three Silviculture contractors whose weed-control operators have been professionally trained, and regularly receive refresher training. Weed control is usually carried out only when other site-disturbing activities such as thinning, pruning, and cutting are taking place.

Employees of the company were offered opportunities to start their own contracting businesses in 1999, and there are now 12 contractors, who employ over 700 workers. 294 of the 321 permanent staff members are employed at the two sawmills, and the remaining 27 are

employed in the plantation management section. The company provides costing guidelines for contractors. They are not allowed to employ illegal immigrants, and there is a set minimum wage for the industry. Most permanent workers live in the estate villages but also have other rural homes.

The 'Commonwealth Smart Partnership Initiative' was launched in Swaziland during 2003. The idea was that there should be greater co-operation between Business, Government, and Labour, in order to increase benefits to all three groups. Co-incidentally, Mondi has similar goals in the local context, and has supported the establishment of independent businesses for those workers that agreed to participate.

Conversion to the use of contractors has not necessarily resulted in a reduction of costs, but it has altered the level of risk to which the company is exposed. In Mondi's view, the formation of contracted businesses has led to the development of an entrepreneurial spirit as well as the development of individual human potential, leading to an improvement in the capacity of the local business community.



**Lush lantana in Mondi Peak Plantations**



## **11) Kim Roques** **SNTC (Swaziland National Trust Commission)**

Kim's background is nature conservation management, and until recently was in charge of the government's Biodiversity Corridor Project under SNTC, funded by the World Bank.

Swaziland has a number of pieces of environmental legislation, such as the Flora protection Act, 2000, and others, like the Alien plant regulations are in the process of being developed. The SNTC act of 1972 is in need of updating.

Less than 4% of Swaziland's total land area is protected. This is far below the ideal (the international norm is 10%). The main reserves are: Malolotja; Mlawula; Hawane; Mantenga Nature Reserves (under SNTC); Hlane Game Sanctuary (Royal game reserve); and Mlilwane.

In Kim's view, there have been no major changes in respect of the area of land under timber in recent years. On the other hand, there have been substantial increases in area planted to sugarcane. Part of the Hlane National Park had been de-proclaimed in order to make more land available for sugar.

Regarding timber plantations, the most obvious impact was the destruction of natural vegetation when large-scale plantations are first established.

A recent forest assessment exercise had identified fragmentation of highveld grassland as a problem – this had negative implications for the conservation of biodiversity. He believed that things were moving in right direction with FSC certification, as plantation managers were then obliged to pay more attention to protection of the environment.

Another notable impact of plantations was loss of stream flow, which affected wildlife and people. Plantation road networks also caused problems especially if roads were poorly maintained. Herbicide spraying on plantation edges caused erosion and also impacted directly on indigenous plants.

The Mlilwane – Mantenga area is invaded by eucalyptus. It should be necessary to make sure that gums (eucalyptus) are removed from protected areas before any new plantations are allowed. Possibly a land exchange giving degraded areas that are infested with wattle or gum in exchange for unspoiled habitat could be a solution. A positive impact was that some large raptors had taken to nesting in trees in plantations. Large amounts of money were being spent on alien plant clearing in the Mlilwane Reserve.

Wood processing causes pollution of water resources. There have been sudden surges in chemical effluent releases from the Sappi Usutu mill at Bhunya. As far as he knew there was no monitoring of water quality in the river. The direct environmental impacts of plantations are not reversible – especially soil erosion. Ideally, no more new plantations should be allowed - and better management is needed for existing timber plantations.

## **12) Titus Dlamini** **Swaziland National Herbarium**

Titus is assistant Curator of the Swaziland National Herbarium at Malkerns Agricultural Research Station. His section is responsible for a number of important projects.

- A new National Botanical Garden to be established at Manzini.
- The national Alien Invasive Plant committee
- Updating the checklist of Swaziland flora

Titus advised that the correct person to speak to in government concerning plantations would be Mr Solomon Gamedze who is based in Mbabane. (Mr Gamedze was interviewed at a later date, but was not prepared to divulge any official information in the interview. The Minister of Agriculture required a written request for specific information on timber plantations.)

## **13) Solomon Gamedze** **Swaziland Dept of Agriculture**

As Mr Gamedze was not willing to provide verbal responses to questions, the following information from the official government website has been included in lieu of an interview. It must be noted that it describes industrial timber plantations and wattle invasions as "forests" which can be confusing for the reader. Timberwatch uses "forest" to describe natural vegetation that has native trees as the dominant plant component, including woodland and thicket. By their very nature, and their characteristics, alien tree plantations and infestations are a threat to natural forests and it is therefore wholly inappropriate to describe them as forests.

**Swaziland Dept of Agriculture – Forestry: <http://www.gov.sz/home.asp?pid=1797>**

### ***Mandate:***

*The mandate of Forestry Section is to ensure proper management, conservation and utilisation of plant and forest resources in the country and to provide a forestry extension service to farmers whilst promoting tree planting for providing forestry products to communities and conservation of nature and environment.*

### ***Forestry Extension:***

*The programme provides a technical service to farmers and the public on forestry practices of sustainable management, conservation and utilisation of the forest resources. The programme is co-ordinated at the Ministry headquarters in Mbabane, but collaborated and networked with the regional agricultural officers, forestry extension officers, schools and Non-Governmental Organisations and communities. Forestry information is disseminated through farmers' meetings, training workshops, field days, demonstrations, and the electronic and print media. The section also promotes tree planting through the national and regional tree planting activities. It further provides free tree seedlings to communities and schools for community wood lots, environment conservation, windbreaks and perimeter planting. Seedlings for individual wood lots ornamentals, shade, hedge, fodder, and fruit trees are sold to communities and the public at a nominal charge.*

### ***Forest Mensuration and Inventory:***

*The programme undertakes forest measurements, surveys and inventories timber plantations and wood lots, for individuals, community, government both on Swazi Nation Land and Title Deed Land for the purpose of determining their value and use. The programme further provides services of evaluating forests for members of the public in cases where damages through theft, fire or natural disasters.*

*The forest inventory of 1999 indicates that Swaziland has 45 percent coverage of forests and*

woodlands, of which natural forests cover 2.2 percent, natural woodlands 22.0 percent; natural bush lands 13.4 percent, wattle forests 1.4 percent and plantation forests 6.4 percent. Forestry is not the only land use of these forests and woodland. Other land utilisation includes extraction of a variety of forest products. Grazing, agri-forestry, nature protection and tourism.

The commercial forests and related processing industry forms a very important part of the economy of Swaziland, contributing approximately 15 percent to GDP, mainly through export. The forestry sector, including the secondary processing sector, provides employment to approximately 8000 people, which is 8 percent of total formal employment in Swaziland. Commercial forestry in Swaziland is entirely run by private companies, of which Sappi-Usutu, Mondi forest and Shiselweni Forestry company are the largest. These three companies, together with some smaller ones, manage a total area of about 130000 ha covered by forest plantations. Of this total area, about 25000 ha (twenty percent) is unplanted and used for infrastructure and for the protection of biodiversity and ecosystems. Main species are pine (predominantly *Pinus patula*, but also *P. radiata* and *P. taeda*) and eucalyptus (mainly *Eucalyptus saligna* and *E. grandis*), covering about 80 and 20 percent respectively of the planted area. The productivity is relatively high, about 15- 20 cubic metres/ha per annum (t) for pine. Overall annual yield is approximately 1.2 million cubic metres of wood weigh a total value of about E650 million, which is largely exported as pulp, logs and timber

### **Wattle Management**

The programme ensures sustainable management and utilisation of wattle forests and plantations by communities and the nation. The wattle trees and forests are utilised for bark tanning extraction, mining timber, and hardwood pulp, building and fencing poles, firewood and making charcoal. Another task of the programme is to provide free wattle seed and seedlings to wattle growers for improving their wattle jungles. The programme also loans out chain saws and brush cutters, at a nominal charge, for rehabilitating farmers' wattle jungles.

The current deforestation and degradation of the natural forest and woodland areas are caused by a combination of factors such as conversion of land to agriculture, uncontrolled extraction of forest products from communal land and large livestock populations. Forest degradation is further compounded by a number of underlying socio-economic conditions, including increasing population pressure, that counteract rational utilisation of forest and woodlands.

The policy and institutional framework of the forest sector has been reviewed as part of the forest policy and legislation formulation process supported by the technical assistance of the Danish Co-operation for 'Environment and Development (DANCED).

The revised mission of the Government forest policies is: "The Government Forestry Service will contribute to the sustainable development of the Swazi forest sector by providing high quality, integrated legal, technical and extension services to all stakeholders utilising trees as a means to improve livelihood, conservation of forest resources and life supporting ecosystems".

The revised vision of the forest sector according to the draft of new National Forest Policy for Swaziland is: "To achieve efficient, profitable and sustainable management and utilisation of forest resources for the benefit of the entire society, and to increase the role of forestry in environmental protection, conservation of plant and animal genetic resources and rehabilitation "(in degraded land)

The new forest development policy objectives are:

- To improve the access to land for the utilisation and development of forest resources, and secure the tenure of forest and trees.
- To promote the rational and sustainable use of land, and achieve a sustainable balance between forestry and other uses of the land and water resources.

- To improve the forest productivity, and ensure sustainable supply of multiple forest products and services by maintaining the forest areas.
- To improve income and living conditions, and alleviate poverty.
- To conserve the biodiversity of the forest resources, encourage its sustainable use and ensure that benefits accrued are shared equitably.
- To promote the integration of forestry into urban development.
- To enhance the national capacity to manage and develop the forest sector in collaboration with other stakeholders.

The objectives will be pursued through the sustainable management of four strategic forestry areas, namely industrial forestry, community forestry, urban forestry and natural forests and woodland management which are elaborated in detail in the draft new National Forest Policy document.

### **Management of Forest Resources**

The DANCED funded programme will prepare a National Forestry Action Programme (NFAP). One of the outputs of the programme will be the definition and development of national criteria and indicators for sustainable forest management (SFM) of all types of forests and woodlands. The criteria and indicators at national level have been defined by a Danish Consultant working with stakeholders in February 2001 based on the dry zone process for Africa. The criteria and indicators need to be defined and developed at the forest management unit level for each of the forest types. Once defined, developed and tested, the criteria and indicators will form part of the regulations, which will be the basis for the establishment of agreed management standard for all types of forests in Swaziland. A natural resource accounting for forestry has been initiated. The information will be useful in giving forestry more value in national accounts than is the case at present and thus give forestry a competitive position when planning for other land uses. The NFAP will define the programmes and requirements for industrial forestry, community forestry (including wattle, woodlots and agro-forestry), urban forestry and natural forests and woodland. The NFAP is also expected to define the programmes and services to be provided by the government and those to be provided by other stakeholders.

### **Indigenous Forests and Woodlands**

The draft of the new national forest policy call for the establishment of natural resources management committees in each chiefdom who will oversee the protection, management and use of all forest resources in their chiefdoms and areas. This concept has been accepted and supported by the chiefs and communities. It is expected that once operational, the over-exploitation of indigenous forest resources will be brought under control. A supporting legislation to control the use of protected flora as well as all indigenous plants of socio-economic importance is already in place, the Flora Protection Act No.5, 2001. The forest legislation to support the national forest policy is under preparation. It is expected ready for promulgation around June 2002. The forest policy and the legislation provides for the establishment of government flora and forest resource and communally managed forest reserves.

### **Wattle Forests:**

Wattle continues to be a source of raw material and income for many rural communities through the sale of firewood, wattle bark, construction and mining timber and hardwood pulp. It is also a source of bark for the production of vegetable tannin in Matsapha in Swazi Wattle Industries and Iswl.'Pc in South America. A second tannin extraction plant will be established at Nhlngano by Swazi Wattle Industries in partnership or joint venture with Swazi and South African investors. The raw material for the two tannin plants will be supplied by the three regional Swazi Nation Land Wattle Growers Co-operative Societies in Shiselweni, Manzini and Hhohho. It is anticipated that the individual title deed land wattle growers will also participate in the new investment. A memorandum of understanding to facilitate business relations amongst all the participating stakeholders in the wattle industry, that is investors, wattle growers and the Government is under preparation.

**Government Plantations:**

Efforts will be made to identify government forests, which could realistically be managed, by the government forestry service and those, which could be leased to private entrepreneurs for management and utilisation. The NFAP will further define the activities and requirements to effectively utilisation programme of all government lands with timber plantations.

**Community Forests:**

The NFAP will define and establish a programme for the development of community forests. Natural resources management committees will be established in every chieftdom to oversee the protection, management and use of all forest resources in their areas. These structures arc expected to help in the identification of land for forestry development as well as implementing the forest policy NFAP, and enforcing the legislation.

**Private Forest Plantations:**

Collaboration and technical liaison between private and public forest sector will be further enhanced in the implementation of the national forest policy and legislation, as the private sector has been part of the forest policy formulation process. Government has continued to play a significant role in the fight against forest fires through fire fighting task team established by the Ministry of Agriculture and co-operatives to help Sappi Usutu. Government has continued to safeguard the interests of the nation through dialogue with the private sector in matters of serious concern.

**Strengthening Afforestation and reforestation National Tree Planting:**

National tree planting remains the main thrust for addressing problems of deforestation, loss of biodiversity, shortage of fuel wood, land degradation and drought as well as climate change. Demands for forest products and fuel wood remain unsatisfied. Trees continue to be planted countrywide by rural communities through the national tree campaign, the agricultural and forestry extension service, non-governmental organisations and the agencies to address the above problems.

**Institutional Strengthening and Support to Forestry Sector Development:**

Following the formulation of the forest policy and institutional framework of the forest sector, and the NFAP yet to be prepared, a technical assistance project will be formulated to implement the NFAP. This will be largely aimed at institutional strengthening to build capacity and capability of the forest sector to effectively and efficiently deliver services to society.



**Industrial plantations at Pigg's Peak**

# The Issues

Three prominent groups of issues have emerged in the course of this investigation, but they are not clearly separate from each other. All three groups have crosscutting implications for the others, and this makes it difficult to isolate any individual or group of issues.

- Damage to ecosystems and loss of biodiversity
- Ownership of and access to resources
- Fair distribution of costs and benefits

Within the first major group, '**Damage to ecosystems and loss of biodiversity**' there are a number of specific issues that were highlighted during the research:

- 1) Destruction of grasslands and loss of natural water resources
- 2) The spread of invasive alien plants including plantation trees
- 3) Loss of access to biodiversity resources
- 4) Implications for climate change

Under the second heading, '**Ownership of and access to resources**' the following items need to be addressed:

- 1) Allocation of and access to land for food production
- 2) Economic implications of inequitable access to resources
- 3) Equitable access to water and consequences for downstream users of water

'**Fair distribution of costs and benefits**' includes a wide range of issues, but the most important of these are the following:

- 1) Sharing of benefits from land under plantations
- 2) Externalisation of social and environmental costs
- 3) The potential viability of alternatives to the status quo, and the value of lost opportunities
- 4) Further local beneficiation of plantation products
- 5) Employment opportunities and benefits
- 6) Implications for community health and culture

It is clear that issues around the subject of water are overarching, and need to be considered in an integrated examination of the subject. Using a broad approach to the question of costs and benefits, it could simply be asked: Who really profits, and who ultimately pays? It is a fact that large parts of Swaziland's land resource together with the water resource have been historically appropriated for the benefit of non-Swazi corporate entities and foreign consumers. Certainly these investments into the exploitation of Swaziland's natural capital will have some positive financial spin-offs for narrow sectors of the local economy, but is there an adequate balance? Is there a fair spread of capital and profits?

The following paragraphs are an attempt to examine some aspects of these issues, and to expose underlying social and environmental injustices that have helped to artificially sustain Swaziland's timber plantation industry.

## **Ownership of and Access to Resources**

If soil and water are considered to be the basic resources needed to sustain eco-systems and people, there can be little doubt that timber plantations have appropriated a disproportionate share of that resource in Swaziland. Nearly all timber plantations in Swaziland have been established in the high rainfall, deep-soiled 'High Veld' region in the West of the country. The high water consumption of these plantations is known to reduce the flow in rivers and streams that have their sources in those areas. Even though many of the plantations were originally established nearly 50 years ago, it should be recognised that the exclusion of nearly 120 000 ha of the most productive land in the country must have far reaching implications. The potential benefits of having allowed the area to remain as it was originally could exceed those derived from the current use by local people. Other agricultural land uses that might otherwise have become established there could possibly have produced greater benefits for the people and the natural environment of Swaziland.

Traditional agriculture and cattle grazing have been displaced onto drier, steeper areas where shallow soils have higher erosion potential and less capacity for water and nutrient retention. A relatively larger number of people need to subsist off a smaller area of less arable and productive land. These factors result in downstream impacts such as more severe flooding, soil erosion, soil nutrient depletion, and siltation of streams and wetlands, with consequent food shortages and impacts on health. In this context it is important to note that Swaziland is a recipient of a substantial amount of food aid. Although the official explanation is that the problem of food shortages is a result of an interminable drought, it is clear that there are other major factors that have contributed to the situation. It seems as if these factors are largely being ignored.



***Plantations reduce grazing available for livestock***

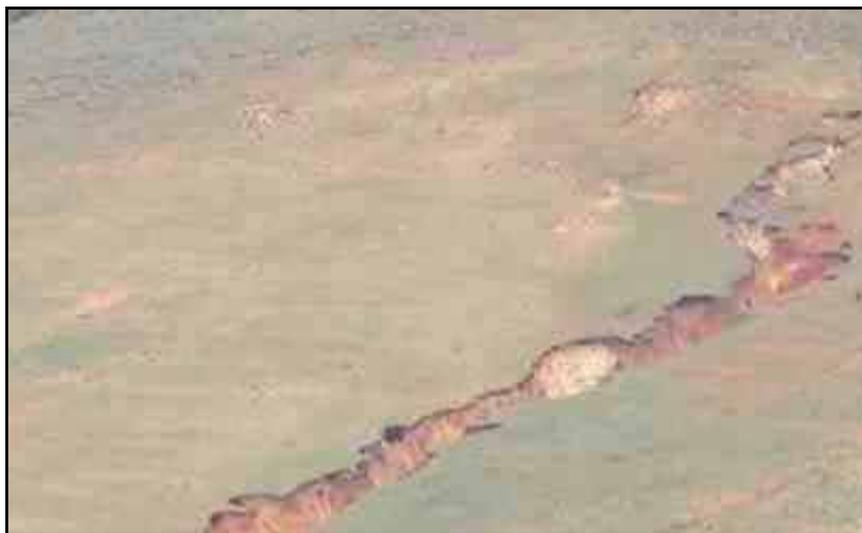
## **Climate Change Implications**

There is a general but erroneous assumption that timber plantations can function successfully as carbon sinks. Studies have indicated that when timber plantations are established in moist grasslands, that there is likely to be a nett reduction in carbon stored. Because industrial timber plantations are temporary entities, they cannot contribute to the permanent sequestration of atmospheric carbon. Sooner or later the carbon stored temporarily in plantation trees will be released into the atmosphere when the wood is converted to paper products, or burned as fuel. The additional impact of the amount of fossil fuel that needs to be burned in the transport and processing of timber into pulp and paper for humans to waste, would probably mean that all timber plantations intended for future industrial utilisation are effectively nett generators of atmospheric carbon. They simply cannot be a part of the solution to global warming.

It is recognised that land use change over areas as large as that occupied by timber plantations in Swaziland, can exert an upsetting influence on weather patterns and result in substantial hydrological impacts. Increased cultivation and heavier grazing resulting from higher concentrations of people engaged subsistence farming will lead to a decrease in soil moisture, that in turn sets off a cycle of reducing evapo-transpiration. This can possibly affect natural convection processes and cycles, and disrupt rainfall patterns. It is therefore possible that the extensive plantations in Swaziland could have caused a shift in rainfall distribution, and the localised drought conditions presently being experienced in the heavily populated and over-cultivated areas where rural people are concentrated.

The classic example of this phenomenon is the dust bowl that was caused as a result of intensive agriculture in the mid-west of the USA during the 1930s. Throughout Africa rapid desert encroachment in marginally productive agricultural areas is a serious problem, and there is little doubt that the effects of any large-scale intensive agricultural activity could translate into the type of negative impact on rainfall described above. It appears that there may be cause to put much of the blame for Swaziland's drought at the door of the timber plantation industry.

See - NASA [http://www.gsfc.nasa.gov/gsfc/newsroom/tv%20page/G04-014\\_earth.html](http://www.gsfc.nasa.gov/gsfc/newsroom/tv%20page/G04-014_earth.html)



**Loss of vegetation cover due to pressure from overgrazing leads to soil dehydration and ultimately desertification**

## **Threats to Culture**

As more and more foreign influence comes to bear on the indigenous people of Swaziland, so will the character of Swazi culture come under increasing pressure to change. Many years of colonial control and foreign investment have brought a range of un-Swazi activities and products, which have slowly displaced traditional knowledge, language, customs and lifestyles and introduced the paraphernalia of western consumer society. The supposed benefits to local people of this cultural transformation may or may not materialise. What cannot be denied though, is that the material things that come with the transition to a western lifestyle- cars, clothes and coca-cola - all have to be paid for with money extracted from the natural environment in one form or another. Natural wealth has to be exploited, converted, exported and sold before the perceived trappings of economic advancement can be acquired, using undervalued local currency to pay more for less.

## **Profits for the People**

The exportation of unprocessed or partially processed and minimally beneficiated plantation products bring in the lowest possible return to the country. High-end profits are made when end-user consumer products are manufactured from the timber and sold. The raw, unprocessed nature of the bulk of the timber plantation products that leave Swaziland means that greater volumes have to be produced and transported at greater environmental cost, and fewer people employed locally.

Employment offered by the timber industry is often far more hazardous than conventional agricultural jobs. The danger of injury to workers is especially high in certain activities, especially when timber from plantations is being cut and transported. Other dangers include exposure to toxic chemicals and dangerous machinery in pulp and saw mills. This is substantiated by a report of the ILO (United Nations International Labour Organisation) that rates forestry (in this case plantation) work as the most dangerous.

A recent trend by the big timber plantation companies in both South Africa and Swaziland, is the outsourcing of labour. Thinly disguised as black empowerment, it is not difficult to see that the main motive on the part of the companies concerned is increasing profitability and reducing the risk of labour action. A relatively small number of individual employees have been identified as 'management material' and then groomed to take over labour intensive plantation operations in the form of "own businesses". All the responsibility for employment is then passed on to these 'entrepreneurs'.

## **Food Security**

Swaziland imports nearly 100 000 tons of food (80% of its needs) and receives 15000 tons in the form of donated food aid per annum. It is debatable whether this would be necessary if the land and water resources that have been appropriated for timber plantations were available for food production in the country. Road infrastructure provision and maintenance, health services, education and conservation are all paid for with public funds largely generated by other sectors of the economy.



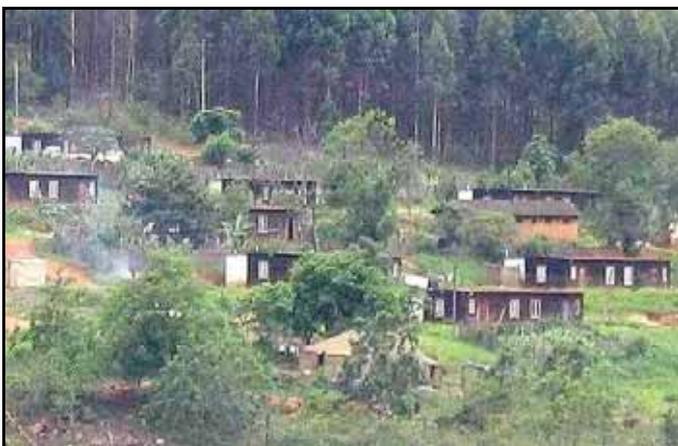
**A substantial amount of Swaziland's food is received as donations**

## **HIV - AIDS**

The estimated HIV infection rate is considered to be the highest in the region – up to 38%. Such high infection levels are usually associated with areas where there is trucking activity and/or migratory labour movement.

In the case of Swaziland, it is possible that men working on contract in mines in South Africa are a source of infection for local women. Similarly, temporary migrant workers and truck drivers associated with the sugar and timber industries are likely to be a part of the problem. Without thorough research, it would be impossible to make any valid assumptions, but there is a strong likelihood that timber plantation activities where contract labour is employed, together with the associated industrial and transportation activities, have contributed to the problem.

The principal at a school in a saw mill worker's village near Pigg's Peak, said that nearly all Standard 5 (Seventh year of school at age 12-15) girls fall pregnant to older employed men. She stated "Young girls will accept as little as 2 Emalengeni for sex because it is money that they need".



**Worker accommodation at Mondi Sawmill near Pigg's Peak**

## Worker Organisation

The relationship between the labour movement and the Swaziland government is a controversial issue. Swaziland is an absolute Monarchy, and King Mswati III appears to have been reluctant to recognise the legitimacy of worker unions in the country. This has led to considerable conflict. Workers also claim that they have been excessively exploited as a consequence of not being properly organised.

In the face of seemingly unavoidable poverty, many rural Swazi people appear to have given in to accepting the menial 'jobs' that the timber industry provides without objection. It seems that just having a job at all is justification enough for whatever sacrifices need to be made in terms of the poor pay and labour practices that come with contract employment. This system appears to perpetuate the 'Baas-skap' relationship between those that are powerful and wealthy and others that are poor and have little capacity to negotiate a better arrangement. The current situation is comparable the feudal labour system, where those that do most of the work receive the smallest reward.

Farmers that make the incorrect assumption that big business grows trees and therefore must be making big money from the activity, are easy prey for the "out grower" schemes that have been promoted by Government and Industry. The reality is that the most suitable areas for timber production – in the high rainfall Highveld region - have already been appropriated by the industry, and the marginal areas where community land is possibly available have only limited potential. Plantations established in such areas are not likely to be financially viable.



**Limited benefits from plantations for local people  
includes contract employment**

## **Water**

The areas under the more than 100, 000 ha of timber plantations in Swaziland are already deprived of water. They consume more than the natural rainfall supply to area that they occupy, even drawing additional water from surrounding aquifers and streams. Plantations in the lower rainfall areas would have an even greater impact on an already depleted water resource, and would impact most during the dryer months of the year.

Reduced flow can result in increased microbial concentrations in streams and rivers. Combined with a lack of sanitation in rural areas, this can contribute substantially to the incidence of diseases such as Cholera.

The progressive dehydration of the landscape must result in a range of “knock-on” or sequential impacts – mostly relating to food production and human health issues. Needless to say, these impacts would also affect the state of the biodiversity resources and their associated natural habitat, that play an extremely important part in providing food, medicine and building materials to rural communities.



**Unprotected leachate pond below Sappi Usutu Waste Dump**

## **Environmental Health**

Air and water pollution from pulp and paper mills, is often the subject of complaints by communities. The community of Bhunya where the Sappi Usutu pulp mill is situated appears to have suffered considerably from the polluted state of the air in the vicinity of the mill where the worker village is situated. Recently the Swazi environmental NGO, YONGE NAWE, initiated a project to monitor air quality by having air-samples analysed for pollutants. Although there are complaints of the air pollution causing health problems to humans in the area, it is not known what the effect might be on the wildlife and livestock.

The Sappi Usutu mill is notorious for regular releases of effluent into the nearby Lusutfu River. Additional pollution comes from the industrial waste dump that is situated in the worker village. Leachate from this unprotected dump flows into a pond that is not fenced to prevent access by children and animals, and which apparently overflows into a stream that feeds into the nearby river during rains.

Although the levels of pollution produced by sawmills are less obvious it must be recognised that the cumulative effect of the use of toxic wood preservatives in an area can be considerable. The disposal of waste materials into nearby streams appears to be a common practice and, can have negative implications for aquatic organisms and human communities.

During the establishment and maintenance of plantations, numerous toxic agricultural chemicals, mainly herbicides such as 'garlon' and 'round-up' are employed to eradicate so-called pests that threaten to damage or compete with young plantation trees. Plants and animals, both indigenous and alien are targeted, and the pesticides used present a threat to both the workers that are exposed to them during their application, as well as non-target plants, birds, mammals, reptiles, fish and insects. It would be difficult to assess the degree of damage caused by this source of pollution without conducting specific research, but there is likelihood that the impact on biodiversity is high.



**Sawmill impacting on stream near Mbabane**

## **Plantation Encroachment and Alien Invading Plants**

The tree species commonly used in plantations are all highly invasive. For many years, the timber industry has allowed their trees to spread into watercourses, wetlands and steep inaccessible areas. This results in the displacement of natural species mostly through shading or suffocation, and further destruction of habitat through ongoing impacts such as the dehydration of streams and wetland areas.

One of the most damaging aspects of the spread of plantations into grasslands is the effect of shading. Grassland plants are not accustomed to the shady conditions that are created by tall plantation trees such as pine, eucalyptus and wattle, and before long they die from lack of sunlight. Over time there are changes in soil pH, particularly where pine-needles accumulate. Under these disturbed conditions plants that prefer higher soil acidity, and can tolerate shady conditions - usually invading aliens such as *Lantana camara* and *Solanum mauritianum*, introduced from South America and Asia respectively, soon establish and continue to spread into natural areas and agricultural lands.

It seems that the timber industry has recently committed to dealing with the problem of alien invading plants, but this may only be on account of the requirements of the conditions set in terms of their FSC (Forest Stewardship Council) certification. It would appear that the economic incentives arising from FSC certification must be substantially greater than the anticipated cost of eradicating the invading weeds in their plantations.

After spending considerable time visiting the three main timber plantation areas in Swaziland, it emerged that management standards differed enormously from area to area with respect to control of alien plant encroachment. Plantations at Shiselweni were by far the best, compared to average performance at Bhunya / Mhlambanyatsi. The plantations in the Pigg's Peak area could at best be described as very poorly managed, and at worst – absolutely disgusting. It is unbelievable that these plantations that in some areas are a totally unmanaged mix of species, heavily infested with alien invader plants, could have been given FSC certification.



**Plantation encroachment dries out  
and pollutes streams and rivers**

## **Economic Worth**

The timber industry in Swaziland is considered to be an important source of export earnings, and one of the major formal employers. There are an estimated 20, 000 people employed in total, but this figure includes many people employed intermittently by contractors to the industry, whose function is essentially to supply semi-skilled labour.

The contract labour system was introduced during the last decade when Mondi and Sappi retrenched large numbers of permanent workers. Most of these retrenched workers were re-employed at lower wages offered through temporary employment by contractors, who had been encouraged and assisted by the timber companies to establish their “own businesses”.

Workers that had previously been in the permanent employ of the timber companies, and had enjoyed all the normal benefits now had no choice but to become contract workers. The companies concerned were able to cut their labour costs, but it is not evident how the workers benefited if at all. The extra profit that the reduction in staff expenses realised for the companies was achieved at the expense of Swazi society and the State.

It is believed that the Government of Swaziland recently made a substantial financial contribution to Sappi Usutu, shortly after the company spent E300 million on a new pulp digester to increase annual production to over 220 000 tons. This company has threatened that any increase in expenses could mean their having to close, and leave thousands without jobs. At the same time, they have reportedly promised E10 million will be spent on equipment to reduce pollution from the mill. These contradictory reports make it unclear whether the pulp mill at Bhunya is viable or not.

It is believed that the timber industry contributes 9% of the Swazi National GDP, but this should be measured against the informal rural economy that is not included in the official statistics. The timber industry is reported to have a capital worth of E 20 Billion, but it is unlikely that the actual cash invested comes anywhere near that figure. How many sustainable rural livelihoods have been lost in order to achieve the present situation?

How many jobs in food farming and ecotourism might have been created if the plantation industry had not taken such a large share of Swaziland’s land and water resources? The answers to these questions may not be known, but it must be remembered that developments during colonial times never took social and environmental costs into account.



**Overloaded and often unroadworthy timber trucks  
can be a threat to road users**



**Public roads suffer as a result of heavy timber traffic**



**Where have all the flowers gone?**

## Land Tenure

Ownership of land under timber plantations in Swaziland is an issue that needs thorough examination. Mondi Peak say that their plantation land is held in freehold title, but Sappi Usutu maintain that they only hold title to the towns at Bhunya and Mhlambanyatsi. The Usutu plantation land was given back to the Swazi Nation ten years ago, and is now leased back.

It is said that all land in Swaziland belongs to the people, and that use and custodianship of the land occupied by plantations is vested temporarily in the timber companies concerned. It should be assumed that substantial revenue is generated through the use of that land and that this revenue is used to the benefit of the communities deprived of access to that land.



***Vast tracts of plantations displace traditional food production from high-rainfall deep-soiled regions onto marginal steep and rocky land***



***Farming scene in southern Swaziland***

# Identifying and Categorising Impacts

It was suggested by a number of the people interviewed that the initial negative effects of the establishment of Swaziland's plantations have already passed, and that people and the modified ecology have settled into a comfortable relationship with industrial tree plantations. There is little doubt however that the existing plantations continue to impact on both society and the natural environment in many different ways. The impacts identified by this study can fall into ENVIRONMENTAL (Affecting Biodiversity and Ecosystems) or SOCIAL (Affecting People and Communities) categories.

Most of the items included in the tables below were identified during discussions with interviewees, and from comments on survey questionnaires, but some are derived from observations made by the author when studying similar types of plantations in South Africa.

## a) Environmental Impacts

IMPACTS ON	ESTIMATED LEVEL OF IMPACT
(a) Natural vegetation & other wildlife habitat	severe
(b) Lakes, pans, streams & rivers	severe
(c) Soil stability, porosity and erodability -	moderate
(d) Soil pH and fertility and microbial activity	not known
(e) Persistence and health of grasslands	high
(f) Persistence and health of wetlands	very high
(g) Spontaneous spread of plantation trees	high
(h) Spread of invading alien plants	severe
(i) Medicinal plant and animal availability	high
(j) Bird and mammal populations	high
(k) Forests and riparian zones	very high
(l) Air quality	high near pulp mill
(m) Aquatic life (water quality)	high

## b) Social Impacts

IMPACTS ON	ESTIMATED LEVEL OF IMPACT
(a) Land ownership & security of tenure	high
(b) Food security	high
(c) Availability of grazing for livestock	high
(d) Livestock on marginal land	high
(e) Availability of natural resources	high
(f) Traditional culture and lifestyle	severe
(g) Eco- tourism potential	very high
(h) Crime levels	high
(i) Community stability	very high
(j) Integrity of family units	high
(k) Community health	Very high

Impacts can also be classified within one or more of the following categories:

- 1) Direct or Primary Impacts (e.g. Loss of grasslands)
- 2) Consequent or Secondary Impacts (e.g. Loss of medicinal plants)
- 3) Indirect or Off-site Impacts (e.g. Spread of alien plants)
- 4) Cumulative or Downstream Impacts (e.g. Overgrazing)

# Conclusions

This investigation into and analysis of the impacts of large-scale tree plantations in Swaziland, has shown that there are many contributing factors that ultimately determine the nature and extent of these impacts.

The most significant variance in views of whether impacts are positive or negative was in respect of employment and economic benefits to local communities. Most people automatically assume that timber plantations and their associated industrial activities yield nett benefits in terms of jobs, but fail to recognise how the same activities can cause the loss of existing employment and undermine future opportunities. Impacts relating to the natural environment and human health were considered negative for the greater part, although the view of the timber industry was that there were significant positive outcomes for the environment arising from their control and management of timber plantation areas.

A point that needs to be made is that the majority of the impacts caused by the establishment of plantations, although perceived to be historical and therefore of limited significance in the present time, still have a profound effect on society and the environment and will continue to do so as long as the plantations remain. Over and above what has happened historically, there are a number of major impacts that are felt wherever plantation related industrial activities take place. This includes the operation of pulp mills such as the Sappi Usutu mill at Bhunya and the various sawmills scattered around the region. It also manifests in high concentrations of dangerous timber trucks and tractors on public roads in the areas where such timber plantation related industrial activities are taking place. There are a number of less obvious negative impacts that arise from these activities including those relating to human health in the form of contagious diseases and exposure to polluted air and water. Other significant negatives that arise relate to employment practices within the industry, retrenchments and the disruption of rural communities' traditional way of life.

What the interviews highlighted was that community members are most concerned with those impacts that directly affect their health and financial situations. Better-educated individuals were more sensitive to and displayed a greater awareness of the environmental and social impacts. From the corporate perspective, although there was acceptance of the nature of the impacts that had been identified, their response was usually that the level of the negative impacts was less serious than indicated by the communities and other commentators. This should be seen as a normal reaction when it is considered that corporate interests are involved in growing timber plantations primarily to make money; and to accept full responsibility for problems affecting communities and the environment, would negatively affect their profitability. Although it was claimed that some of the complaints from communities were exaggerated, based on my own evaluation of the situation, their reports were accurate.

Responses to the questionnaire drew attention to a number of issues that had not been raised during interviews and my empirical observations. What this illustrates is that there may be other issues that have yet to be identified. It would, however, probably require in depth study and analysis to isolate and define these additional issues. Further distribution of the survey questionnaire could help to obtain a greater number of responses and with that a better indication of how serious the listed impacts are perceived to be. It could be a most worthwhile exercise, as it would also help to increase the level of awareness of the various impacts listed in the survey questionnaire.

As is often the case with environmental studies it is very difficult to come up with precise results that will indicate clearly how to proceed. It should be assumed that the existing plantations will remain for the foreseeable future and that their negative impacts will continue to be absorbed by society and the environment. However, what is clear from the accumulated information is that the attitudes of the timber plantation industry and the government of Swaziland need to change. Incorrect assumptions made in the past need to be

re-evaluated, and integrated decision-making should replace the current model which is largely dictated by the self-congratulatory attitude of the plantation companies.

Swaziland is in the process of developing policy and legislation to govern the management of forests and forestry (plantations) and it would be wise to use this opportunity to ensure that there is clear differentiation between forests and plantations in this policy. The wise use of natural resources such as Swaziland's biodiverse forests require a totally different management approach to that of the utilisation of timber plantations that have been imposed onto areas that were once valuable, pristine grasslands.

The assumption that the investments made by timber companies in the form of processing plants and other infrastructure are primarily for the benefit of the Swaziland economy and people, needs to be held up to scrutiny. It is possible that the actual situation is substantially different and that the claimed investment of E20-billion by the timber industry in Swaziland is grossly exaggerated. A careful evaluation of the costs and benefits associated with the timber industry as a whole may well demonstrate that it represents a net investment deficit on account of damage and hidden consequences that have not been costed into the exercise. What it boils down to is that many environmental and social costs are externalised by the timber industry, resulting in a situation where their profits are effectively derived from subsidies exacted from the broader community.

There is a possible positive side to the picture in that it is clear that plantation companies are trying harder to give the impression that they are doing more to meet their moral and legal environmental obligations than they have in the past. Alien infested areas in riparian zones and wetlands that have been neglected for many years are suddenly being given attention. After clear cutting wetland areas that were previously planted illegally, new plantations are now being planted in accordance with industry guidelines with increased setback distances from rivers, streams and wetlands. Much of the turnaround might be attributable to a new sense of environmental awareness and responsibility, but my view is that they are only doing it to meet certification standards in order to boost their profits!



**Clear-cutting exposes sensitive slopes to erosion and invasion by alien weeds**

# Recommendations

This report would serve little purpose unless it was able to contribute meaningfully to the resolution of at least some of the problems that have been identified as arising from impacts associated with the establishment and ongoing presence of industrial timber plantations in Swaziland.

Those areas that have already been converted to plantations, and that have been able to demonstrate their suitability for timber production within conventional parameters and meet acceptable norms and standards in relation to the viability of the plantation, should best be left as such. It is true that the worst of the impacts of plantations would already have been experienced in the form of destruction of natural vegetation, displacement of communities and loss of water resources. The ongoing off-site impacts that are generated can only be mitigated against if at the very least it could be ensured that all current profits and benefits are channelled to the local people via quality employment, as compensation for their previous loss of land and livelihood. This would need to be coupled with the introduction of more thorough and effective environmental management, implemented and maintained by the communities to whom the land rightfully belongs. The internationally recognised practice of CBNRM (Community Based Natural Resource Management) will need to be introduced in order to give effective ownership, control and responsibility back to the communities.

The social and ecological debt of the Sappi Usutu Pulp mill will need to be carefully assessed and remedied. Community health will need special attention. The workers' village at Bhunya should be flattened, and workers provided with alternative opportunities for accommodation away from the polluted environment near the mill. The three schools at Bhunya, where young people are exposed to polluted air, should be relocated as a matter of urgency. An alternative would be Mhlambanyatsi, where there is good infrastructure, and a healthier environment.

It must be clear that any new plantations proposed, including so-called community woodlots, will only exacerbate existing problems and should be avoided. It must also be understood that woodlots, although comprising smaller areas individually, can cause cumulative impacts of the same magnitude as large plantations. The only justification for new plantations should be if they are to be established on land that has already been heavily invaded by plantation trees. There is no shortage of such areas in Swaziland, and in most cases all that is required is to put management systems into place and to convert these areas into formal plantations.

It is evident that Swazi people are sensitive to the problems associated with plantations, but it would be useful if either an existing environmental group like YONGE NAWE, or a new organisation could take up the issue of timber plantations in Swaziland. A local campaign to monitor and where necessary take actions to prevent further harm to rural communities and their natural resources is needed.

# Parties Interviewed

NGO REPRESENTATIVES	
<p><b>Yonge Nawe Environmental Action Group</b></p> <p><b><u>Joseph Mutsigwa</u></b> Communications and Research Co-ordinator <a href="mailto:josephm@yongenawe.org.sz">josephm@yongenawe.org.sz</a></p> <p><b><u>Thuli Makama</u></b> Director <a href="mailto:btmakama@yongenawe.org.sz">btmakama@yongenawe.org.sz</a> <a href="mailto:yonawe@realnet.co.sz">yonawe@realnet.co.sz</a></p> <p>Tel +268-4047701/1394 (Kitiwe) P O Box 2061, Mbabane, H100 <a href="http://www.yongenawe.com">www.yongenawe.com</a></p>	<p><b>SCAPEI – Manzini</b></p> <p><b><u>Nhlanhla Msweli</u></b></p> <p>Cell +27-73-1577520 C/o George Dor Tel (w) +27-11-4037624 Tel (h) +27-11-6487000 Cell +27-84-7601502</p>
ENVIRONMENTALISTS	
<p><b><u>Kate Braun</u></b> <a href="mailto:kbraun@africaonline.co.sz">kbraun@africaonline.co.sz</a> Tel +268-4042125</p>	<p><b><u>Rex Brown</u></b> <a href="mailto:ecs@africaonline.co.sz">ecs@africaonline.co.sz</a></p> <p>Tel +268-4044118 Fax +268-4040629 Cell +268-6045036 PO Box B25, Sandla PO, Mbabane H102 <a href="http://www.ecs.co.sz">www.ecs.co.sz</a></p>
COMMUNITY MEMBERS	
<p>Bhunya High School <b><u>Phillip Vilakati</u></b> Principal</p> <p>Tel +268-4526354 Box 436, Bhunya</p>	<p>Bhunya Secondary school <b><u>Mrs E. Nkonyane</u></b> Principal</p> <p>Tel +268-4526177 Cell +268-6053793 Box 186, Bhunya</p>
<p>Ekuthuleni Primary School <b><u>Duduzile (Matilda) Zwane</u></b> Principal</p> <p>Tel +268-4371532 Box 189, Pigg's Peak</p>	

<b>INDUSTRY REPRESENTATIVES</b>	
<p>Mondi Peak Plantations  <b><u>Tony Bold</u></b>            tony_bold@mondi.co.za</p> <p>Tel +268-4371136 or 4371255 or 4371006            c/o Ant Kenny            Tel +27-11-6384005            Cell +27-82-8048323</p> <p><b><u>Ricky Pott</u></b>            Mondi Environmental Manager</p>	<p>Sappi Usutu Pulp Mill - (Sappi Environmental declined interview)  <b><u>Mandla Dlamini</u></b>            mandla.dlamini@sappi.com            Public Affairs Manager</p> <p>Tel (w) +268-4526234            Tel (h) +268-4674384            Fax +268-4526022            Cell +268-6020285            Private Bag Mbabane, H110, Swaziland</p>
<p>Sappi Usutu Pulp Mill  <b><u>Shane Perrow</u></b>            shane.perrow@sappi.com            Mill Manager</p> <p>Tel (w) +268-4526028            Tel (h) +268-4674381            Fax +268-4526029            Cell +268-6020303            Private Bag Mbabane, H100, Swaziland</p>	
<b>GOVERNMENT PERSONNEL</b>	
<p>SNTC – Swazi National Trust Commission  <b><u>Kim Roques</u></b>            bcpd@realnet.co.sz            Biodiversity Conservation and Participatory Development            Co-ordinator - BCPD</p> <p>Tel +268-4163351            Tel +268-6050640            PO Box 100, Lobamba  <a href="http://www.sntc.org.sz">www.sntc.org.sz</a></p>	<p>Swaziland National Herbarium  <b><u>Titus Dlamini</u></b>            sdnh@africaonline.co.sz            Assistant Herbarium Curator</p> <p>Tel +268-5282111 or 5283017            Fax +268-5283360 or 5283490            Cell +268-6022547            PO Box 4, Malkerns</p>
<p>Department of Agriculture and Cooperatives  <b><u>Solomon Gamedze</u></b>            dofmoac@africaonline.co.sz            Senior Forestry Officer</p> <p>Tel +268-6057699            Tel +268-4042731            PO Box 162, Mbabane, Swaziland</p>	

# Survey – Questionnaire

## Environmental and Social Impacts of Large-scale Tree Plantations in Swaziland

Compiled by Wally Menne  
Timberwatch Coalition  
[www.timberwatch.org.za](http://www.timberwatch.org.za)

**PO Box 30577, Mayville, 4058, South Africa**  
E-mail: [plantnet@iafrica.com](mailto:plantnet@iafrica.com)  
Tel: 27 31 2014648 Fax: 27 31 2019958

Commissioned by the World Rainforest Movement (WRM)  
Montevideo, Uruguay. URL: [www.wrm.org.uy](http://www.wrm.org.uy)

### General Information

This form has been designed to help assess the ways that large-scale tree plantations affect people (social) and natural systems (environmental). There are two tables, one for each of these categories, for completion.

Impacts in both social and environmental categories can be classified within one or more of the following groups:

- 4) Direct or Primary (e.g. Destruction of grasslands)
- 5) Consequent or Secondary (e.g. Loss of medicinal plants)
- 6) Indirect or Off-site (e.g. Spread of alien plants)
- 7) Cumulative or Downstream (e.g. Overgrazing in other areas)

If so desired, reference to the impact class or group may be made in the 'comments' column of the assessment form. Additional comment is welcome, and may be submitted on separate sheets if necessary.

Please submit completed surveys to e-mail address given above.

The results of this survey will be made available to all participants.  
Thank you for your time.

NAME	
ORGANISATION	
ADDRESS	
TELEPHONE/FAX	
E-MAIL	

## 1) ENVIRONMENTAL IMPACTS

Please rate the following on a scale of 1 – 10, with 1 being very low impact and 10 being very high impact:

IMPACTS ON	RATING	COMMENTS
(a) Natural vegetation & other wildlife habitat by plantation establishment		
(b) Surface water – Lakes, pans, streams & rivers by plantation water uptake		
(c) Soil stability, porosity and erodability - both on and off plantation sites		
(d) Soil ph and fertility as well as microbial activity in soils within plantations		
(e) Persistence and health of grassland ecosystems (through fragmentation)		
(f) Persistence and health of wetland ecosystems (through desiccation)		
(g) Adjoining natural areas caused by the proliferation of plantation tree species		
(h) Farmlands & natural areas due to spread of invading alien plants		
(i) Local medicinal plant and animal availability due to reduced populations		
(j) Local bird and mammal populations due to illegal hunting and trapping		
(k) Adjacent forests and riparian zones during clear cutting of plantations		
(l) Air quality arising from pollution from paper / pulp mills and vehicles		
(m) Aquatic life (water quality) due to mill waste & effluent polluting rivers		
(n) Other – please specify		

## 2) SOCIAL IMPACTS

Please rate the following on a scale of 1 – 10, with 1 being very low impact and 10 being very high impact:

IMPACTS ON	RATING	COMMENTS
(a) Land ownership & security of tenure due to community displacement by plantations		
(b) Food security through loss of resources needed to produce food requirements		
(c) Availability of grazing for livestock due to conversion of grasslands to plantations		
(d) Grazing in other areas due to pressure of increased livestock numbers		
(e) Access to products derived from land before plantations <ul style="list-style-type: none"> <li>a. thatching</li> <li>b. medicinal plants</li> <li>c. wild food plants</li> <li>d. animals for food</li> <li>e. Crops and dairy</li> <li>f. animal manure (fertiliser)</li> <li>g. other</li> </ul>		
(f) Traditional culture and lifestyle associated with pastoral land use		
(g) Employment potential of eco-tourism and other Nature-based activities		
(h) Crime levels due to irregular and temporary nature of contract employment		
(i) Community stability due to recruitment of plantation workers from other areas		
( j) Integrity of families arising from breadwinners having to seek work away from home		
(k) Community health arising from pollution of air and water caused by mill emissions		
(l) Other – please specify		

# Internet Information Sources

## General

**(A) A Short History of the Kingdom of Swaziland**

<http://www.swaziweb.net/histr/>

**(B) Swaziland History**

<http://www.lonelyplanet.com/destinations/africa/swaziland/history.htm>

**(C) Swaziland Environment**

<http://www.lonelyplanet.com/destinations/africa/swaziland/environment.htm>

**The Convention to Combat Desertification - National Action Programme**

[http://www.ecs.co.sz/ccd/env\\_articles\\_policy\\_ccd\\_nap.htm](http://www.ecs.co.sz/ccd/env_articles_policy_ccd_nap.htm)

**(D) Swaziland National Trust Commission**

[www.sntc.org.sz/reserves/reserves.html](http://www.sntc.org.sz/reserves/reserves.html)

**(E) Profile of Swaziland**

[http://us.politinfo.com/Information/Country\\_Profiles/country\\_profile\\_082.html](http://us.politinfo.com/Information/Country_Profiles/country_profile_082.html)

<http://www.visitswazi.com/tour/culture.html>

**(F) Country Profile: Swaziland**

<http://www.new-agri.co.uk/02-6/countryp.html>

## Plantations

**(G) The Forest Policy Green Paper**

[www.ecs.co.sz/forest\\_policy/forestry\\_green\\_paper/forest\\_green\\_paper\\_chapter2.htm](http://www.ecs.co.sz/forest_policy/forestry_green_paper/forest_green_paper_chapter2.htm)

**(H) The National Forest Policy, 2002**

[http://www.ecs.co.sz/forest\\_policy/forest\\_policy/fp\\_chapter1.htm](http://www.ecs.co.sz/forest_policy/forest_policy/fp_chapter1.htm)

**(I) Swaziland Department of Agriculture – Forestry**

<http://www.gov.sz/home.asp?pid=1797>

**(J) Description of plantation resources**

<http://www.fao.org/forestry/site/18316/en/swz>

**(K) The sustainability of wood production in plantation forestry -J. Evans**

[http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/docrep/w7126E/w7126e07.htm](http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/w7126E/w7126e07.htm)

**Worldinformation.com**

[www.worldinformation.com/woi/start.asp?content=world&continent=Africa&country=268](http://www.worldinformation.com/woi/start.asp?content=world&continent=Africa&country=268)

**(L) Integrated industrial forestry: the case of the Usutu Pulp Company Ltd.**

[http://www.worldbank.org/afr/afr\\_for/interim/sswazInd.htm](http://www.worldbank.org/afr/afr_for/interim/sswazInd.htm)

**(M) Sappi Usutu mill restructuring to restore profitability**

<http://www.sappi.com/home.asp?pid=463&aid=252>

**Yonge Nawe introduces community pollution monitoring**

<http://www.yongenawe.com/03resources/workshopmaterial/airquality130202.html>

<http://www.gcmonitor.org/pr8.html>

## **Social and Political**

**(R) The Political Economy of Swaziland**

[www.sacp.org.za/ac/ac159i.pdf](http://www.sacp.org.za/ac/ac159i.pdf)

**(S) Swaziland: a 21<sup>st</sup> century feudal regime**

<http://www.icftu.org/www/PDF/EnglishSwazilanddocmcw.pdf>.

**(T) Swaziland Disintegrating**

*Aids and Famine run rampant throughout the land*

[http://rhodesian.server101.com/swaziland\\_disintegrating.htm](http://rhodesian.server101.com/swaziland_disintegrating.htm)

**(U) Swaziland gripped by double tragedy**

<http://news.bbc.co.uk/1/hi/world/africa/2027079.stm#ten>

**(V) Swaziland Strikers beaten by Police**

<http://www.africahome.com/annews/categories/economy/EpyplFkEAEeqmpVjBU.shtml>

**(W) Victory for Protesting Swazi Unions**

<http://www.businessday.co.za/bday/content/direct/1,3523,1411217-6078-0,00.html>

**(X) Smart Partnership International Dialogue**

<http://www.gov.sz/home.asp?pid=2321>

**(Y) Impacts of timber plantations on rural people of Swaziland**

Presentation by Nhlanhla Msweli at the 'Timber Plantations: Impacts, Future Visions and Global Trends' conference held at Nelspruit on 13th November 2003.

<http://www.fishingowl.co.za/allenbusters9.html>