

**PERCEPTIONS OF THE FORESTRY INDUSTRY:
A CASE STUDY OF SAPPI FORESTS IN RICHMOND**



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ABSTRACT

Commercial forestry in South Africa was born out of the need to alleviate the growing demand on limited natural resources. From small beginnings, the industry has grown over the years and currently plays a significant role in South Africa's economy. The industry is a source of employment, foreign exchange and it facilitates a number of downstream processing activities.

However, with the growth of the industry, there has also been increasing concern from various sectors over the impacts of the industry on the environment, particularly on water and biodiversity. More recently, concern has also shifted towards challenging the social and economic benefits of timber to local communities. As a result of growing pressure, legislation, policies and institutions have been transformed to ensure that environmental and social issues are taken into consideration in carrying out any form of development. The forestry industry has also changed considerably and understanding stakeholders perceptions has also become evident.

In 1995 as part of the process to adhere to ISO 14001 international standards, Sappi forests commissioned a study to enable them to have a better understanding of activities, products and services which could have an impact on the environment. The concerns of the stakeholder were incorporated into their management plan. In continued efforts to improve the image of the forestry industry, this study was commissioned in 1999 with the aim of understanding how peoples perceptions of the industry had changed since 1995.

The change of perceptions was determined through structured as well as semi structured interviews. A comparison between the responses in this study with those in Murphy *et al.* 1995 was undertaken to determine how peoples perceptions had changed since 1995. Even though the forestry industry had included some of the concerns raised by stakeholder and improved their management plans since 1995, peoples perceptions of the industry were largely negative. External changes leading to increased awareness in the intervening period were seen as the reason for the lack of change in peoples perceptions. Among others the external changes include increased transformation of environmental legislation both internationally and nationally which is more focused on addressing social as well as environmental issues.

PREFACE

The research described in this dissertation was conducted at the Centre for Environment and Development at the University of Natal under the supervision of Prof. Charles Breen (Institute of Natural Resources)

The study represents original work by Chimika Mwale and has not otherwise been submitted in any form for any degree or diploma to any other University. Where use of work of others has been made, it has been duly acknowledged in the text.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The forestry industry dates back to 1874 in South Africa. While the origins of the industry were closely allied with mining, plantation forestry has developed progressively over the years and has made a notable contribution to agriculture outputs, while facilitating a number of large downstream processing and manufacturing activities. The sector generates about 5% export earning and employs about 125 000 people in primary production (growing and harvesting) and secondary processing (saw and pulp mills). The industry also meets 90% of the domestic demand of wood and currently utilizes approximately 1.6 million hectares. It is expected that in the coming years the industry will continue to grow largely through small scale timber growers.

Growing with the industry, has been a number of concerns from several quarters. The industry has been criticized for depleting water, soil nutrients, posing a threat to biodiversity and displacing people and replacing other more valuable agriculture activities. These concerns have been the basis of the negative image of the industry held by many stakeholders.

The mentioned problems exist in the context of national and international concerns over the deteriorating state of the environment largely as a result of population growth and growing demands on limited resources. Scarcity of water and biodiversity reduction as a result of human activities have been acknowledged as global problems. In view of these problems, international bodies have formulated standards to help reconcile the productive function of development with protecting the environment. Legislation has also been transformed to ensure that environmental and social issues receive due attention when carrying out development projects.

The result of this mounting pressure, is that the forestry industry in South Africa has changed considerably. Traditionally focussed on the creation and management of plantation resources, environment management systems have been introduced aimed at addressing issues of equity, efficiency, and sustainability in plantation forestry management. Focus has been on determining how the forestry industry can contribute to national development, while improving the environmental quality and empowering rural communities. Pressures and opportunities to attain

certification from internationally accredited bodies, have also greatly fostered this change.

In 1995, Sappi Forests took the initiative of assessing those aspects of its activities, products and services which could impact on the environment in an effort to conform with ISO 14 001 international standards. Identification of stakeholders views was evident. As a result, a study was commissioned by Sappi forests to identify issues of concern among stakeholders and enable the industry to have a better understanding of perceptions about the industry. A number of the concerns raised by the stakeholders were taken into account in the management plans of Sappi Forests since 1995.

In continued efforts to improve the image of the industry, this study was commissioned in 1999 to determine whether stakeholders views of the industry have changed since 1995 and the possible reasons for the change.

1.2 Global Environmental Problem

In the past three decades the deterioration of the environment has been acknowledged as a global problem worldwide (Annesburg, 1993). Ecosystems have been degraded, biodiversity reduced, soil eroded and valuable water resources wasted through human activities (Yeld, 1997). The mentioned problems exist in the context of development as a result of population growth and a demand on limited resources (Fuggle, 1990; Fuggle, 1992). As a result human survival is now facing a global threat, consequent upon a complex of unrestricted human activities over the last three decades. What has been overlooked in the past is that the environment is where people live and development is what these people attempt to do to improve their lives (World Commission on Environment and Development, 1987: xi).

In recent years people have become increasingly aware of the environment and the effects development has had on it. It is now well understood that environment does not exist as a sphere separate from human actions, ambitions and needs (Ahmed and Mlay, 1998). However, human well-being depends on a favourable interaction between economic development, environmental health and quality of life (Huntley, Siegfried and Sunter, 1989).

The need to reconcile the productive functions of development (in this case forests) with the protective environmental and social roles has received much attention since the United Nations Conference on Global Environment in 1972. Since then it was agreed that in order to achieve the dual aim of environmental protection and development, the basic requirement of sustainable development must be adopted. When referring to sustainable development in terms of management of commercial plantations, the agreed definition at the United Nations World Commission on Environment and Development (WED) report "Our common future" was development that meets the needs of the present generation without compromising those of the future (World Commission on Environment and Development, 1987). This definition has been interpreted in a number of different ways by different people with different interests and thus there has been a lot of conflict over what is sustainable.

CHAPTER TWO

THE FORESTRY INDUSTRY IN SOUTH AFRICA

2.1 THE DEVELOPMENT OF FORESTRY IN SOUTH AFRICA

2.1.1 Introduction

Plantation forestry in South Africa dates back from 1874 and was born out of the need to conserve limited natural forest resources (Bigalke, 1983). At the time, the industry was based on indigenous forests. These forests had suffered severely from uncontrolled exploitation and in 1874, the first Government Forest Conservator was appointed to control the exploitation of indigenous forests in Knysna (Scholes *et al.*, 1995).

However, with the discovery of gold on the Witwatersrand in the 1880s the picture changed (Scholes *et al.*, 1995). The population increased, gold-rushes and the development of railways increased the demand for building materials, sleepers and mining timber in an area which is naturally treeless (Scholes *et al.*, 1995). This resulted in grave concern about the depletion of natural forests in the country as indigenous timber forests in South Africa cover less than one half of one percent of the land area (Bigalke, 1983). The government of the time carried out and stimulated additional tree-planting to take pressure off the natural forests, and this marked the beginning of plantation forestry in South Africa.

2.1.2 Conflicting land use

Plantation forestry is generally practiced in high rainfall areas of Minimum Mean Annual Precipitation (MAP) of 850 mm (Van der Zel, 1997), a soil depth of 0.5m or more and suitable temperature and elevation requirements. These conditions exist in only 25% of South Africa. In addition these areas of high forestry potential are also frequently the areas of high potential for agriculture, water yield and conservation. The result of these potential but conflicting land use options is that the history of forestry has generally involved multiple stakeholder interests and herein lies the source of conflict and formulation of perceptions of the forestry industry.

2.1.3 Historical development of conservation ethic in forestry

Environmental conservation was introduced in South Africa by foresters who initiated the first Forestry Act of 1988. This Act laid the foundation of modern management of plantations and the

protection and conservation of indigenous forests. A widely accepted definition of conservation is “the sound management and the utilisation of the biosphere in such a way that it yields the greatest sustainable benefits to present generations, while at the same time maintaining its potential to meet the needs and aspirations of future generations (World Commission on Environment and Development, in (Yeld, 1997). Further, it emphasises that this management should cause minimum loss of species of fauna and flora and natural habitats (Pott, 1996).

The historical development of environmental conservation within South African forestry evolves through three main stages from 1988 to date. It started with the emphasis on conservation of the remaining indigenous forests (before 1900) then the conservation of water and moved on to the conservation of natural assets and unplanted areas over time. Pott (1996) observes that as far back as 1652 and 1806, out of the 1200 laws that were in existence in the Cape, about 100 were concerned with controlling the utilization of forestry resources. Among these laws was Plakaat No. 33, dated October 2, 1658. The importance of this law was that it prohibited the cutting of wood in the company’s forests (Sim, 1906).

The first government law, The Cape Forest Act No. 28, was promulgated in 1888 when Count M. De Vasselot de Regne was appointed as the Cape’s first superintendent of woods and forests (Bigalke, 1983; Pott 1996). According to Bigalke (1983) and Pott (1992) this legislation was very significant as it provided the legal basis for creating the country’s first reserves. It made provision for the conservation of trees and other plants as well as fish and game in the Crown Forests at a time when demand on the forests was very high. Public access for recreational purposes to such forests was also subject to control by permit.

Around the 1960s, with the proliferation of plantations, emphasis shifted from the conservation of indigenous forests to that of catchments and water. This came out of people complaining about diminishing water flows in areas near plantations. This led to the amendment of the existing Forest Act (Act No. 72 of 1968) by adding specific articles on the control of afforestation by means of the Forest Amendment Act No. 40 of 1972 (Van der Zel, 1972). The significance of this legislation was that the percentage of afforestation cover per area of land owned was reduced, giving rise to an increasing area of unplanted or ‘unproductive land’ as older foresters considered

it (Pott, 1996).

The law was also important as, prior to 1972, no restrictions existed as to where trees could be established. It put restrictions on planting in areas such as wetlands, riparian zones, archaeological sites and on the edges of cliffs. The law also imposed restrictions where the expansion of plantation forestry was endangering established irrigation or other water utilisation developments.

In the 1980s the thrust in conservation moved towards incorporating social issues. The following years experienced the maturing of conservation ethics. A set of guidelines for the application of conservation practices in forestry was prepared by a working group of representatives. At this time major forestry companies in South Africa had the initiative to develop environmental auditing protocol. Certification to internationally accredited certifiers such as ISO 14000 and the Forest Stewardship Council by the major timber growing companies such as Mondi and Sappi also started in the 1990's.

2.1.4 Plantation forestry species and ownership

Plantation forestry was the obvious solution to augmenting the dwindling supplies of timber. It is of interest to note that the first recorded oak plantation of 34ha was established at New Zealand in 1670 by Governor W.A. van den Stel (Pott, 1996). Since indigenous trees grew slowly, tree species which grew fast and which had other desirable characteristics (such as straight stems and few knots) were imported from Australia, America and Europe. The first eucalyptus plantation appears to have been established at Worcester by Mr J Stom-Lister in 1876. He was also responsible for the plantation of rooikrans (*Acacia cyclops*) and Port Jackson (*Acacia cyanophylla*) in the Bellville area the following year. Various exotic tree species were tried and plantation forests were established, though things proceeded slowly for the next few decades.

After the second world war in 1945, the rate of afforestation in South Africa increased very rapidly (depicted in figure 2. 1 below).

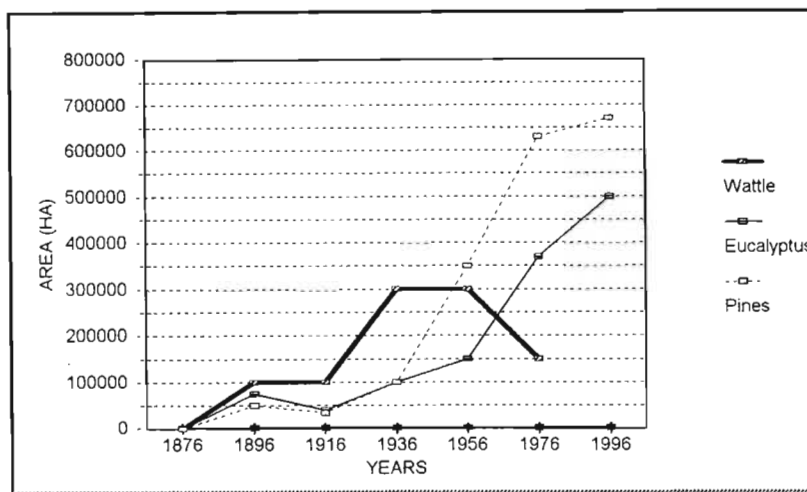


Figure 2. 1. Growth in timber production in South Africa. Source: Scholes *et al.*, (1995).

According to Scholes *et al.*, (1998) the first large timber species planted were wattles (*Acacia carnsius*), grown for their tannin-rich bark (Figure 2.1). Next were eucalyptus (gum trees), of which a large variety of species was grown, mainly for mining props. The need for construction timber grew steadily, and led to large pine plantations in the Transvaal.

In the 1970s, the demand for paper in the country increased, and this marked the beginning of private sector involvement aimed at helping the government meet the growing paper demand. In 1997/8 the government owned about 17% of afforestation land in South Africa through Safcol, the forestry companies (Sappi, Mondi) owned a total of 46% of the plantations and the remaining 37% belonged to private individuals and the public.

2.2 GENERAL ISSUES IN PLANTATION FORESTRY DEVELOPMENT

2.2.1 Introduction

Over the past 30 years, there has been a rapid expansion in commercial afforestation, as well as a significant intensification in the way it is practiced. Having started with 34 ha of trees, plantation forestry currently has a forest resource estimated at around 1.5 million hectares (Pott, 1996; DWAF, 1997). From being a local producer the industry has expanded to currently also being a net exporter of forest products. While the benefits of plantation forestry are to be acknowledged, in the past, South Africa has had an atrocious reputation for its lack of environmental accountability (Johns, 1993; Niemelä, 1996; Keppeler, 1990). Initial concern centered on potential physical impacts on the environment resulting from the concentrated commercial monocultures. More recently attention has also shifted towards challenging the social and economic benefits of timber forests to local communities.

Forestry has not been ranked very highly compared to other industries in South Africa. According to Edwards (1999) this negative and poor public image of forestry has had a detrimental impact on the industry.

2.2.2 Description of plantations

Some critics of the forestry industry do not agree with the use of the term “plantation forestry” by timber growing companies. Carrere (1999) of the World Rainfall Movement observes that plantations like forests, are full of trees but the two are radically different. He argues that a forest is a complex system, encompassing soil, water, micro climate, energy and a wide variety of plants and animals in mutual relation, whereas “forestry plantations”, on the other hand, are a cultivated area whose species and structure have been simplified dramatically to produce goods, whether timber, fuel, resin, oil or fruit or pulp and paper (Carrere, 1999).

De Laborde (1998) argues, that it is absolutely important for industrial activities to use terms that denote what they do and are not misleading to the public. “It is deceiving for industrial timber plantations to go under the name of forestry” he contends, as this carries the image of beautiful indigenous forests. He suggests ‘industrial timber plantations’ would be the right term to

describe the forestry industry.

2.3 ENVIRONMENT AND PLANTATION FORESTRY

Most authors contend that forestry has a negative impact on the environment (Scholes *et al.*, 1995; Pott, 1996; Owen, 1999). That is, it negatively affects the biodiversity, soil and the quality and quantity of water resources. Some authors believe that these negative impacts can be reduced by placing a limit on the proportion of the landscape which is planted to exotic trees, by locating new plantings sensitively, and by managing the unplanted areas to conserve their plants, animals and ecology (Scholes *et al.* 1995; Gandar and Forster, 1994; Everson, 1993). A lot of concern from stakeholders of the industry has been raised about how much the forestry industry is doing to preserve the environment. Very little, conservationists believe, arguing that plantations destroy biodiversity, squander precious water, and could be a threat to eco-tourism (Johns, 1993).

To the contrary, a prominent environmental economist (cited in Cellier, 1994) contends that preservation as an environmental policy is not possible in the real world. Further, he states that in the real world with all its imperfections, people need to be realistic about finding a balance between industry and conservation as well as development and preservation.

2.3.1 Forestry and Biodiversity

According to Gandar and Forster (1994), cultivation of unbroken ground results in a loss of habitat and a reduction of species on site. This holds for timber plantations or any other crop. As a result, critics of the timber industry accuse the industry of being responsible for great species-loss. Additionally, over the years the industry has acquired a reputation for extensive expansion of trees which the industry does not deserve at the expense of preserving biodiversity.

Scholes *et al.* (1995) contends that most plantation forestry in South Africa occurs in areas which used to be Montane grassland (Acocks Veld Type 8). The Montane grasslands are one of the seven biodiversity 'hot spots' in South Africa, being areas with an above-average variety of species, especially endemic species which occur nowhere else. Further, Van Wyk (1997) and Masson (cited in John, 1993) observe that the biodiversity found in these grasslands biomes is extremely high, second only to the Fynbos biome. The grassland found chiefly on the high central

plateau of South Africa, and the inland regions of KwaZulu-Natal and the Eastern Cape is one of several great grassland regions in the world, including the Steppes of Russia, the Puszta of Hungary, the South American pampas and the prairies of North America (Van Wyk, 1997). However, most botanists and conservationists argue that despite the importance of these grasslands, afforestation continues expanding at the expense of rare and threatened species (Van Wyk, 1997; John 1993; Niemelä, 1996). As a result the spread of forestry plantations is increasingly being challenged by bodies such as Timber Watch (a South African network) and the World Forest Movement (WRM) as they are concerned about the species lost through such action.

The forestry industry agree with some of the impacts of plantation forestry, but they disagree with what they call lack of realism by some over zealous conservationists. They argue that some conservationists overlook the importance of striking a balance between the economic and social importance of plantations and maintaining grasslands. In addition, foresters contend that any change in land-use from grassland to either maize, sugar cane or trees inevitably results in a reduction in biodiversity and also a change in the type of plants, mammals and birds that live in the area. Since society needs sugar, maize and forest products, some compromise must be reached (Cellier, 1994). Additionally, with the limited tree resources in South Africa foresters argue that plantations have helped by decreasing pressure on the natural forests thereby preserving the existing indigenous trees.

Endangered species

Most plantations are reported to have devastating effects on bird life in areas where they exist (Gandar and Forster, 1994). Conservationists argue that the blue swallow, *Hirundo angolensis*, and broad-tailed warbler, *Schoenicola brevirostris*, found almost exclusively in grasslands are species which are believed to now be endangered (Johns, 1993). Furthermore, among the indigenous flora and fauna that once thrived but are now rare as a result of plantation forests, are species such as *Clivia caulescens*, *Gladidous exiguus*, *Van micrantha* and *Watsonia transvaalensis* and animals such as Oribi, Ourebia, mountain reedbuck, *Redunca fulvomfula* to mention a few. Conservationists are concerned about the loss of such species and are therefore against any expansion of plantation forests (Niemelä, 1996; Haila, 1994; Kim, 1993 and Miller,

1993). In addition to birds, plants and large vertebrates there is concern over loss of invertebrates, many of which have not been identified or studied (Niemelä, 1996).

Pott (1997) argues that in condemning the forestry industry, what people overlook is the fact that biodiversity does exist in plantations. Cellier (1994) points out that a study by Deall and Backer in 1989, on plantations in the Hazyview/Mount Anderson area found 1009 different plant species alone in the plantation, that is without taking animals and insect species into account various. While foresters agree that some animals exist only in grasslands, or fenced game reserves, they point to the fact that there is also much wildlife in the plantations themselves. In addition, they argue that there have been other recorded instances of species becoming nationally reestablished after the advent of forestry. For instance, it has been reported that in the Louwsberg area, warthog, *Phacochoenus aethiopicus*, kudu, *Tragelaphus strepsiceres* and klipspringer, *Oreotragus oreotragus*, have been seen on newly afforested farms where they have not been seen for over 50 years (Pott, 1997).

On the other hand conservationist and biologists argue that the increase in wildlife does not necessarily mean an increase in biodiversity (Niemelä, 1996 and Haila, 1994)

Foresters wonder what actually has been lost as a result of plantation forestry as opposed to being reduced. Pott (1997) argues that even though it is believed that species such as the blue swallow are declining, they continue to breed in areas that are carefully conserved by the forestry companies.

2.3.2 Impacts of Forestry on Soil

The forestry industry has been criticised for damage caused to soil by trees. The impacts of forestry range from acidification of soil to reducing amounts of nutrients in soils, compaction of soil and finally soil erosion (Scholes *et al.*, 1995). Elaborating on the effects of pine and eucalyptus, Johns (1993) argued that they acidify soil and deplete nutrients and leach substances into the soil that repel other plants.

Nutrient Depletion

According to Scholes *et al.* (1995) where forestry plantations exist, nitrogen, phosphorus, calcium and magnesium are all depleted over time. Though foresters say it is possible to convert afforested land to other crop agriculture uses, and vice versa, Carrere (1998) argues it is expensive and seldom happens. Moreover, soil micro-organisms in plantations are deficient for years after harvesting.

However, foresters believe that plantations do not just deplete nutrients from the soil, but also feed the soil with nutrients. The shading provided by trees is one way in which the soil is protected and improved. Ian Garland (in Cellier, 1994) also explains that gum trees bring up trace elements from the subsoils through their taproots, and subsequently enrich the topsoil through leaf litter. However, Carrere (1999) disagrees with this notion arguing that it is absurd to suggest without quantification that any sort of tree planting protects and improves soil quality, when evidence shows that plantations degrade soil.

Soil Erosion

Some authors believe that forestry plantations help prevent soil erosion in most areas, where as other authors argue that it actually leads to soil erosion. In comparison to other land uses, Scholes *et al.* (1995) observes that much less is lost from forestry than from short rotation crops such as maize, sugar or tobacco. On the contrary, Carrere (1999) states that plantations require more frequent management intervention, which make the soil, more prone to erosion and other forms of nutrient loss. Further he continues, that heavy machinery compacts the soil making it difficult for water to infiltrate and thus promoting erosion. In addition, he contends that extraction breaks the soil surface, leaving it exposed to the erosive action of rain.

2.3.3 Forestry And Water Use Perspectives

Commercial timber is one of many crops produced under dry land conditions in South Africa. It is generally practised in the high-rainfall areas, in the upper reaches of catchments, where it can intercept and use runoff before it reaches other downstream users. According to Liebenberg (1995) as far back as 1915, farmers began to complain about the decrease in runoff from afforested areas. However, this early concern was overshadowed by the two world wars and the

importance of timber as a strategic reserve. Although the complaints about afforestation intensified during the drought of 1960, it was not until 1972 that the Afforestation Permit System was introduced with the aim of conserving water supplies (Liebenberg, 1995). However, according to Forster and Gandar (1994) and Liebenberg, (1995) the permit system has been heavily criticised for a number of reasons such as:

- it only applies to forests planted after 1972 and ignores the impacts of afforestation before that period.
- the system was based on old data which are not valid in modern days since new clones have been developed which grow faster and use more water.
- and it is alleged that regular contravention of the permit limitations takes place, such as planting trees too close to stream and rivers.

As the afforestation permit system did not meet its intended goal, concern over the amount of water used by plantation areas continued. In recent years increased demands are being made on the limited water resources of South Africa. Conservationists argue that the demand for wood products and consequently the rate of afforestation is also growing, yet afforestation leads to a reduction in catchment water yield (Van Wyk, 1998 and Bosch and Hewlett, 1982). Therefore, there is conflict between managing catchments for both sustained water and timber yields.

Water use by plantations

It is generally believed that water tends to diminish where plantations are established (Carrere, 1999; Saville, 1994; and Johns, 1993). According to Carrere (1999) in locations as diverse as Southern Chile, Espirito Santo State in Brazil, South Africa or Northeast Thailand, the water system has suffered significant negative impacts as a result of plantation forestry. This is mainly due to the high water uptake and loss by the plantations.

Foresters believe that there has been unjust emphasis placed by critics of the industry on the amount of water used by timber plantations. They believe timber plantations in South Africa are among the most water-use efficient growers of dryland crops as opposed to the water 'guzzlers' some extremists make them out to be. For instance, when it comes to total consumption of water by forestry in South Africa, Van der Zel (1996) explains that estimates vary from 1284 million

m³/a (Water Affairs, 1986), to 313,5 million m³/a (Environmentek, 1995) to 395, 6 million m³/a (ICFR, 1996). Foresters are of the view that even comparing the highest mentioned figure on water use by forestry plantation to 8504 million m³/a reportedly used by irrigation in the agriculture sectors, undue emphasis is being placed on the less significant water use by plantations (Pott, 1997). In addition, Roberts (1994, cited in Cellier, 1994) a hydrologist, observes that droughts are a recognized pattern of the South African weather cycle. Hence the cry that forestry is using too much water is repeated every drought cycle: 1950,1960, 1966, 1982, 1986 and 1992/93.

Foresters normally say that one of the benefits of afforestation is to improve the infiltration characteristics of the soil which leads to the prevention of soil erosion, more soil moisture, as well as less surface runoff, i.e less water feeding directly into streams and rivers (Musto, 1991; in Saville, 1994). However Carrere (1999) disagrees with the latter, stating that the species most commonly used in plantations (eucalyptus and pines) make it hard for water to filter down through the soil so that, added to their enormous water-intake, these species worsen the impacts on the basin as a whole.

Farmers' main criticism against the forestry industry is that it reduces the runoff from catchment areas (Liebenberg, 1995). They argue that the decline in average annual runoff depends to a large extent on the degree of afforestation. In addition, as forests have first option on a catchment's water resource, during periods of water shortage, forests also automatically draw their full water needs from rainfall events and the saturated zones surrounding nearby perennial streams. Gandar and Forster (1994) believe that it is this preferential and uncontrollable water use by plantations that results in the forestry industry being bitterly criticised for taking an unfair portion of the available water in catchment areas during times of shortage.

New Water Policy

A new Water Act was introduced in South Africa in 1998 to remedy and monitor water usage in the country. This decision was as a result of the serious water shortage in the country and dissatisfaction by a number of people with the existing water legislation. The main aim of the act was to make productive users of water pay for the water they use. According to section 36 of

the Water Act of 1998, the only industry that was listed as a streamflow reduction activity is the forestry industry. This has sparked off a lot of controversy

2.3.4 Plantation forestry and aesthetics

Opinions about afforested landscapes vary from those who see them as monotonous, and desert-like to those who find them pleasing. According to Scholes (1995), many studies carried out in Europe and the United States indicate that the public do not disapprove of plantation forests. However, in South Africa a study by Murphy *et al.* (1995) showed that afforestation is seen to be unattractive because it is a monoculture and comprises exotic species, but at the same time most people believe it is not true that it has a negative impact on tourism.

Further, it is argued that ecotourism on its own is an unrealistic thought in a country such as South Africa where people have diverse needs (De Laborde, 1999). On one hand, most politically deprived rural people are demanding a chance to own and run their own farms where as on the other hand, conservationist are fighting to conserve biodiversity. Cellier (1994), argues that in order to survive economically, countries like South Africa have to strive for self sufficiency as well as striking a balance between various interest groups. That is, in terms of land-use, some land has to be used for forestry, agriculture, as well as ecotourism. In view of this, Cellier(1994) argues that it is unlikely that the government would set aside remaining grasslands for the sake of overseas ecotourists, regardless of the foreign exchange this could earn the country.

Representatives of the tourism industry were of the view that afforestation occurs in the most beautiful parts of the country in South Africa where it obscures areas of scenic beauty. Elaborating on the effects of plantations on tourism some conservationists contend that areas such as routes from the various Highveld cities to the Kruger National Park and private game reserves have some spectacular mountain passes, but they complain that these views have been reduced to the monoculture of plantations (Johns, 1993). Furthermore, they express concern about plantation forests, saying American and European ecotourists would surely like to see the real savannahs and grasslands of the real Africa, not the plantations, which are imitations of the countries they originally come from.

2.4 PLANTATION FORESTRY AND THE ECONOMY

Plantation forestry is an economic activity which generates income to a variety of sectors within the South African economy. Its contribution to the economy in terms of income generation and job creation is acknowledged and appreciated (Porter, 1997; Mander, 1997 and Edwards, 1997). However, the decision to establish timber plantations not only creates benefits, but there are costs attached to it. The costs are viewed as opportunity costs of land as well as external costs. Opportunity costs of land have been explained, as corresponding to the economic return on the land which could be earned by an alternative land-use option such as sugar, agriculture, conservation or tourism (Porter, 1997). "The external costs" have been described as costs created by the decision to have a plantation in an area which has other activities by other individuals or groupings taking place on it. These costs attached to growing plantations are a source of considerable debate from various sectors in South Africa.

An additional source of controversy over the cost of plantations comes out of the fact that there is little available information regarding the cost of planting and maintaining timber plantations throughout the full circle of their growth. Porter (1997) observes that when trying to identify whether afforestation would be an efficient land-use option for a given area, the greatest difficulty is that an assessment of the opportunity costs and external costs are quite difficult to determine as:

- firstly, there is scientific uncertainty about the precise impact of biodiversity on water availability and scarcity
- secondly, there is economic uncertainty, even with scientific certainty concerning these impacts, regarding the economic value of impacts on biodiversity or water availability
- Furthermore, the impact on scenic quality in terms of the willingness of residents to pay or in terms of the reduction of tourism potential for the region is also rather difficult to assess.

The main reason for valuing the environment is that choices have to be made. That is, there is a need to compare the net social gains of one policy option with that of another. However, in this case when it comes to decision making, lack of information about the full cost of growing timber

plantations leaves people with very little choice but to rely on their own precautionary principles of minimum safe standards (Porter, 1997).

2.4.1 Economic benefits of plantation forestry

According to Edwards (1999) the gross revenue generated by forestry is estimated between R500 and R600 per hectare, which compares very favourably with other land uses, such as conservation at \pm R60/ha and Beef at R113/ha. Porter (1997) maintains that these higher returns per hectare from forestry plantations result in the productivity per hectare of farming units to be higher and consequently increase income for participating individuals.

Some critics of the industry question whether the profits believed to be derived from plantations are a true reflection of what the actual profits are. Owen (1999) expresses doubt, stating that when calculating the profits associated with tree farms, the cost of the destruction caused to the natural environment is never brought into consideration. Furthermore, he contends that trees produce a large volume of wood per hectare, per year, for industry, but those are the only benefits received. In comparison to original natural forests or grasslands which produce vegetables, game, fruits, natural medicine as well as serving a number of other purposes, including conserving soils and water resources and protecting biodiversity of the local community.

2.4.2 Cost of plantation forestry

As much as there are benefits derived from plantation forestry, a number of authors agree that there are costs that go with the economic benefits (Mander, 1997; Arson 1997, in World Rainfall Movement, 1998; Owen, 1999). Among these are privatization of community assets, such as land (in the case of communal areas), water catchments, local biodiversity and other natural resources such as aesthetic beauty (Mander, 1997; Arson 1997, in WRM, 1998). In addition, it is believed that by increasing individual ownership over these resources, the broader community lose access to them which subsequently results in a decline in well being.

Cellier (1994) held a different opinion. In developing plantations, he maintains, forests provide indirect spin-offs that benefit not only individual owners and the communities in forestry areas, but also the country as a whole. Amongst these are general infrastructure and economic

development, including the provision of social services such as education facilities and health facilities to local communities. In addition, Cellier (1994) maintains that the development of plantations also leads to skills development, with participating individuals being exposed to different enterprises and markets. Furthermore, plantation forestry employs around 125 000 people with 20% in saw milling, 12 % in the paper industry, and 55% directly in plantations (DWAF, 1997). Skills are developed in people who then provide households with greater opportunities for further development.

Furthermore, Cellier (1994) maintains that in most places where small grower schemes are established, plantations actually add value to the land. For instance she argues that, in areas such as former KwaZulu where companies have established small growers, the land is often severely degraded and thus trees can only improve the conditions. The industry therefore provides a sustainable living for a large number of people who would otherwise be unemployed and also raises the standard of living for countless others.

On a global scale according to Edwards (1999), South Africa is doing well in the quality and price of its forest products on world markets. The plantations together with the world class wood processing facilities, currently contribute about 9.2 % towards South Africa manufacturing GDP and 2.2% to the countries total GDP. In 1997, the industry's exports amounted to approximately R4.7 billion, creating a net trade balance of R1.6 billion. According to the Natal Witness (1999), South African forestry, through foreign acquisitions and alliances, has become an international market player and one of the most globally active sectors of the South African economy.

Carrere (1999) argues that the problem with the agro-export development model on which large-scale tree plantations in South Africa are usually based, is that they also create economic problems on a national scale. Further, he maintains that apart from occupying large areas of fertile land, industrial plantations require state support and heavy long term investments. Yet while these costs have to be met by all, Carrere (1999) observes, very few reap the profits of plantation forestry.

Carrere (1999) also contends that tree crops on the whole are chronically unprofitable in strict

market terms. However, he argues that as millions more trees are being added by the planting of millions more hectares of tree crops around the world, this could result in pulp wood prices falling to persistently uneconomic levels. Consequently, southern countries which have committed themselves to pulp wood exports, are likely to have to continue exporting their timber at even lower prices, competing among themselves for industrialized country buyers.

On the positive side, Cellier (1994) maintains that forestry's contribution to ecotourism is considerable. In the sense that a major portion of about 40 000 hectares of unplanted forestry land has been preserved and visitors use is actively encouraged with wilderness areas, hiking ways providing 1661 kilometres of path for hikes mostly passing through plantations, as well as natural vegetation"(Cellier, 1994).

2.5 SOCIAL IMPACTS OF PLANTATION FORESTRY

Afforestation has a diversity of social effects of both positive and negative nature on different groups of people. According to most authors, the positive effects include job creation in rural areas as well as the supply of firewood and building material (Murphy, Peden, and Gandar, 1995; Gandar and Forster, 1994). In addition other spin-offs from forestry include small business opportunities as well as training opportunities. Though the benefits of the industry are acknowledged, some stakeholders of the industry question the sustainability of these social benefits.

Gandar and Forster (1994) contend that with the introduction of plantation forestry, farm labourer employment together with on-farm housing is lost, often without compensation. That is, plantations cause the former occupants of the land to lose their former livelihood. In addition, Carrere (1999) maintains that it is common for these plantations to be established on land used for subsistence farming, so that the tendency is towards net loss of jobs. Further as much as it is true that most companies use labour-intensive methods for planting, which creates jobs, Gandar and Forster (1994) argue that these methods only generate short-term jobs for a few men and women, whereas housing seldom forms part of the remuneration. This means that when native forests or grasslands are replaced by plantations, the local population is deprived of occupations and money-making resources which used to be provided by indigenous resources.

Carrere (1999) also maintains that it has been observed in the past, that once a large-scale afforestation project has come to an end in an area, most people move away from rural areas to urban areas. This is so because most people are largely dependent on plantations when plantation industries exist in an area. Consequently, it therefore becomes very difficult for them to go back to their original practices having abandoned them while they had plantations forests to rely on for. It has been observed that local people end up in the slums on the outskirts of the cities hoping to find a better living to no avail (Albertyn and Marlene, 1997).

It has also been alleged that the social responsibility programmes of the major forestry companies (Sappi and Mondi) mostly only benefit their employees and employee's families (Scholes, *et al.*, 1995). These benefits being in the form of land, housing, water, transport, primary and adult education opportunities. Moreover, Gandar and Forster (1994) maintain that with the influx of migrant labour where new plantations are grown, the beneficiaries of the social services in an area might not necessarily be members of the displaced community who lived in that area before the timber plantation was introduced.

Cellier (1994) contends that seen in a rational light, forestry plays an important role in social upliftment. Also, people living in the areas where plantations are grown have few other ways of earning income and income generated from forestry helps in a number of ways. Rather than looking at the growth of forestry as a problem Cellier (1994) argues that there are greater problems that should be addressed. Problems such as human aspiration and uncontrolled population growth were seen as the real threats to our natural heritage (Lotter, 1999; Cellier, 1994). Lotter(1999) argues that as the population increases it becomes increasingly difficult for the environment and the economy to provide sufficient social resources to sustain everyone. Therefore, rather than focusing on plantation forestry as a problem, overpopulation, crime and general environmental illiteracy in South Africa are the greater problems to be addressed (Cellier, 1994). Furthermore, it is believed that forestry helps meet some of the basic needs of the country's burgeoning population, and Cellier (1999) contends that this should be acknowledged.

Aitken (1999) observes that an additional problem on plantation forestry and farm workers lives is crime that negatively affects them. A report recently released by the Forestry Owners

Association from results of a survey in the South African forests in KwaZulu Natal area showed that crime, arson and theft were the main problems in the area (Edwards, 1999). Crime against individuals resulted in 380 deaths and 115 seriously injured people. According to the report, people were being shot on their way to work, timber-carrying trucks were being fired at, and intimidation was becoming a serious problem. Further, it was reported that arson was also responsible for 1093 or 73% of all forest fires and 2825 hectares were damaged by arson during the period. In addition, some 30 000 tons of timber was stolen in the same period. The industry is deeply concerned about rising crime rates and the lack of attention given to it. (Business Report, 1997; cited in Carrere, 1999). Edwards (1999) was of the opinion that more effort should be put towards reducing crime in South Africa rather than the undue attention given to the practices of the forestry industry.

2.5.1 Employment

Most authors agree that large scale industrial plantations create local employment for local people (Gandar and Forster, 1994). However, according to Carrere (1999) plantation development often results in long term net loss of employment. Although figures vary widely from place to place and source to source, Carrere (1999) also maintains that on the whole there appears to be agreement that industrial plantations cannot employ as many people as conventional agriculture, particularly family agriculture. Furthermore, the jobs created by plantations are seen as seasonal, non-permanent jobs (Gandar and Forster, 1994).

It is argued that most of the work opportunities created by the timber companies is sourced out to contractors who are not obliged to offer normal fringe benefits associated with permanent employment (World Rainfall Movement, 1999). This results in low salary and bad labour/working conditions which are characterised by inadequate accommodation and non-compliance with current labour legislation. In addition, it is also believed that local communities complain that many contractors prefer to use desperate illegal immigrants who are prepared to work for lower wages and cannot belong to a labour union. Thus, local people are deprived of jobs they desperately need (Carrere, 1999).

In general according to (Carrere, 1998) tree plantations do not always lead to the creation of local

industries, especially as in many cases production is aimed at the direct export of unprocessed logs. He argues that even when pulp and paper industries are established, the higher degree of mechanization in the factories means few jobs are created. A report from the World Rainfall Movement (1999) reveals that of more serious concern is the fact that the forestry industry is working towards computerised mechanical harvesting machines that will operate 24 hours a day felling, pruning, debarking, cutting and stacking. What this means is an eight-hour shift will employ three people as opposed to an estimated 200 workers using manual methods. Carrere (1999) contends that this will leave about 200 workers redundant by a single machine. He also argues that this forestry model clearly shows that though forestry is highly beneficial for large corporate companies, its social and environmental impacts make it unsustainable in the long run.

An additional problem has been that though forestry provides fuel wood to local communities, some authors feel they are not doing enough to meet the growing need for the product (Scholes, *et al.*, 1995; Gandar and Forster, 1995). They argue that commercial forestry provides about 10% of the wood in South Africa, that is about 1.1 million tons out of about 11 million tons of fuel wood required per annum (Scholes, *et al.*, 1995). This is so despite the fact that plantations generates 2 to 4 million tons of “waste” wood each year (Scholes, *et al.*, 1995; Gandar and Forster, 1995). It is therefore argued that if foresters gave the responsibility to manage riparian zones and clearing timber collection to local entrepreneurs from nearby rural communities, it would increase the wood available to local communities. In addition, it would help rural communities get extra income by selling the excess timber for building and fuel wood purposes to other members of their communities.

From a rural perspective according to Gandar and Forster (1995), most community members complain that plantations are often located far from rural settlements and suitable transport for timber collection is normally in short supply. They feel the industry does not do enough to help with the timber collection. Moreover, fuel wood collection is seen by many as the work of females who in most cases cannot drive and cannot afford to spend the whole day away from home because of the multiple roles they are required to perform.

2.5.2 Small Scale Timber Growers

The small scale timber grower sector is a growing sector in South Africa. These schemes have been embarked on by Sappi and Mondi to promote timber farming on an extensive scale in rural areas (Othusitse, 1997). As at 1997, Sappi and Mondi, the two major timber growing companies in South Africa, had over 7000 small growers in rural KwaZulu Natal (*ibid*, 1997). This is one of the areas where the timber industry believe they are actively involved in bridging the gap between corporate interests and local people. The idea behind these schemes is that forestry companies provide the inputs, primarily plants and forestry expertise and financial support to enable individual farmers to grow trees on their own land using their own labour for sale backs to the companies (Cellier, 1993). The benefits the companies get out of this is an additional source of fibre without having to purchase the land (Cellier, 1993). However, there are varying perceptions about the benefits the small growers get from the timber plantations. These perceptions range from being viewed, as economic ventures for communities, to concern over whether community interests are really being served, as well as concern from some conservationists over the amount of environmental degradation caused by small growers (Cellier, 1993; Murphy, Peden and Gandar, 1995; Othusitse, 1997).

Cellier (1993) contends that the benefits the farmers obtain are that they get into a production industry, with guaranteed markets for their products. Also, the projects are believed to improve local economies and alleviate unemployment (Othusitse, 1997). A survey of growers showed that the net productivity of timber was R2124 per hectare for the first rotation which translated to R 340 per ha per year (Cairns, 1993). In addition, a study by Othusitse (1997) showed that small grower schemes contribute to promoting a sense of business among growers through the tree production and sales.

It is believed that the benefits from the small growers schemes result in increased local community members joining the schemes(Cook and Grut, 1989; Cellier, 1994). However, some authors disagree with the argument that perceived benefits of forestry, are a basis for the expansion of small growers in rural areas. A study by Murphy *et al.* (1995) showed that conservationists and environmentalists disagreed with the benefits of the scheme. They were of the view that there is a less than honest representation of the scheme by the industry, as it is believed that major timber

companies persuade subsistence farmers that they will become wealthy when their trees are ready for harvesting in seven or eight years. However, it is argued that what they fail to inform the prospective “woodlot” owners about are the environmental and social consequences of their accepting to grow trees.

In contrast, the growth in commercial afforestation in the rural areas is attributed to the quest by the forestry industry to expand Carrere (1998). It is also argued that long rotation of trees, means poor farmers have to wait a long time for their returns. Carrere (1999) suggests that an ideal situation would be for growers to have a number of plantations growing at different stages of growth, for them to get annual returns from forestry. However, he believes that this is not possible because there is inadequate land.

Some authors question who the beneficiaries of the small growers products truly are. Carrere (1999) contends that the public perception normally used by forestry firms to justify large timber growers of pine and eucalyptus are based on the fact that paper consumption is generally perceived as something positively associated with literacy, access to written information and thus a better quality of life. However, he argues that a large part of the plantations produced in the southern hemisphere is not used to supply the population of these countries, but those of the North. Further, he maintains that the U.S and Japan have an annual per capita consumption of between 330 and 230 kg respectively. In comparison with the countries exporting paper and pulp such as South Africa, Chile, Brazil and Indonesia which have an average per capita consumption of 38, 42, 28 and 10 kgs respectively. Furthermore, Carrere (1999) observes that 40% of the world paper production is used for packaging and wrapping, while only 30% is used for writing and printing, so that he disagrees with the literacy argument, which in his view does not hold.

Despite all the concerns about small grower schemes Othusitse (1997) contends that forestry plantations in most of Africa are seen as a real potential for social upliftment. Cook and Grut (1989) in case studies in Sub-saharan Africa described a positive correlation between wealth and the adoption of forestry projects. In Rwanda and Nigeria, case studies revealed that initial adopters were individuals or groups who could afford to take risks and most people only enter

into plantation forestry when it is widely practiced (ibid, 1989). They concluded that wealthier areas are characterised by more intensive and innovative forestry practices and thus a local people are lured into timber growing as a result of the perceived benefits.

2.5.3 Public Image of Forestry

A review of the literature shows that forestry is not a high profile, nationally important industry in the eyes of the majority of the most public. Although this maybe the case, most foresters (Edwards, 1999; Perley, 1999; Aitken, 1999) argue that most of the negative perceptions of the industry are based on emotions or perceptions without people understanding the facts.

Edwards (1999) argues that there are enormous misconceptions and a lot of skewed information about the costs and benefits of forestry adds to the detrimental image of the forestry industry in South Africa. He points out that people have to be informed of the facts about forestry for the industry to gain the good public image it so rightly deserves. He further argues that more often than not, forestry is portrayed as a villain, whereas that is not true. He contends that the forestry industry is just as concerned about water, biodiversity and the social well-being of the people as other stakeholders are.

Perley(1999), a forester in New Zealand, maintains that a great problem is most people do not rationally analyse information. He also argues that various studies have found that people do not necessarily base their decisions on objective facts alone, but a lot depends on whether they trust the person who is delivering the message. If people do not trust you, he argues, they are most unlikely to listen to you. In the case of forestry in South Africa, since the forestry industry has had a negative public. imagine for a long time, Perley (1999) argues that it is most unlikely that people take time to think of the conservation, environmental and social efforts of the forestry industry positively. He contends that it goes back to the argument that information is construed not because of it's relative worth, but because of the relationship with the messenger. Furthermore, he states that for instance, why are pastoral scenes, however environmentally damaging they are, seen as aesthetically pleasing and benign? Perley (1999), believes that the challenge facing the industry is to find a trustworthy source in the eyes of the public, through which to present the facts about the environmental, social and economic benefits of the industry.

Additionally, Pott (1997), observes that the unfortunate part about the condemnation of the industry is that the same arguments that were developed to counter the devastating deforestation are being used to attack attempts to provide a sustainable alternative through plantations. One of these arguments is that deforestation, particularly in tropical rainforests “is leading to an episode of extinction more dramatic than that at the end of the Cretaceous, 65 million years ago” (Huntley, 1989). Though there is concern over the latter statement, Pott (1997) questions whether plantation forests deserve the same level of condemnation. He argues that the current condemnation precedes the proof, and as such can only be regarded as being perception-based rather than factual.

2.6 TRENDS TO IMPROVE FORESTRY IMAGE AND REDUCE TENSIONS

Although plantation forestry is a legitimate form of land use in South Africa, many negative perceptions regarding it are held. The forestry industry is aware of these perceptions and in recent years the issue has received a lot of attention. The focus from the industry has been to try and overcome these negative perceptions that people have of the industry. This has been done through transformation of policies, institutional structures as well as economic priorities. The aforementioned changes exist in the context of the need for forestry development through environmentally, socially and economically sustainable means. Additionally, opportunities and pressures of the globalising world economy are also powerful forces that have contributed to shaping these internal changes.

2.6.1 Changing Government and Corporate Roles

There has been a widespread recognition of the importance of ensuring that forests are managed to provide a range of products and environmental and social services in perpetuity. The need to reconcile the productive function with the protective function of environmental and social roles of forests was forcefully stressed by the United Nations Conference on Environment and Development (UNCED) held in Rio in 1992 (FAO, 1999). Since then, various processes and procedures have been initiated to further the implementation of sustainable forestry management. In South Africa, government has created a number of new policies since 1995. Soon after the 1994 elections, political and economic transformation required a fundamental review and redirection of forest policy. As a consequence a comprehensive National Forestry Action Plan

(NFAP) was compiled with the overall goal to “promote a thriving sustainable and equitable forest sector which would contribute to achieving a national goal (Foy, Pitcher and Wills, 1998). In addition, the NFAP was intended to provide a framework for implementing policy through the effective and coordinated mobilisation of resources and institutions towards a common policy purpose.

Another government initiative has been the use of Environmental Impact Assessments (EIAs) as an area planning mechanism for assessing whether forestry is a viable alternative to other forms of land use in an area. Potentially sensitive areas and areas of benefit are identified by doing an EIA. In essence, EIAs are a procedure for evaluating the environmental costs and benefits of any proposed development, which would include forestry. In South Africa, it has been promoted through the policy of Integrated Environmental Management (IEM) as introduced by the Department of Environmental Affairs and Tourism.

Lastly, a new Water Act was enacted in South Africa in 1998. This Act will have great impact on forestry. Section 21 of the Act defines water use by forestry as a, ‘stream flow reduction activities’ (SFRA). Therefore, as a SFRA, forestry enjoys the status of being a lawful water user (Scotcher, 1999). The significance of this Act is a range of charges could be levied on forestry as a stream flow reduction activity. Though the new Act has received a lot of controversy, it is reported to have made progress in improving the process of dealing with permit applications significantly (Gardiner, 1999).

2.6.2 Changing Corporate Roles: Towards Ethical Trade

Timber companies have made significant progress toward ensuring environmentally responsible, socially beneficial and economically viable management of plantation forests in South Africa. This has been achieved through establishing policy at company level which is in line with world-wide standards and in line with recognised and respected principles of forest management. (Hashatse, 1998). The big corporate companies have taken varied routes to obtain international certification of their products in order to establish international credibility. The essence of certification is that customers buying timber products are demanding assurance that good environmental practices have been built into the product they are buying (Hashatse, 1998). This is done to ensure that

companies are not, through their support of the timber products, also supporting the destruction of the environment and the lives of the people that live in that environment. An additional objective of certification is to link informed consumers with products produced in an environmentally responsible and sustainable manner.

In 1997 Sappi Forests began implementing the ISO, 14001 environmental management system, and in February, 1999 it achieved certification. (Scotcher, 1999). Activities, products and services of the industry which impact on the environment were identified to aid planning on how to reduce these impacts (Murphy *et al.*, 1995). Also, since ISO specifies requirements for environmental management and not criteria to be adhered to, Sappi specified which environmental standards it would meet. Furthermore, in an effort to maintain acceptable standards, Sappi Forests will be subjected to two external surveillance audits annually as well as annual company internal audits (Edwards, 1999).

The 1990s have also seen the implementation of the Forest Stewardship Council's (FSC) principles and certification by Mondi and Safcol. The FSC, unlike ISO, has a set of standards that organizations have to meet in order for certification to be achieved. Major strides have been made to achieve these standards by both Mondi and Safcol. One notable change, is the implementation of a pioneering system of bio-monitoring of rivers running through Safcol plantation (Vuuren, 1997).

2.6.3 Contracting

Amongst the major forestry companies, there has been a trend towards using contractors rather than a permanent workforce. Though in the beginning this change had reportedly significant negative social impacts in many cases (Gandar and Forster, 1995), it is reported that more recently the general trend to shift responsibilities onto contractors is said to have been replaced by more sensitive approaches (Scotcher, 1999). As Sappi and Mondi are looking into contracting procedures that comply with ISO and FSC standards respectively. The issues of wages, benefits to the community and health and safety risks for those who are employed are also reportedly being checked against these policy standards (Hashatse, 1998).

2.6.4 Research and Publication

A lot of research work has been done and publications produced by forestry companies. Most of the research work has been aimed at providing information for ensuring good environmental practice. On the other hand, the publicity is seen as a way of ensuring that the credibility of the industry is recognised and appreciated. An analysis of the Forest Owners Association (FOA, 1999) funding for environmental activities showed that 56.7% of the funding, amounting to R 85 000, was spent on research in 1998/99. Other organizations such as the Institute of Commercial Forestry research have also been actively involved in numerous research works.

Edwards (1999) points out that the benefits of continued research have resulted in improved yield which has in turn resulted in increased productivity through tree breeding and site-specific silviculture. In addition, Edwards stated that yield improvements have exceeded 50% in some cases and there have also been big improvements in the percentage of utilisable timber volume. The significance of this is that there is more timber produced in a smaller piece of land and thus the timber industry do not have to use a lot more land to meet the growing demands of timber. As a result, South Africa is now only planting about 10 000 ha of new timber per year as compared to 45 000 ha and 28 000 in 1990/91 and 1991/92 respectively.

2.7 Summary of Issues

Concerns and issues raised in review	Issues and concerns raised in Murphy <i>et al.</i> , (1995)
Impacts of plantations on biodiversity	✓
Water use by plantations	✓
Soil erosion and nutrient depletion	✓
Economic benefits of plantations	✓
Social concern and benefits of plantations	✓
Efforts to change perceptions	✓

2.8 THE STUDY

The review of the literature and results of Murphy *et al.*, (1995) have enabled us to identify categories that shape peoples perceptions of the industry. It is also clear from the review that the categories used in the study by Murphy *et al.* (1995) clearly reflect the issues raised in the review. Sappi responding to Murphy *et al.*, (1995) introduced a number of actions directed at improving their operations and thereby changing peoples perceptions. Therefore, the rationale for this study, is determine to what extent the actions by Sappi Forests have been effective in changing peoples perceptions of the industry. Understanding of the extent to which they have been successful will help construct new strategies to promote positive perceptions. The following are the aims and objectives of the study.

2.8.1 Aims of the Study

To inform the Forestry industries of stakeholders opinion of the sector.

2.8.2 Objectives

A number of conventions for expressing objectives have arisen in recent times. Some donors require that the objectives be expressed as outcomes. This convention has been adopted for expressing the objectives of this study.

The objectives expressed as outcomes are:

- the manner in which stakeholders perception has changed is documented and understood by Sappi;
- the causes of changes in stakeholder perceptions are documented and Sappi is informed;
- Sappi's activities to manage stakeholder perception are documented and understood;
- the external forces influencing stakeholders' perceptions are documented and Sappi is informed;
- Sappi is informed of changes in stakeholder perceptions.

CHAPTER THREE

STUDY AREA AND METHODOLOGY

3.1 DESCRIPTION OF STUDY AREA

Having a general overview of the study area is meaningful in assessing whether there are factors that influenced the community members views of the forestry industry. The study site was the Illovo Nek area in the Richmond area of KwaZulu Natal province, in South Africa. The community members covered by the study included 10 former Sappi employees and 10 neighbouring community members from Gengenshi.

3.1.1 Location

Illovo Nek is situated in the KwaZulu-Natal province, approximately 25 km north east of Richmond (Figure 2.1). The area has Sappi and Mondi plantations and is surrounded by neighbouring settlements (Figure 2.2). Most of the plantations, about 14 000ha in this area, are under Sappi forests (T. Reedy. pers.comm, 1999), whereas the remaining approximately 5 000 ha are under Mondi forests. The settlements neighbouring the plantations include Simozomeni, Endaleni, Magodi, Gengenshi. and Emgxobeleni. The settlements are near rivers/streams as their people rely on rivers/streams for their water for domestic use and for water for their livestock. Timber plantations are a source of construction timber, laths and fuel wood to the local communities.

3.1.2 Topography

The area falls within Camp's Bioresource Group 5-Moist Midlands Mistbelt (Cedara Resource Information, 1999). It is characterised by a rolling terrain with moderately steep slopes with an altitude of between 800m to 1676m above sea level. The topography of this area is good for Pine and Gum, as well as for standard crops like maize (K.Camp. pers. comm, 2000).

3.1.3 Climate

Rainfall in the area is generally high with a mean annual rainfall of 979 mm (Camp, 1999), mostly occurring during summer. However, during the interview Mr Camp observed that the mean annual rainfall at the study site probably exceeded 979. The mean minimum and mean maximum annual temperature are 4.8°C and 24.9°C respectively, with a mean annual temperature of 16.0°C. The coldest months in the area are June and July with mean minimum temperatures of 5.0°C and 4.8°C respectively.

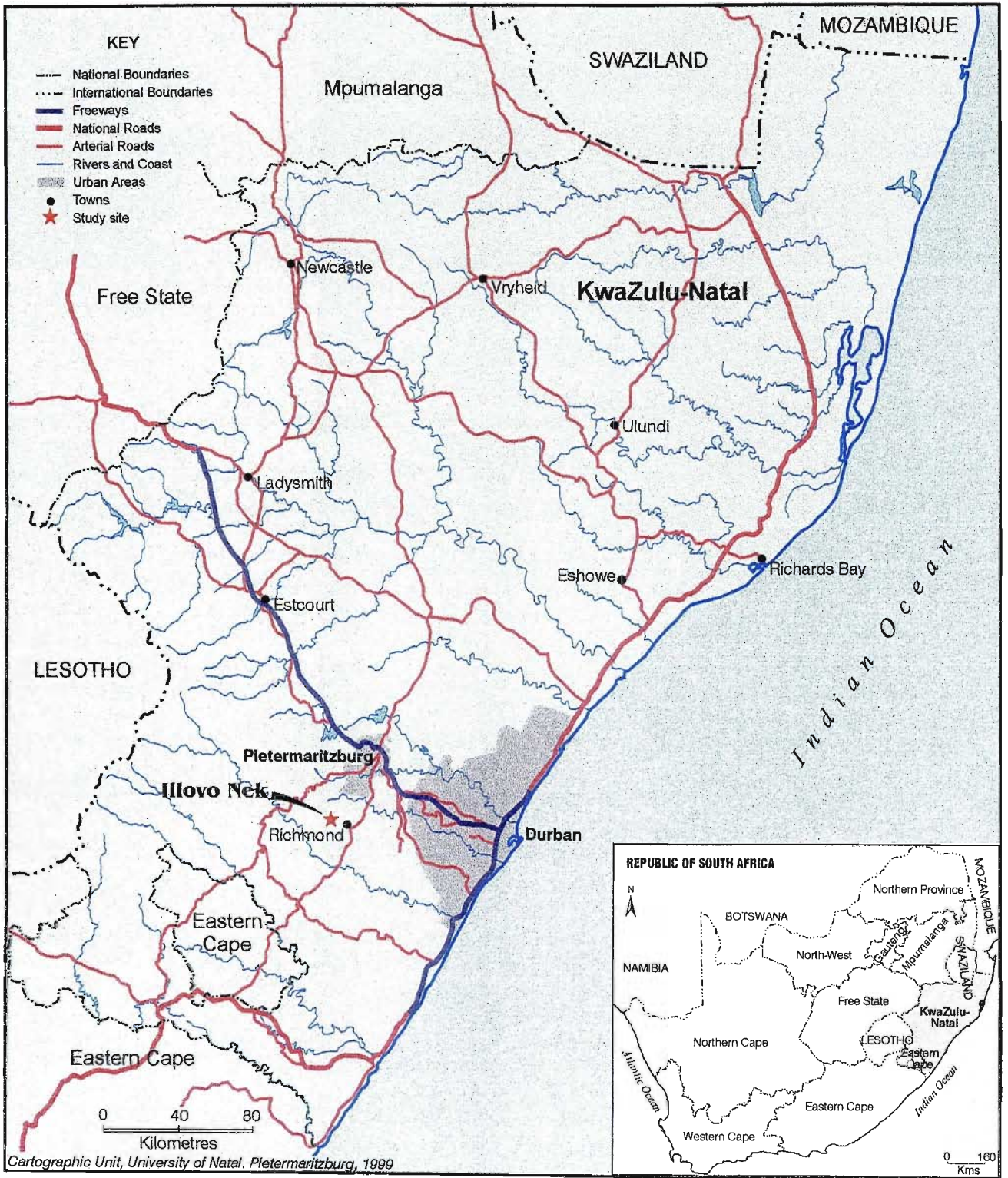


Figure 3.1 : Location of Study Area within KwaZulu-Natal

respectively. The warmest months are January and February with the mean maximum temperature at 24.8°C and 24.9 °C respectively. The climate and in particular the rainfall in this area, is very conducive for the successful growth of plantation forests as they require to be grown in areas with an annual rainfall of between 800-1000 mm.

3.1.4 Soil

Soils in the area are characterized by having yellow or red colour with an apedal structure (Camp, 1999). Subsoils and top soils tend to be high in organic matter and free draining (Low and Rebelo, 1996) which gives the soil good physical structure and therefore makes it good soil for commercial plantations.

3.1.5 Vegetation

The area comprises a grassland vegetation and the indicator species in this area include *Aristida junciformis*, *Rubus cuneifolia* and *Solanum mauritianum* (Camp, 1999). The grasslands are used for grazing purposes by the local people.

3.1.6 Former Sappi employees

A workers compound exists in Illovo Nek area and houses most of the forestry plantation workers. Currently there are about 200 workers housed in the Sappi compound (T. Ngcobo, pers.comm. 1999). The Sappi compound is fully serviced with electricity and piped water. A primary school also exists in the area with two teachers and about 68 scholars. A majority of the households in the compound use fuel wood for cooking and for heating in their houses.

3.1.6 Neighbouring communities

The nearest settlement to Illovo Nek is a settlement called Gengeshi which is about 5km from the Sappi (S. Phoswa, pers.comm, 1999). The settlement has a population of 300 people and most of the people working in the plantations are recruited from this settlement on a short term basis because of its proximity to the timber plantations. The area is serviced by a borehole as a source of drinking water. The area is not serviced with electricity, so the local people rely on fuel wood for energy. Timber, largely drawn from the plantations, is also used for building houses in the area and thus there is a heavy reliance on timber by the local people of the area.



Figure 3.2: A local structure being constructed from timber and laths



Figure 3.3: Children carrying fuelwood from neighbouring timber plantations

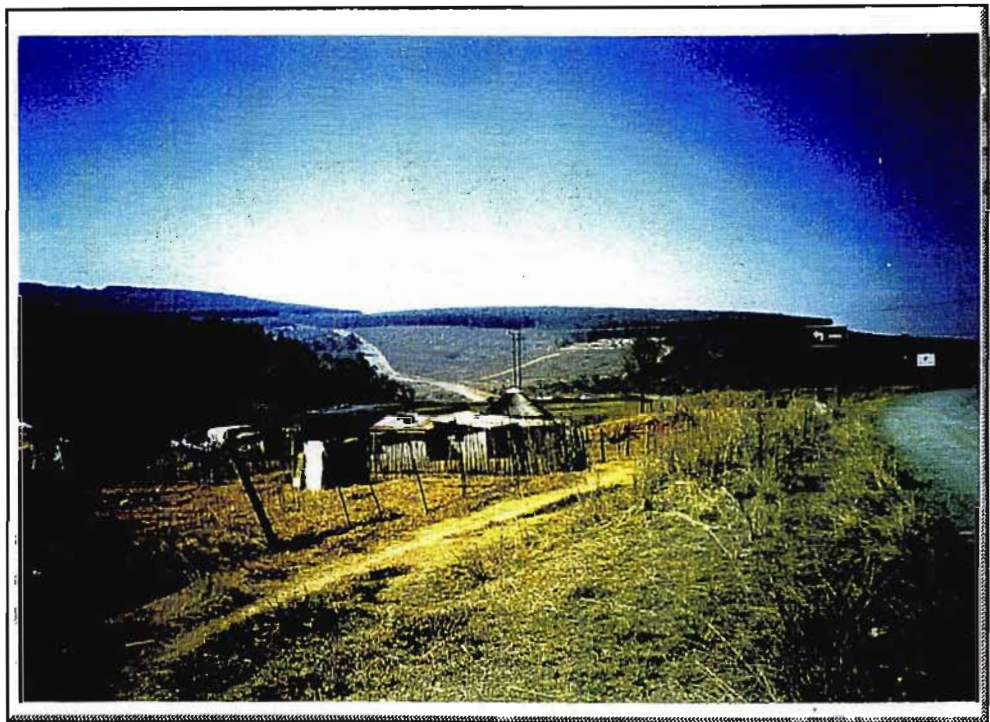


Figure 3.4: Fencing made from timber

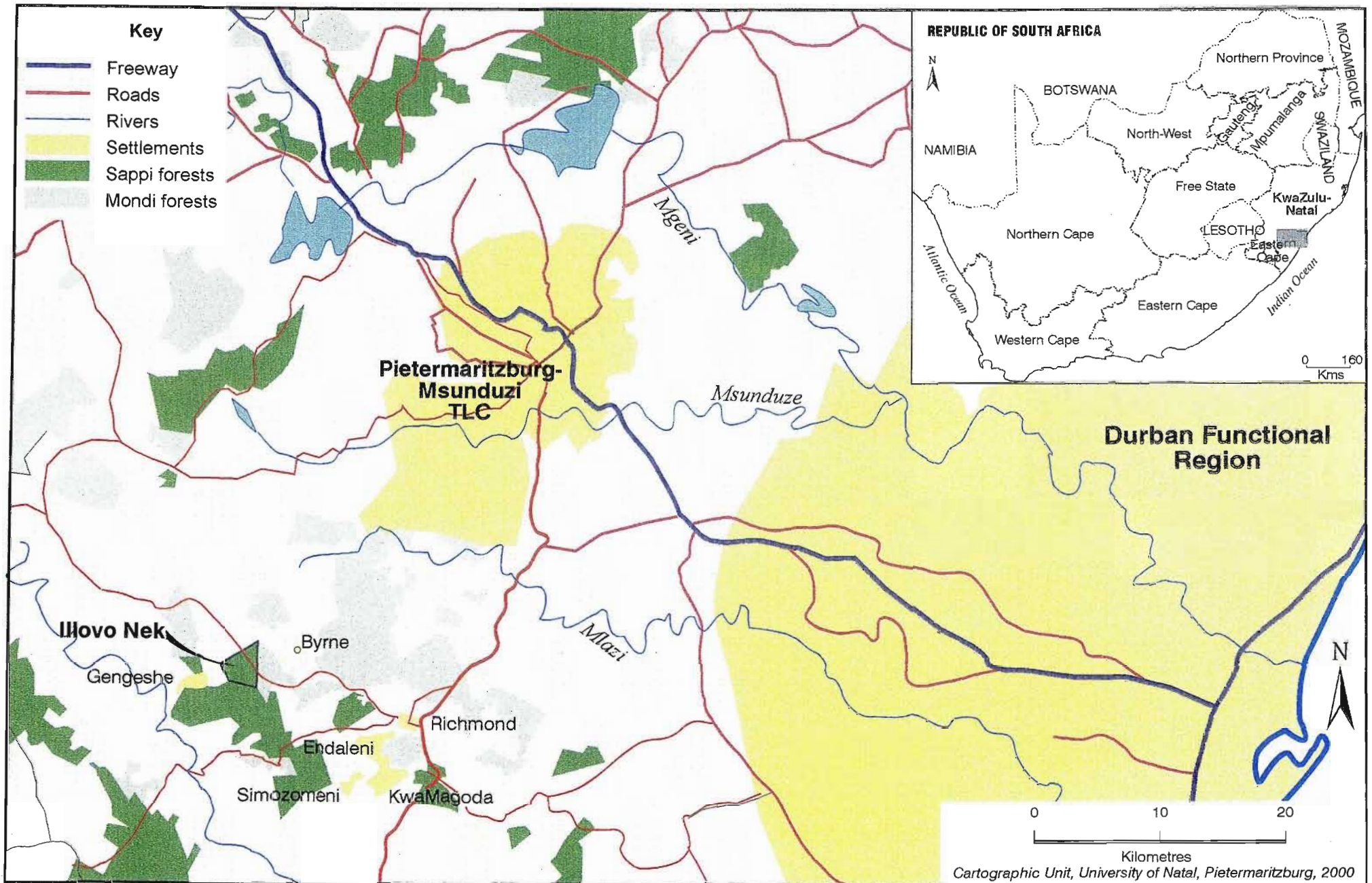


Figure 3.5: Map of the Study Area showing Sappi forests, Mondi forests and the settlements Simozomeni, Endaleni, KwaMagoda and Gengeshe.

3.2 METHODOLOGY

There are many types of information gathering methods to be used in research. The choice of methods employed by any researcher depends on the type of data required, the time available for research, the availability of human resources, research funds as well as the socio-economic status of interviewees involved in research. The choice of methods employed in collecting and analysing data has a strong influence on the outcomes of a study.

3.3 METHODS OF INFORMATION GATHERING

The survey methods were employed in this study to gather information (Leedy, 1989; De Vaus, 1986). Surveys have been described as an encounter between a researcher and a respondent in which the respondent is asked a series of questions relevant to the subject of the research (May, 1993, Babbie, 1992). Surveys include a combination of research methods used to collect information on attitudes, opinions and information about conditions of life. The method also helps determine causes that led to formulation of perceptions, beliefs and behaviours (Boeree, 1998).

This method was adopted as it was seen as an ideal method in determining perceptions from different stakeholders since it allowed respondents to express themselves freely. Structured and semi structured interviews were both employed to collect information.

3.3.1 Structured interviews

Structured interviews were used when collecting data from former Sappi employees and neighbouring community members. Structured interviews involve the use of questionnaires which can either be open ended or predefined questions (May,1993). They are based on strict procedures and a highly structured interview guide which is no different from a questionnaire (Appendix 1). As the researcher did not know the local language, two interviewers were trained by the researcher, by thoroughly discussing all the questions in the questionnaire prior to the interviews. They were required to record the interviewees responses and not to lead the respondents to answers. The purpose of employing this method was to reduce interviewer bias to a minimum and achieve the highest degree of uniformity in procedure between the two interviewers.

3.3.2 Semi-structured interviews

Interviews with forestry industry stakeholders, agricultural representatives, government officials and environmental/conservation stakeholders were held using a semi-structured approach. Semi structured interviews involve the administration of few predetermined questions by the interviewer. The basis for adopting this approach was that the people interviewed were professionals directly or indirectly involved with the industry under review. This method promoted informal discussions between the interviewer and the respondent which provided good ground for respondents to express and expand their own perspectives on the issues under consideration. Considerable flexibility and follow-up questions were also allowed by this method.

3.3.3 Personal interviews

Personal interviews are conducted in a face to face situation which allows interaction between the interviewer and the respondent. The nature of personal interviews is that they require the establishment of a relationship between the interviewer and the respondents which gives the interviewer an opportunity to clarify information and opinions expressed (Leedy, 1989). It also provides an opportunity for the researcher to comprehensively record responses.

3.3.5 Telephone interviews

Telephone interviews were held with respondents in distant places. Telephone interviews allow the interviewer to determine the same structural characteristics as personal interviews, but, they do not allow the interviewer and respondent to experience face to face interaction.

3.4 Information gathered

For each of the stakeholders, information was gathered on:

- Perceived benefits of the forestry industry.
- Stakeholders environmental and social concerns of the forestry industry.
- Measures that could help deal with the concerns raised.
- Comparison of commercial forestry and other forms of land uses.

3.5 Selection of Interviewees

Interviewing all respondents who participated in the 1995 study by Murphy *et al.* was considered as the best approach to adopt so as to facilitate comparisons of stakeholders perceptions in 1995

and current perceptions. However, although a comprehensive list of all the interviewees who participated from the 1995 study was available, it was not possible to locate all the respondents. Some of the respondents were not available on the contact numbers that were given on the listing, and some had left the organizations they were representing. Substitution of missing respondents was done by either selecting somebody from the same organization previously represented or from a different organisation with similar interest to the one substituted.

3.6 Limitations of Data Collection

Data collection had to be done late in the evening after 18:00 hours with former Sappi employees, after the respondents finished work, as this was the only time they were available. This made it very difficult for the interviewers as some of the interviewees were tired and others (especially women) were more interested in attending to their household chores than being interviewed.

Carrying out the interviews in the evening also created an additional problem as the interviewer was confined to holding interviews in the houses or in some cases on verandahs outside the houses. What this meant was though family members were informed that individual responses were required from respondents, in a few cases family members moved close to the place of the interviews and assisted with giving responses. It was not always possible to separate the responses of the selected respondents from those interfered by others.

Political tension existed at the time of the field work in the area and as a result it was not possible for information to be collected from certain respondents in some areas. This tension related to leadership and political parties.

The respondents were predominately Zulu speaking workers. Communication with the community members was therefore through an interpreter to make the respondent feel relaxed. This limited follow-up questions that could have been asked to probe for more information.

It was also not always possible to get respondents for interviews at the time when required, therefore the time allocated for data collection went on for a longer period than was expected.

CHAPTER FOUR

RESULTS

4.1 Introduction

Perceptions of forestry vary widely (Murphy, *et al.* 1995). It was necessary, therefore, to seek input from a range of stakeholders. It is also important to note that the changes in stakeholders perceptions of the forestry industry are attributable to many causes. Some of these result from changes within the forestry industry, whereas others reflect changes happening within the environment in which the industry operates. For clarity and understanding, the results of the study have been aggregated in groups reflecting stakeholders sharing common interests. Murphy *et al.* adopted this approach in 1995 and by doing so in this study, assessment of the changes of perceptions on specific issues within and between stakeholder groups will be facilitated. The stakeholder groups defined are community members, forestry industry personnel, agriculture organizations, government officials and conservationists, social and environmental organizations are aggregated in one group. The stakeholder groups are characterised as follows:

4.2 Definition of stakeholder groups

4.2.1 Community stakeholders

These comprised of black rural people. Half of the interviewees (10 people) were currently living in the workers compound about 1 km away from the Sappi office in Illovo Nek. These were a mixed group of labourers and caretakers working under different contractors in the forestry industry. Some of these were former Sappi employees. The other half of the respondents, were from a neighbouring village (settlement) called Gengenshi. This settlement is about 5 km away from Sappi's main office at Illovo Nek and it is from this community that most labourers working for contractors on a temporary basis are drawn.

4.2.2 The forestry industry stakeholders

The forestry industry stakeholders comprised six professional people from timber associations and companies and one person from the small scale wattle growers. Some of the people interviewed were consulted in the study by Murphy *et al.* in 1995. Some of the original interviewees were not available and could not be included in the study

4.2.3 Agricultural organization stakeholders

This stakeholder group comprised of individuals from agricultural organisations. Included were five people from two farmers associations, a conservation committee, Cedara Agricultural College and the University of Natal.

4.2.4 Government stakeholders

The government officials consulted were six professional people from the provincial departments of Environmental Affairs and Tourism, Transport, Water Affairs and Forestry, Land Affairs, Agriculture and KwaZulu Natal Nature Conservation. The group also included one consultant. This individual was included in this stakeholder group by Murphy *et al.* (1995).

4.2.5 Environmentalist/social/conservationists stakeholders

This group comprised of 10 people from a variety of backgrounds. These included, Timber Watch, the Natal Museum, Botany and Zoology Departments in the universities of Natal and Pretoria, the Wildlife and Environmental Society, Plantnet and an Association for rural advancement.

4.3 Definition of terms used

In order to facilitate comparison of the results from the study by Murphy *et al.*, 1995 with those in this study, the same topics used in the study of Murphy *et al.* 1995 have been adopted for this study. To facilitate understanding of the issues and concerns relating to plantation forestry, terms used are defined below.

Socio-economic concerns: are those manifestations of social and economic change brought about by the development of plantation forestry and which are identified by the stakeholder groups..

Biodiversity/conservation and alien species: biodiversity refers to the composition, structure and function of the natural environment (Stork *et al.*, 1997). It includes the genetic variability within species and their populations, the variety of species and their life forms. In this study, biodiversity and conservation are many times used interchangeably as one of the primary focuses of conservation is to help maintain biodiversity. Conservation has also been understood to mean

the management of human use of the environment so that it may yield the greatest benefits to present generations while maintaining its potential to meet the needs and aspirations of the future generations (Yeld, 1997).

Integrated Resource Management: For the purpose of this study, integrated resource management is taken to mean the integration of forestry into broader spatial and temporal scales of resource management.

Aesthetics: is taken to mean altered quality of the visual landscape.

Security: This refers to issues that relate to personal security, property thefts and fire hazards.

Misinformation Campaign: is defined as where the forestry industry is considered by a stakeholder to deliberately provide misleading or false information to the public with the intention of covering up adverse impacts of forestry. It also includes stakeholders giving the public negative information about the activities of the forestry industry

Other terms that were used in the study by Murphy *et al.* (1995) that may be used in this study include

- Soil impact
- water
- food
- Small scale timber growers
- Attitudes of the forestry industry to the public and
- Other concerns about Sappi

Any concerns that were raised that related to the above topics were recorded under the appropriate subtitle.

4.4 COMMUNITY STAKEHOLDERS

Community members' perceptions have been examined through identification of the factors causal and influential in determining perceptions. That is different factors such as perceived benefits and concerns about the forestry industry were explored. The community members gender, age and level of education were also assessed to give the researcher insight into the background which characterises the responses of the interviewees. The table 5.1 compares the issues raised by in Murphy *et al.* (1995) and those raised in this study.

4.4.1 Water

People in rural areas rely mostly on water from streams for subsistence farming, washing and in some cases drinking water. It is therefore not surprising that there was concern from four of the respondents over the perceived reduction of water from the catchments due to plantation forests. Three interviewees suggested that trees should not be planted close to water at all, as a way of ensuring that water to downstream users is not reduced.

4.4.2 Biodiversity, conservation and alien plants

Concern was expressed by two over the loss of grasslands and indigenous species as a result of plantation forests. Further, one respondent mentioned that forestry plantations do not provide any medicinal value to local people and therefore, local people have to walk long distances to secure medicines.

4.4.3 Soil impacts

Two respondents were of the view that it was not possible to grow anything in areas where plantations existed, as crops grown next to forestry plantations die after a while.

4.4.4 Socio-economic Issues

Respondents identified a number of social and economic issues. These were jobs, fuel wood, and construction timber identified as benefits, and working conditions under contract employer and loss of grazing land as concerns of the industry. KwaZulu-Natal has an unemployment level of 30% to 40%, that is one in every three to four people in the economically active group are not employed (May, 1998). It is not surprising, therefore, that respondents regarded jobs provided by the forestry industry as an important benefit to individuals and communities.

TABLE 4.1
COMPARISON OF ISSUES RAISED BY COMMUNITY MEMBERS IN
1995 AND 1999

STUDY ISSUES	Murphy <i>et al.</i> (1995)	This study (1999)
Water	-	-
Biodiversity, conservation and alien plants	-	-
Soil impacts	+	-
Aesthetics		
Perceptions of misinformation		
Integrated resource management		
Socio-economic benefits		
• Fuel wood	+	+
• Construction timber	+	+
• Jobs	+	+
Socio-economic concerns		
• Long working hours	-	-
• No medical aid	-	-
• Loss of grazing land	-	-
• Land tenure	-	-
• Training	-	-
Food		-
Security	-	
Attitudes of forestry to the public		
Environmental management system		
Small Scale timber Grower	-	

Key: + (positive) is used to indicate that a benefit was mentioned about an issue and
 - (negative) is used to indicate that a concern was raised about an issues.

A blank space is used to indicate that an issue was not raised

Of the nine respondents who responded to the enquiry as to whether plantation forestry was of benefit to the individuals, one mentioned it was very important, one important and three said it was of average importance. One respondent said it was not at all important. Three respondents claimed it was very important for the community. Contributing factors to these responses may be

- that only certain individuals have received training and
- that such training as they may receive is not equipping them to find opportunities in the labour market outside of what they are doing with the forest industry

It is interesting that most respondents were very aware of the importance of the industry in the broader socio-economic context and rated production of pulp and paper as being important.

Sappi have been undergoing transformation. Part of this involves the reduction of involvement in plantation management and contracting these services out. With this change, the number of employees working for the forest companies and in the forestry industry has reduced. This reduction of employment exists within the context of general increased unemployment and rising costs in South Africa. Under these conditions workers are vulnerable to exploitation by employers as the rate of unemployment dictates that the number of family members under the care of those employed has increased. The rising cost of living and necessity for employment leaves employees with a greater challenge to perform well in order to maintain their jobs. It is therefore not surprising that issues of welfare were a major concern amongst community members. Concern raised by community members was over long working hours, coupled with no fixed 'knock off' time in the plantation forestry industry. Half of the respondents (ten) felt very strongly against people working for as long as 10 to 13 hours a day in the forestry industry. Additionally, three people were concerned about the policies of the contract employers as they claim there is no medical allowance given to people hurt while working in the plantations.

Loss of grazing land as a result of plantation forestry was also rated as a major concern by two respondents who said it reduced the amount of land available for grazing for their livestock. This was also not surprising as among rural people in KwaZulu Natal considerable value is attached to their animals as a sign of worth and for use in paying 'Lobola' (bride price). On enquiry about possible suggestions on how to mitigate the concerns raised, seven respondents suggested that

provision of grazing land to community members would help in dealing with community needs, ten said people should be consulted before any decision to displace a community took place, and two were of the view that the forestry industry should stop displacing people altogether. In addition, another two respondents suggested that the industry should reduce on trees planted altogether.

With democratization in South Africa after 1994, land tenure has been an issue widely discussed. In the case of politically disadvantaged people in the rural areas most were optimistic that they would get a chance to own their own land. However among the interviewees, only one person raised the issue of land tenure as an issue of concern. Two said the displacement of people by plantation forestry was an issue of concern.

4.4.5 Food

In an attempt to assess how people perceived forestry as a land use in comparison to other land uses, the following were the responses of the interviewees. Twelve respondents were content with having forestry as a land use instead of cane plantations, four were discontent and four felt it did not matter whether they had either forestry or cane plantations. This is probably because forestry was seen as a better payer of employees as compared to the sugar industry. In comparison with crop farming and livestock/dairy, twelve and eleven people, respectively, were discontent with the idea of replacing them with plantation forests. The products of livestock and dairy and crop farming are edible and rural communities see themselves as benefitting from these products. These benefits are seen in the context of poverty, unemployment and population growth in the rural communities.

4.4.6 Conclusion

Eleven of the community members indicated that their attitudes towards commercial forestry had not changed. However nine were of the view that their attitudes towards the industry had changed post 1995. Out of the latter interviewees, three felt their attitudes towards the industry had become more positive, where as the remaining six felt their attitude had become more negative. The negative attitudes towards the industry were mostly attributed to poor working conditions, loss of grazing land, water depletion, loss of medicinal plants and inability to grow

crops in places where plantations existed. On the other hand changes to positive attitudes were attributed to benefits received from the industry such as jobs, fuelwood and construction timber.

The concerns and benefits expressed in this study by the community member stakeholders when compared against those raised in Murphy *et al.* (1995) were largely the same. An additional issue mentioned in 1995, but not in 1999 was that timber plantations were seen as hiding places for criminals. Aesthetics, integrated resource management, perception of misinformation, small scale timber growers and environmental management systems were not raised as issues both in 1995 and in this study.

4.5 THE FORESTRY INDUSTRY

TABLE BOX 4.2
COMPARISON OF ISSUES RAISED BY FORESTRY INDUSTRY
STAKEHOLDERS 1995 AND 1999

ISSUES \ STUDY	Murphy <i>et al.</i> (1995)	This study (1999)
Water	+	-
Biodiversity, conservation, alien species	+	+
Soil impacts	+	
Aesthetics		
Perceptions of misinformation		-
Integrated resource management	-	-
Socio economic benefits		
• Good pay	+	+
• Schools	+	+
• Clinics	+	+
Socio-economic concerns		
• Labour laws	-	-
• Willingness to work	-	-
Food		
Security		-
Attitudes of forestry to the public		
Environmental management systems	+	+
Small Scale timber growers	-	-

4.5.1 Water

Five of the six respondents felt the forestry industry was unjustly singled out and the new water Act was being applied on a selective basis negatively towards forestry. The fact that in the new

Act, forestry was the only water user categorized as a stream flow reduction activity and liable to being charged for water usage was not acceptable to five of the respondents. Reference was made to other water users like the fruit growing industry and agriculture, which one respondent said use much more water than the forestry plantations that only rely on rain water. One respondent was of the opinion that the government was unwilling to appreciate the benefits from the plantation forestry industry. A respondent went on to say that until the government appreciates the forestry industry as a legitimate form of land use, whatever the industry does will never be appreciated.

4.5.2 Biodiversity, conservation and alien species

One forester was of the view that certain species have benefitted from afforestation. For instance, the respondent mentioned that species such as the common reedbed (*Redunca arundinum*) have increased in the Natal Midlands. In addition, warthogs (*Phacocoerus aethiopicus*) were said to have increased in the Louwsburg area. On enquiry, one forester was of the view that communication with stakeholders to identify exactly which species have been lost in areas where plantations existed would be a good starting point to resolving conflict on biodiversity loss.

Three of the forestry officials felt that it is about time people acknowledged that forestry plantations provided an alternative at a time when timber requirements were growing and protected the limited indigenous trees from complete exploitation. One respondent made reference to the fact that indigenous forests only exist in about 1% of the total surface of South Africa, and over the years a lot of these indigenous forests have been reduced and some totally destroyed largely as a result of population increase and uncontrolled use.

4.5.3 Perceptions of misinformation

Five of the six members of the forestry industry expressed concern over the continued criticism of the industry regardless of their efforts to be environmentally and socially sustainable. It was the view of three respondents that people form perceptions about the forestry industry without facts, but based on incorrect information about the industry. Two foresters questioned whether forestry was really such a bad land use as compared to other land uses.

One forester also felt that the foresters have done much more than any other organisation in terms of environmental management. The respondent made reference to the publication of bird books by the industry, certification to international standards like ISO 14000 and/or the Forest Stewardship Council by the major timber companies, and the implementation of annual audits by the bigger timber companies. The respondent was of the opinion that despite these changes, the general public is still being led by years of baseless perceptions that forestry is a negative industry and not by facts. Further the respondent mentioned that despite allegations that trees are planted in areas of good agricultural options this was not true.

Two interviewees also stated that The Wildlife and Environmental Society was the greatest critic of the forestry industry's practices and at the forefront of criticising the industry, but it was not interested in face to face discussions with the members of the industry.

A subsequent question on how respondents felt the forestry industry could improve their image revealed that that two foresters felt there was a need to control disinformation that goes out, by employing permanent public relations officers to specifically guide peoples perceptions

4.5.4 Integrated resource management

One forestry industry stakeholder pointed out that there are not enough discussions between the foresters and bodies who keep watch on the negative impacts of the industry. He went on to say that though friction between the foresters and the wildlife conservationists still existed, he looked forward to the time the forestry industry will be part of the solution making and not part of the perceived problem. The respondent also mentioned that if all stakeholders of the forestry industry worked as a team they would all have a better understanding of the industry and its practices and would spend more time working out possible solutions than wasting time criticising each other.

To change the negative image of the industry, one interviewee suggested that the foresters would have to use a different messenger to publicise their activities. That is rather than foresters talking about what they have done, if NGOs and wildlife conservationists could appreciate what foresters are doing and pass on the word, the information would be better accepted.

In addition two respondents contended that looking at forestry in the context of sustainable development and in carrying out any business, what must not be forgotten is that a balance has to be struck between economic development, social development and environmental conservation.

4.5.5 Social-economic issues

Two respondents felt that the social benefits of forestry are sometimes overlooked by a number of people. Three interviewees mentioned that with the high level of poverty in the rural areas, local people benefitted from the timber industry. Reference was made to more than 200 schools and 70-80 clinics run by foresters, at their own expense, for the communities. One respondent questioned whether the latter benefits did not amount to benefits to the community. One respondent was of the view that although forestry plantations employ relatively few people, they pay their employees well.

Referring to the forestry industry, one respondent felt that as much as the impacts of plantation forestry need be considered, the benefits it brings to local communities in terms of social and economic upliftment should not be overlooked.

One respondent pointed out that with the high rate of unemployment in South Africa, the fight against unemployment is one of the countries most urgent battles. However, he went on to say that the countries labour policies were very restrictive and did not encourage companies to employ. Reference was made to the new labour laws that were geared to ensure the redistribution of existing jobs ensuring that good conditions prevailed for those employed. One respondent argued that the unfortunate part about such restrictive conditions is that any growth in the forestry industry is bound to lead to more mechanisation which will only lead to greater unemployment and worsen crime.

One contractor felt that too much blame was being placed on contractors over the working conditions of employees and that the broader economic policies in South Africa were being overlooked. The respondent mentioned that with cheap papers from Asian markets flooding the South Africa market, the prices of timber have been affected. He went on to mention that as the prices of timber have reduced, companies have faced the challenges by cutting down on budgets

given to contractors.

One respondent also mentioned that in the past workers, through unions, were always making an issue of working conditions, with no concern about the loss of productivity. One respondent mentioned that the result was very detrimental to running a business. The respondent also mentioned that timber companies like any other business, have obligations to meet with both international market demands and local markets and therefore reliable and productive staff are a sure way to achieving this. The respondent further mentioned that it is within this context that the major companies have outsourced their activities to ensure that productivity is achieved. One respondent was of the view that the basic conditions are met when deciding on workers salaries as contractors are not allowed by law to pay below the basic pay conditions.

Three respondents mentioned that the general relations between contractors and the rural community are good despite the reduction in jobs. However one contractor was of the view that generally willingness of people to work has reduced since 1995.

4.5.6 Security

One respondent felt that the South African criminal justice system has deteriorated over the last five years and fighting crime is not a priority of the government. Further, the respondent mentioned that this has resulted in a rising crime rate in South Africa which is negatively affecting the plantation forestry industry and the lives of the farm workers.

4.5.7 Environmental management systems

Three of the seven foresters interviewed were very content with the current practices of forestry as they pointed out that they had accomplished most of the things they had set out to do in 1995 which were in relation to EMS. The respondents mentioned that their achievements included certification to both procedural and performance standards. Five of the respondents mentioned that a lot more has to be done for them to gain a positive public image among the stakeholders. It was also stated that, among other things, the commercial forestry industry in South Africa has implemented strategies for sustainable forest management.

4.5.8 Small Scale Timber Growers

One respondent from the small scale timber growers associations felt there was a shortage of land as it was not easy to acquire land for growing trees. The respondent attributed the shortage to the fact that forestry does not receive any recognition from national authority about its existence as an industry that contributes to economic development, resulting in more stringent mechanisms being put in place in order to deny the industry land for growing plantations. This is rather surprising as a representative of the same industry that has received a lot of attention about its continued expansion feels there is inadequate land being provided for growing trees.

4.5.9 Conclusions

The issues of concern raised by the foresters were over the new water legislation, labour legislation and the lack of an integrated resource management plan to ensure that the views of multiple stakeholders are considered in decision making. Increasing levels of crime also emerged as an issue of concern as it was said to be negatively affecting the forestry industry. In addition, concern was also raised over continued criticism of the industry by some stakeholders of the industry.

On a positive note, forestry industry stakeholders felt its about time the forestry industry was acknowledged for its contribution not only to rural welfare, but to providing an alternative source of timber to help preserve the limited indigenous trees. It was also pointed out that plantation forests benefits some species. Foresters were also quite content that they had managed to accomplish most of the things they had set out to do in 1995. Such as certification and implementing procedures aimed at achieving sustainable forestry Management. With regard to their public image, they were of the view that a lot more has to be done to gain a better positive public image.

Soil impacts were mentioned in the study by Murphy *et al.* (1995), but none of the stakeholders mentioned it as an issue in this study. Aesthetics, food, and attitudes towards forestry were not raised as an issue in either this study or the one by Murphy *et al.* (1995).

4.6 CONSERVATION AND ENVIRONMENTAL STAKEHOLDERS

TABLE 4.3
COMPARISON OF ISSUES RAISED BY CONSERVATION
/ENVIRONMENTALIST 1995 AND 1999

ISSUES	Murphy <i>et al.</i> (1995)	This study (1999)
Water	-	-
Biodiversity, conservation and alien plants	-	-
Soil impacts	-	-
Aesthetics		-
Perceptions of misinformation	-	-
Integrated resource management	-	
Socio-economic concerns		
• Impact on rural communities life, health and economy	-	-
• Loss of grazing land	-	-
• Rural -Urban migration	-	-
• Exporting timber as raw material	-	-
• Contracting more foreigners	-	-
Food		
Security		-
Attitudes of forestry to the public		
Environmental management system		-
Small scale timber growers	-	-

4.6.1 Water

Bad management of plantation forests which resulted in plantation trees colonising riparian zones was stated as a major problem by two respondents. It was also mentioned that the uncontrolled alien plants that have spread in a large part of the country are a threat to the scarce water supply in South Africa as they use much more water than the natural vegetation. Reference was made to the Sabie area where two respondents mentioned that the water discharge from the Sabie river was decreasing as a result of alien plants. Other impacts of timber plantations that were mentioned were reduced availability of water for local communities and less water for other agricultural production and industrial activities.

Three respondents out of the 10 mentioned that people have the additional burden of carrying water over long distances once forestry plantations are introduced in an area, due to the reduction in the stream flow from rivers which are normally relied on as a source of water.

4.6.2 Biodiversity/conservation and alien plants

The highest plant species diversity in South Africa, as well as habitats in which some of the rarest plant species are found, occur in the higher rainfall areas of the country (Miller *et al.*, 1996). Five respondents mentioned that it is also these areas that are most favoured and identified for afforestation. Therefore, it is not surprising that issues of biodiversity and land use by plantation forests were identified as concerns by environmentalists and conservationists.

Forestry was seen as a major destroyer of grasslands and all 10 respondents were concerned that animal and plant species were being lost in areas where plantation forests were introduced resulting in what they called 'green deserts'. Two respondents questioned why the forestry industry despite its impacts, was still expanding its practices. It was mentioned that the timber industry is the only destructive industry that is expanding at 200 square km a year. It was also mentioned that the problem with the forestry industry is once they are given 'half a chance' they go beyond what they need. One respondent also mentioned that it was by default that indigenous forests were saved and not by intent.

Six people felt that plantation forests were located in the best land with valuable grassland and

species used for grazing, cultivation and spiritual well-being by local communities. It was also mentioned that land convenient for growing trees existed in other areas that were not as fertile as the land under use at the moment and therefore, if the forestry industry used this land there would be less conflict between them and other stakeholders. One respondent mentioned that land use planning must be done in the context of social aspects before any plantation is introduced to an area.

4.6.3 Soil Impacts

One respondent was of the view that the main threat to sustainability of forestry plantations was nutrient depletion of soil. In addition he mentioned that soil disturbances during harvesting can also cause nutrient loss.

4.6.4 Aesthetics

Five respondents raised concerns over modification of the natural environment with monoculture of plantations. Concern was also raised over the uncontrolled increase of “jungle timber” (uncontrolled invasive plantations) in the Drakensberg region. Contributing factors to these responses were that KwaZulu-Natal was regarded as an important inland centre for recreation and tourism, with a reputation of having a range of outstanding natural beauty. Therefore one respondent felt that on a national scale, plantations were negatively affecting tourism.

4.6.5 Perceptions of Misinformation

Three respondents were of the view that the forestry industry were upsetting environmentally concerned people with ‘silly’ statements about what they are doing for the environment.

One respondent said they were not opposed to forestry activities, but rather towards the fact that the industry covers up and denies impacts that they have on social and physical environment. Two environmentalists felt that since 1995, there has been a lot of ‘propaganda’ to try and misinform people about what the forestry industry is doing for the environment. One respondent mentioned that Sappi are at the forefront of portraying a different industry from what they are really are. Four respondents pointed out that the cover up policy by the forestry industry has led to increased conflict between environmentalists and the forestry industry. Five interviewees

mentioned that if the forestry industry accepted their impacts on the environment, they would gain a lot of credibility.

One respondent was of the view that the fact that the forestry industry go out their way to publicise that they have received certification is a true indications that the industry is not sustainable. The respondent went on to say that foresters do not realise what they are doing and 'only fools can understand sustainability in terms of already destroyed areas.' Three respondents also challenged the use of the word forests by the timber industry as they believed that since 1995 the timber industry was using it as a technique to bluff the public into mistaking forests for timber plantations. Further, one respondent alleged pictures of indigenous forests in some cases have been use of to publicise timber plantations.

4.6.6 Socio-economic Issues

Three interviewees mentioned that the introduction of plantation forests in areas leads to a number of social, economic and cultural problems. Three out of the ten respondents mentioned that plantation forestry was seen as having a negative impact on the rural community way of life as it was foreign to normal rural agriculture that people are used to.

Three respondents contended that community health can not be separated from environmental health. Further the respondents mentioned that, when land for grazing is taken away from people, what that meant was their health is taken away from them as plantations have no value from a medicinal point of view.

One respondent was of the opinion that the change from mixed farming, which is seen as labour intensive, to forestry plantations which do not require as much work in all the growing years deprive a number of local people of an agricultural source of income. In addition, the respondent mentioned that the taking of land away from people for plantations, put a lot of economic pressure on people in rural areas as they were faced with the challenge of buying goods that they could otherwise produce for themselves. One respondent also mentioned that in most areas where plantation forests have been introduced the economies of the towns have come to a stand still as most people in these rural towns can not afford the luxuries they used to afford before the

introduction of plantation forests. Reference was made to a small town called Kwambonambi where it was claimed the economy had come to a standstill and professionals such as doctors had moved away.

One conservationist mentioned that because most people cannot cope with the pressures of their land being taken away from them by plantation forests, there has been an increase in rural people migrating to the peripheries of the bigger cities in a quest for a better life. The respondent went on to argue that as most people cannot find jobs in town, this has contributed to an increase in informal settlement, prostitution and crime in South Africa.

One respondent also mentioned that there is inadequate use of traditional structures and knowledge in discussions on the way of life in rural areas prior to the introduction of forestry plantations. The respondent felt that traditional authorities were being undermined by plantation forestry officials who just went into areas and convinced a few prominent people such as teachers and health officers in communities, into believing that growing timber is a profitable venture. The respondent went on to say that what was not taken into consideration was that forestry plantations lead to the creation of poverty by taking away peoples independence and land.

Two respondents also mentioned that they did not think the government was aware of the extent of the problem because they are more concerned about water and the environment and not about people.

Though they acknowledged that there are benefits drawn from forestry, they mentioned that when weighed against the detrimental impacts of forestry, the value of the benefits is reduced. Concern was raised by six respondents over the pricing system of timber. The respondents were of the view that the costing system of timber has been incorrect in the past as people do not include the full price it takes to grow plantations when discussing the benefits of timber. Therefore the value of plantations is usually grossly over stated. It was also mentioned by three out of the six respondents that because the pricing of timber is done wrongly, in reality, plantations could actually be of little value. The three respondents suggested that a full study on the cost and benefits of natural resources was necessary in order to understand the cost of forestry plantations.

Three respondents disagreed with the production of timber for export purposes. They mentioned that the industry were not only planting what they required, but they were also producing to export. One of the three respondents mentioned that although the country needs timber, it was unacceptable to produce it for export. This respondent likened the exportation of timber to actually exporting air, water and soil to other countries. In addition, two conservationists also questioned who really reaps the benefits of forestry. One respondent mentioned that the benefits of forestry end up in the hands of a few individuals and not the local community.

Five people expressed concern over exportation of too much timber in its raw state at very cheap prices. It was felt that the processing of timber must be done in South Africa to increase the number of jobs created for people. One respondent also stated that when timber is sold to the international markets, profits never come back to South Africa.

Two respondents were of the opinion that it was important for people to look into the true value of land, by fully taking environmental and social issues into consideration.

It was also mentioned by three respondents that afforestation is undermining the importance of providing employment to local people as new machinery introduced in the industry requires that one person does the work of about 7-8 people.

One respondent mentioned that contractors are more willing to employ foreigners than local people because they pay them less than what the local people would ask for.

4.6.7 Security

One respondent was of the opinion that when forestry plantations were introduced in rural areas people were faced with risks of fire hazards. One interviewee was of the view that the rising rate of unemployment had led to an increase in crime in South Africa.

4.6.8 Environmental Management System

One respondent was concerned that despite the increase in the number of plantations, there were very superficial activities being carried out to address the environmental concerns. He went on

to mention that people have to be made to understand that, 'Land is like a diamond and its value lies in shining forever'.

4.6.9 Small scale growers schemes

Three respondents wondered whether money is good enough compensation for the degradation done to land by plantations. These respondents mentioned that in areas where small scale timber growers schemes have been introduced, the local people have been manipulated into believing that these schemes are beneficial. One respondent also suggested that what would be more beneficial for the local people, would be to let private companies lease land, and do proper Environmental Impact Assessments, as opposed to getting land for free from local communities. He claimed that foresters have no credibility at all, as they deny that they are planting additional plantations, when they actually are doing so in tribal areas disguising their activities as social forestry.

4.6.10 Conclusion

The environmental/conservation stakeholders placed a lot emphasis on the impacts of plantation forestry on natural resources, destruction of human communities and reduction of water to streams. They were also concerned about whether plantation forestry really benefits rural communities and helps to improve their quality of life. Forestry plantations were seen as having negative scenic impacts and as such negatively affecting tourism.

Another issue of concern that was raised was that the forestry industry was misinforming the public about what they were doing for the environment.

What is surprising about the responses of these stakeholders is that the views and concerns expressed in 1995 are largely the same as the ones expressed in this study. People's perceptions of the industry are still negative despite the environmental changes that have taken place within the industry since 1995. It is difficult to say whether the perceptions of the industry are based on a correct understanding of the activities of the forestry industry or there are other factors influencing the perceptions.

Additional issues that were raised by the stakeholders in this study that were not raised in 1995, include the need for environmental management systems, security, and concern about aesthetic impacts of forestry. Food and the need for an integrated resource management system were not raised as issues in this study.

STUDY ISSUES	Murphy <i>et al.</i> (1995)	This study (1999)
Water	-	-
Biodiversity, conservation and alien plants		-
Soil impacts	-	
Aesthetics		
Perceptions of misinformation		
Integrated resource management		-
Socio-economic concerns	-	-
Food	-	-
Security	-	
Attitudes of forestry to the public		
Environmental Management systems	-	
Small scale timber growers		-

4.7.1 Water

Water is a critical resource throughout out South Africa. Farmers and other rural inhabitants depend on water for domestic and agricultural use. It is therefore not surprising that all five respondents mentioned reduction of water flow as a concern in areas where plantations existed. Two agriculturalists mentioned that in areas where plantation forestry replaces non-forested land, ground water levels are lowered and stream yields are reduced. It was also mentioned that the latter effects are more pronounced during the dry season.

One agriculturist was concerned that some of the existing forests have not been planted in an environmentally friendly way with regard to water.

One respondent saw the legislation as a positive step towards controlling water usage in country that has great water problems.

4.7.2 Biodiversity, conservation and alien plants

One agriculturalist disagreed with the view of some foresters that land used for plantation forestry can be brought back to other land uses contending that once an area is under plantation forests, it is under trees forever. Therefore, they suggested that in the best interest of use of land, the first use of land by foresters should be in land that is not for agriculture.

4.7.3 Integrated resource management

There was concern raised from one respondent over a lack of holistic and integrated planning in catchments over resource utilization. This was attributed to policies by major forestry companies to expand through small scale timber growers in the rural areas.

4.7.4 Social-economic issue

One respondent felt that there was inadequate funding allocated for rural community projects and a need to ensure more access to funding to help community members.

4.7.5 Food

Plantation forestry was seen as alien plants invading good agricultural land by two respondents. One respondent was of the view that it was important to make sure that the countries food requirements are considered as a great priority. This concern was raised in the context of the growing levels of poverty in South Africa and the need to alleviate it.

4.7.6 Small scale timber growers

Concern was raised over small scale timber growers operating under communal land ownership in former KwaZulu by three respondents. It was mentioned that though the rural people were being encouraged by foresters to grow trees, their options for managing land environmentally are

very limited because of the nature of communal ownership. It was also mentioned by one respondent that small growers were a threat to land, as it was felt that most of the land users had inadequate knowledge about their land and as such they could give away good agricultural land to plantations. One agriculturists suggested that one way to mitigate this concern, is to ensure rural people and land owners are better informed and trained as land users.

4.7.7 Conclusion

Generally the issues of concern to agricultural stakeholders were over the amount of water used by plantations and the displacement of agricultural land with alien vegetation. Small scale timber growers under communal land ownership were also seen as a threat to other agricultural land users. Lack of a holistic and integrated planning in catchments as well as the need to provide funding to help rural community members were also expressed as issues. The mentioned issues in this study have been under considerable discussion in recent years in South Africa, it is therefore not surprising they were raised as issues in this study.

Alien vegetation, Integrated resource management and Small scale timber growers were not raised as issues in the 1995 study by Murphy *et al.*, however they were expressed as concerns in this study. Other issues that were not emphasized in this study in 1995 but raised as issues in 1999 were soil, which was seen as a threat to long term sustainability of forests.

Aesthetics and perceptions of misinformation were not raised as an issue in either 1995 or in this study.

4.8 GOVERNMENT OFFICIAL AND OFFICIAL BODIES

TABLE 4.5
COMPARISON OF ISSUES RAISED BY GOVERNMENT OFFICIALS
AND OFFICIAL BODIES IN 1995 AND 1999

STUDY	Murphy <i>et al.</i> (1995)	This study (1999)
Water	-	-
Biodiversity, conservation and alien plants		-
Soil impacts		+
Aesthetics	+	
Perceptions of misinformation campaign		
Integrated resource management	+	
Socio-economic concerns	-	-
Food		
Security		
Attitudes of forestry to the public	-	
Environmental management system		
Small scale timber growers		

4.8.1 Water

Though water was raised as an issue of concern by four respondents, the focus of the concerns were different. Three government officials were of the opinion that too much forestry in one area reduced the flow of water to other downstream users. In addition, they also mentioned that foresters still do not manage riparian zones in some areas, stressing that this was especially noticeable in big companies. The water consultant, however, focused on how much water plantations use. He questioned how much water forestry plantations actually used. The reason for his uncertainty, was that research on how much water forestry plantations use has only been

done in drier catchments, but not in wet catchments.

4.8.2 Biodiversity, conservation and alien species

One government official was concerned that the big timber growers are still extending the areas under plantation as they are encouraging community members to grow timber.

Concern was raised over large scale replacement of natural communities, usually grasslands by plantations of alien species. Two respondents pointed out that part of the affected natural system is irreparable. Reference was made to Veld Type '45' Mistland grasslands 96 which one respondent said had been destroyed by afforestation with consequent loss of populations of plant and animal species. One respondent also mentioned that the Blue Swallow, which is South Africa most endangered species (Erskine, 1990) occurs and breeds in prime afforestation sites. The respondent pointed out that these grasslands which the Blue Swallow rely on have been destroyed, and thus, a number of species are endangered.

Two government officials argued that they are not opposed to forestry but to biodiversity destruction. One interviewee was concerned about the loss of fire regimes which maintain grasslands as a result of afforestation. This was mentioned in the context that the industry is prohibited by law from burning plantations during the period of July and October due to the risk of fires getting out of control (Everson, *et al.*, 1989). However, these burning programmes have serious adverse implications for indigenous plants and animals as they occur during the growing season for plants and breeding season for animals. Even though timber growers talk about the possibility of rehabilitation within a year, one respondent was of the view that this was virtually impossible as the amount of biodiversity lost and soil nutrients lost can not be brought back in a year.

On a positive note, two government officials acknowledged that the forestry industry has also adopted environmentally friendly approaches.

4.8.3 Soil impacts

The water consultant was of the view that people need to be informed that afforestation increases

infiltration and thereby reduces erosion. He also was of the opinion that afforestation also plays an important role in putting back nutrients into the soil through organic composition from the leaves, slash and bark which are left in the timber fields.

4.8.4 Perceptions of misinformation

One interviewee was of the view that what happens on the ground and what is actually said by foresters are two different things. The water consultant held a different view. He argued that not all peoples perceptions of the forestry industry are based on facts. He was of the view that some peoples perceptions have been created by a group of people who are either well interested but ill informed or are emotional about the impacts of forestry plantations.

4.8.5 Socio -economic concerns

One respondent felt that as the current market is declining and the price of timber falling, there is too much timber being produced for the market. The respondent also mentioned that though there is no doubt that timber production is a source of foreign exchange to South Africa, there is a price to pay, as it costs the country a great deal of water. Profits were said to be very minimal on the growing side of the timber companies.

There is a big move internationally towards down sizing and outsourcing in forestry. Outsourcing as seen provides good job opportunities by empowering small organizations. This is consistent with emerging government policies and legislation.

Though there are few problems in the transitional stages of new contract companies; these revolve around companies not being able to afford large equipment and work being labour intensive for workers in the beginning. This levels off with time.

4.8.6 Conclusions

It is difficult to compare these results with those in the study by Murphy *et al.*(1995) who reported that there was no consensus on what government officials perceptions of the industry were. However, the general discussions among government officials and the official bodies revolved around questioning what has been done and not done not by the forestry industry. These

revolved around how to manage macro and micro impacts of forestry on water, the need for one forestry policy to manage the growth of the forestry industry, and the need for a holistic land use management and planning system.

On a positive note, in this study the government officials acknowledged the efforts by the forestry industry to adopt environmentally friendly approaches. However, there was concern raised over loss of biodiversity. Reference was also made to grasslands which were being destroyed.

It was also felt that big growers are still expanding their areas of plantation by encouraging small growers to have plantations. It was recommended that this should be disallowed as the current markets were declining and the prices of timber falling and therefore there would be too much timber produced for a small market.

CHAPTER FIVE

COMPARISON OF THE FINDINGS IN 1995 WITH THOSE IN 1999

5.1 Introduction

Specific issues raised by different stakeholders in this study (chapter 5) were compared against the issues raised in the study by Murphy et al., (1995). The intention of the discussion is to develop an overview of issues and how these may or may not have changed. (A brief review of the comparison is summarized in Table 5.1).

TABLE 5.1
A COMPARISON OVERALL ISSUES RAISED BY STAKEHOLDERS IN 1995 AND 1999

Issue \ Stakeholder	COMMUNITY S.H.		FORESTRY S. H.		ENVIRONMENTAL/ CONSERVATION S. H		AGRICULTURAL S.H.		GOVERNMENT S. H.	
	1995	1999	1995	1999	1995	1999	1995	1999	1995	1999
Water	-	-	+	-	-	-	-	-	-	-
Biodiversity conservation	-	-	+	+	-	-	-	-	-	-
Soil Impacts	+	-	+		-	-	-			+
Aesthetics						-			+	
Perceptions of misconception				-	-	-				
I R M			-	-	-	-		-	+	
Socio-economic	-	-	-	-	-	-	-	-	-	-
	+	+	+	+						
Food		-					-	-	-	
Security	-			-		-	-			
Attitudes of forestry to public									-	
Small Scale growers				+	-	-				
E M S			+	+			+			

Key: S. H. = Community stakeholders + = Benefit mentioned

I R M = Integrated Resource Management - = Concern raised

E M S = Environmental Management System

5.1.1 Water

Water was considered an issue of great concern in both the 1995 study by Murphy *et al.* and this study. The amount of water used by timber plantations and the implication on other water users were the major issues of concern in both 1995 and in this study.

Community members, conservation/environment stakeholders, agriculture and government stakeholders in both studies were of the view that plantation forestry resulted in reduction of water to downstream users and rural people. Other issues of concern in this study, included the spread of alien invasives and their impact on water reduction as a result of the high water intake by these plants, which were raised as an issue of concern by government and environment/conservation stakeholders. In addition, though some stakeholders in this study acknowledged that management of riparian zones had improved, there were concerns over the management of riparian zones not being properly attended to in some areas.

There were varying perceptions over the water Act promulgated in 1998 with regards to the pricing of water. Proponents of the industry felt the pricing system was a disincentive to successful running of their business whereas agricultural and conservation/environment stakeholders were of the opinion that the new legislation was a positive step towards monitoring water usage.

Though it was not possible to get an exact priority listing of what the respondents greatest concerns were regarding the impacts of plantation forestry on water, the amount of water used by plantations ranked high on the list of concerns expressed by all stakeholders. This is so despite some variations in focus on some of the issues raised by stakeholders in 1995 and in 1999. Perceptions over water use by plantations has not changed. This is more so among community members, government and conservation/environment stakeholders. Any programme aimed at addressing changes of perception over water usage would therefore have to focus on finding a strategy that will be acceptable to conservation/environment, government and community stakeholders.

5.1.2 Biodiversity, conservation, and alien species

From the 1995 study and this study, it is clear that afforestation is seen as a serious threat to biodiversity conservation by most stakeholders. Both in the 1995 study and this study, the major focus of the respondents was with regard to the impacts of afforestation on grassland, birds species, invertebrates and animals species. This concern was raised in the context that most of the areas in which the greatest biodiversity are found are also the areas favoured by afforestation. Some stakeholders were also concerned in that in most areas where afforestation has taken place, part of the affected natural ecosystem is irreparable.

In this study a lot of concern was put on what the forestry industry was doing to conserve biodiversity in a holistic manner. Some stakeholders were concerned that, despite the introduction of a number of regulations to help monitor biodiversity conservation, the regulations were not always implemented. There was also concern over the continued expansion of plantations despite their impacts on biodiversity.

5.1.3 Soil Impacts

Soil was raised as an issue by only two stakeholder groups in this study as compared to the four stakeholders that raised it as an issue in 1995. Both in 1995 and in 1999, the stakeholders were concerned about the loss of soil during the clearing of natural vegetation and nutrient depletion in areas where forestry plantation existed. The effects of herbicide on soil were raised as a concern in 1995 by some stakeholders, but this was not an issue in this study.

5.1.4 Aesthetics

The visual impact of afforestation was raised as an issue in both this study and in the 1999 study. Though aesthetics was not much of an issue, in both this study and the 1999 study, the focus from those who raised it as an issue was that the forestry industry are not doing enough to mitigate their visual impacts. A lot more could be done in terms of landscape planning to reduce its impacts. Policy and procedure need to be put in place to ensure that landscapes are conserved.

5.1.5 Perceptions of misinformation

Perceptions existed among government, and environmental and conservation stakeholders that

the forestry industry are continuously misinforming the public about the industries activities. These views were held by conservation/environmental stakeholder groups in 1995, but in 1999 only environmental stakeholders expressed them in this study. The industry was seen as one with environmental impacts, which it covered by continuously publicising the environmental friendly activities it was carrying out. which do not necessary reflect the reality of what they are doing on the ground. The issue of misinformation was brought out very strongly by the environment/conservation stakeholders in both this study and in 1995..

Proponents of the forestry industry were concerned that despite the numerous efforts by the forestry industry to be environmentally and socially friendly, the other stakeholders of the industry still do not want to believe that the industry is sustainable.

5.1.6 Integrated resource management

Both in 1995 and in 1999 the need for integrated resource management was emphasised. A joint effort with among various stakeholders to ensure that general consensus over what social and environmental aspects need to be sustained was viewed as important was seen as important. Rural community stakeholders in 1999 were of the view that if an integrated environmental management plan existed, people would be consulted before any plan to have commercial afforestation in an area was undertaken. Therefore proper planning regarding the relocation of people would be formulated in an amicable way acceptable to all stakeholders.

In this study, forestry was seen as an industry that can contribute considerably towards meeting the challenges of the future, by some stakeholders, but only if it was integrated into a greater development plan, with due acknowledgment that there are trade offs in any form of development and forestry is no exception.

Though in this study all stakeholders who mentioned the issue viewed it as a solution to arriving at an acceptable compromise on how impacts of forestry could be mitigated, not all stakeholders felt the same in 1995. Some stakeholders in the study by Murphy *et al.* 1995, were of the view that the structure of corporate forestry poses limitations to such systems, alluding to the fact that South Africa relies on exotic species which were said to have no culture of using plantations for

a variety of purposes.

5.1.7 Socio-economic Concerns

The socio economic focus in both studies was mainly concerned with the provision of services to rural people, the quality of life of rural people and what opportunities are available for local community members to survive once forestry has been introduced on land originally used for other practices by rural people. However, there were a few issues that were mentioned in 1995 that were not mentioned in 1999 and vice versa.

Both in 1995 and in this study, the main socio-economic issues that were articulated were concerned with issues of rural community welfare. Positive effects included job creation, fuelwood and construction timber. Economically, in both studies, respondents acknowledged that forestry is an export industry that brings benefits to rural communities. Other benefits of the industry that were mentioned in the 1995 study, but not raised in this study are increased fire fighting capacity amongst farmers and improved recreation facilities as a result of afforestation.

Among the concerns raised in both studies, focus was on deterioration quality of rural life as a result of plantation forestry. This was attributed to reduction in grazing land and displacement of rural communities in areas where timber plantations existed. A lot of attention was placed on the reduction of employment and deterioration of working conditions under contract employment in this study by all stakeholders. However, though the issue was mentioned in 1995, only environmentalist/conservationist stakeholders raised it as a concern.

The primary concern raised economically was over who really benefits from plantations. In both studies, there was concern around the export income not being repatriated to South Africa. Furthermore, in both studies, respondents were concerned that timber was being exported as raw material. It conservationist and environmentalist in 1999 were of the view that if the processing of the timber was done in South Africa, it would provide more employment opportunities to the local people. While there were concerns that the forestry industry was vulnerable to global trends in 1995, this was not raised as an issue in 1999.

The socio economic focus in both studies was mainly on issues relating to economic welfare and

5.1.8 Food

Food was raised as an issue of concern in this study by community members stakeholders in the view of the fact that timber plantations are not edible. The need for any development initiative should take the food requirement of people into consideration was also acknowledged. The concerns are not different from those that were raised in 1995.

5.1.9 Security

Increasing crime was raised as an issue in both the 1995 study and this study. Fire hazards as a result of plantations were also mentioned as an issue in both studies.

5.1.10 Attitudes of forestry Industry to public

Some stakeholders in this study were very skeptical about whatever the forestry industry was doing for the public. This came out quite clearly in most of the issues raised. Some of the issues already mentioned under different titles showing they lack confidence in the industry include statements like;

- The forestry industry is undermining the intelligence of the people by telling them half truths about what they were doing for the environment.
- Do the rural people really benefit from forestry plantations and
- The forestry industry covers up its environmental impact

These issues were not raised in the 1995 study, however the focus in the 1995 study was on the forestry industry traditionally being hostile to the public with regard to entry to plantations. This was not an issue of concern in this study.

5.1.11 Small scale timber growers

In both studies, stakeholders expressed concern over whether the best interests of forestry companies agreed with the best interests of rural communities. Some stakeholders were concerned that most rural people did not fully understand the implications of agreeing to go into timber growing. Furthermore, some stakeholders pointed out that the risk to grow timber is high, and

most local people do not have the ability to grow it.

5.1.12 Conclusion

A comparison of the perceptions expressed in the study by Murphy *et al.* (1995) with those expressed in this study show that although individual emphasis among stakeholders could have changed, most of the stakeholders attitudes towards the forestry industry overall are still largely negative. This is not surprising as not only has the forestry industry changed its practices considerably since 1995, but the environment in which the industry is operating has also changed substantially. Some of the changes in the environment that could have had an effect on peoples perceptions of the industry are discussed in the following chapter.

CHAPTER SIX

EXTERNAL FACTORS INFLUENCING PERCEPTIONS

6.1 Introduction

From the previous chapter it is clear that peoples perceptions of the forestry industry have not changed since 1995, this is so despite efforts by the forestry industry to implement sustainable forestry management policies, refrain from planting close to riparian zones and ensuring that environmental impact assessments are conducted before any area is planted with timber.

The external environment has changed markedly since 1995 and this has continuously focussed peoples attention on the industry. Some of the changes that have taken place since the survey by Murphy et al. (1995) include an increase in:

- ♣ Unemployment levels
- ♣ Poverty
- ♣ Emerging democracies
- ♣ Increasing legislation to guide forestry management
- ♣ Emphasis on seed dispersal from plantations resulting in alien invasive plantations

6.1.1 Unemployment and Poverty

Over the past five years, the rate of unemployment in South Africa has increased tremendously. Approximately 500 000 jobs have been shed since 1995 (Aitken, 1999), leading to an exceptionally high rate of unemployment, estimated to be between 30% to 40% (May *et al.*, 1998). The trend towards 'contract employment' rather than 'established permanent workforce' in the forestry industry has also resulted in large scale retrenchments, significantly reduced wages and loss of benefits (May et al., 1998).

People in rural areas in South Africa are heavily reliant on employment for survival and the reduction in employment means an increase in the number of people competing for few jobs. The vulnerability of these people is increased because they rely on employers not only for employment wages, but also for services such as schools, housing and medical facilities (May *et.al*, 1998). Consequently, any change in the numbers of employees impacts significantly on rural households

and therefore increases their expectations of local industries to provide employment and services to them.

6.1.2 Emerging democracies

South Africa has a history of apartheid policies and practices that denied the majority of black people access to land . This resulted in tenure insecurity and loss of grazing in most areas where forestry plantations existed. However, with the introduction of the land reform policy in South Africa, whose primary aim is to address the skewed land dispensation that exists, most people are finally filled with a lot of expectation and hope that they can own their own land. This expectation has a bearing on how people view land that is currently being used for timber plantations.

6.1.3 Increasing Legislation

A number of national as well as international policies and programmes have been implemented over the past seven years in South Africa to reduce impacts of commercial forestry on the environment and local communities. The following is a list of some of the legislation introduced:

- ♣ The New Water Act
- ♣ The Biodiversity Conservation
- ♣ Criteria and Indicators for Sustainable Forestry Management:
- ♣ National Forestry Action Programme
- ♣ Labour laws

All the above mentioned legislation was born out of years of public concern about the impacts of commercial forestry worldwide. As such, these policies and programmes have been introduced in an effort to ensure that management decisions in forestry not only focus on economic productivity, but maintain diversity, ensure that water is used sparingly and ensure social upliftment. The introduction of the new legislation was characterized by frequent media coverage on topics such as water usage by plantations, biodiversity and how sustainable forestry plantations are in meeting the needs of local people. Consequently, it is the view of the researcher that the publicity that went with the introduction of the legislation could have made more people aware of the negative impacts of forestry plantations and thus increased their expectations about the forestry industry. In addition, some opponents of the forestry industry may have taken the

introduction of a number of all the legislation at the same time to mean, that, the forestry industry has such great impacts that need to be closely monitored. Finally the introduction of the legislation could also have been understood to mean that the forestry industry is being environmentally and socially conscious. Whatever the case, the legislation has obviously made a number of people aware of the existence of the forestry industry and their impacts.

6.1.4 The Working for Water Programme

There has been a lot of focus on seed dispersal from timber plantations resulting in alien invasive plantations. The basis of the concern about alien invasive vegetation has been over the amount of water used by these trees and the amount of indigenous species lost as a result of the increase in alien vegetation. It is estimated that alien plants use around 3 300 million cubic meters (m³) of water per annum (Bosch and Hewlett, 1982, Jaruis and McNaught, 1996) which accounts for 6.7% of the total amount of water that would otherwise flow in our rivers. As a result, the South African government has spent a lot of money through the working for water programme in trying to reduce the number of alien plants around. The implementation of the programme has also increased awareness among most people about the impacts of forestry plantations.

6.1.5 Who decides on what is Sustainable

Though there are numerous calls for sustainable forestry, a number of people have not come to terms with the meaning of the word (Pott, 1999 and Breen and Mander, 1995). The most common definition of sustainable development is development that meets the needs of the present while not compromising the needs of the future generations. However, there have been a wide range of interpretations given to this with no single accepted definition or path of achieving it. For ecologists it means preservation of the status and function of ecological systems, for economists, it refers to the maintenance and improvement of human living standards (Toman, 1992, Auerbach, 1992). As a result, considerable conflict has arisen over the forest qualities that need to be sustained. Different stakeholders of the industry emphasize different aspects in arriving at what they call sustainable. The challenge lies in arriving at an approach that takes multiple objectives of different stakeholders into consideration.

6.1.6 Loss of Biodiversity

In recent times, there has been enormous concern over loss of biodiversity worldwide. The concern has been that human activities such as habitat destruction, foreign plants and animal invasions are resulting in an increasing loss of biodiversity. As South Africa ranks as the third most biologically diverse country in the world. The unique variety of genes, species, ecosystems and ecological processes occurring in the country has made it a country of major global importance in terms of biodiversity conservation (South African Legislation). A lot of focus has been placed on restoring degraded ecosystems, controlling the alien plants and integrating biodiversity considerations into forest management.

As plantation forestry constitutes a major change in the environment, with impacts of landscape and ecological processes which impacts on biodiversity. The impacts of forestry plantations have received a lot of attention and a lot of emphasis has been placed on the development of strategies and action plans to ensure that forestry plantations are managed in a sustainable manner. Further, the biodiversity convention held in 1992 mapped out more strategies which have been incorporated by most countries.

However, because the word biodiversity means different things to different stakeholders the difference in understanding what the word means is a source of controversy and conflict. Whereas the forestry industry put more emphasis on species richness, or the number of species in a system (Pott, 1999, per.comm), conservationist and environmentalists are focused on composition of biodiversity and the structure and functional diversity in a habitat. The challenge then is to come to an acceptable understanding of how habitats should be shifted to other land uses and how much and where.

6.1.7 Conclusion

The external environment has an impact of the way people perceive the forestry industry. The forestry industry is changing and so is the society around the environment. Understanding of the external changes is vital to any efforts directed at improving perceptions.

CHAPTER SEVEN

CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

- 7.1.1 From this study the results show that people's perceptions of the forestry industry have not changed since the study conducted by Murphy *et al.*, 1995. Though the forestry industry has changed its practices considerably in the intervening period to ensure that the impacts of the industry on the environment and society are reduced, they have not had much impact on peoples perception of the industry. Stakeholders perceptions of the industry are not entirely based on activities of the industry. The environment in which the stakeholders live has also changed since 1995. South Africa has become part of the global society and this has brought with it increasing awareness and appreciation of discourse around the sustainability of commercial forestry. In addition, there have been several internal forces, particularly the revision of policy and legislation concerning use of water resources. These have kept commercial forestry in the limelight leading to increasing awareness among different stakeholders, and thus new concerns and expectations.
- 7.1.2 There is also some indication that people are not that well informed about the forestry industry's practices suggesting that perceptions are based on shallow understanding. This is illustrated by some responses which seem simplistic or naive in the context of commercial forestry; and some which seem to be founded on misunderstanding. Many of the issues of concern are not particular to the forestry industry, yet stakeholders perceive them to be so. There are opportunities for forestry to join with other sectors to promote a broader and better understanding. Some groupings viewed some issues as more important than other. It is therefore possible to target stakeholders in trying to influence their perceptions of the issues. It is suggested that through enhanced understanding, of the issues may come changed perceptions of the industry. The current approach of promoting and/or defending forestry might be beneficially replaced by an approach focussed on issues. If people really understand the issues, they can draw logical conclusions.

7.1.3 Though the decision was to use the same methodology adopted in the 1995 study in this study, with hind sight, it was not very realistic to merely revisit the study by using general questions. These questions did not allow the researcher to determine whether people were more concerned about the same issues raised in 1995, or not. The method discouraged the interviewer from asking leading questions that would have otherwise given the researcher a more detailed understanding of subtle changes in perceptions and causes thereof. It did not allow the researcher to query how the activities implemented by the forestry industry in the intervening period could have affected people's perception. In other words, an alternative approach might elucidate shifts in perceptions, whether these were positive or negative.

7.2 Recommendations

7.2.1 To successfully influence people's perceptions, there is a need for targeted programmes directed towards defined issues and stakeholders based on the issues they raised. This would help the forestry industry deal with specific issues that are viewed as problems among specific stakeholders. It would also help the industry to achieve better clarity on issues and how they have changed, thereby enabling the industry to understand changing perceptions. The industry should consider a dedicated effort towards influencing perceptions.

7.2.2 There is a need to form strategic alliances to promote a broader understanding of issues amongst stakeholders rather than a sectoral understanding of issues around forestry. Perley (1999) suggested the need to change the messenger, however, it is also important to change the message disseminated by the industry, to ensure that the stakeholders get both a bigger and an improved understanding of issues. A more holistic view of issues of biodiversity, water, society and current economy would be important. This would give stakeholders a broader understanding of the issues so that the relative roles of forestry could be compared constantly with those of other industries.

7.2.3 More important than determining whether perceptions have changed is gaining an understanding of what causes people's perceptions to change. This is fundamental to

forestry or any other industry being able to conduct its affairs in a manner which accords with societies norms and values. Further research should be directed at gaining this understanding.

REFERENCES

- Acocks, J.P.H. (1953) *Veld Type of South Africa. 3rd edition*. Memoirs of the Botanical survey of South Africa No.57.
- Ahmed, A.G.M and Mlay, W. (1998) *Environmental and Sustainable Development in Eastern and Southern Africa: Some critical issues*. Macmillan. Basingstoke.
- Aitken, B.(1999) Government has to do with forestry's problems. *S A Forestry*. May/June: 30.
- Albertyn, C. and Powell, M.(1997) Daily Dispatch in World Rainforest Movement. (1998) *Tree Plantations: Impacts and struggles*. Montevideo, Uruguay.
- Allan, D.G., Harrison, J.A., Navard, R.A. and Van Wilgen, B.N. (1997) *The impact of commercial afforestation on bird population in Mpumalanga Province, South Africa* - insights from bird atlas data. *Bibliography conservation* 79:173-185.
- Annesburg, R.(1993) Environmental Action Proposed. *International Magazine on the Environment*. No. 16 December: 3 - 9.
- Auerbach, R.(1992) *Sustainable development - developing what to sustain whom?* New Ground, Autumn 1994. 15: 38-41.
- Bigalke, R. C. (1983) Forestry and Resource Conservation. What is the role of the Forester in South Africa? *South African Journal of Forestry*. 172: 12-14.
- Boeree, C.G (1998) Qualitative Methods Workbook
(<http://www.ship.edu/~cgboeree/qualmeth.html>)
- Bosch, J. M. and Hewlet, J.D. (1982) A review of catchment experiments to determine the effects of vegetation changes on water yield and evapotranspiration. *J.Hydrol.* 55: 3-23.

- Bosch, J.M. and Versfeld, D.B. (1983) *Forestry and the management of riparian Zones: Internal report of South African Forestry Research Institute*. Jonkershoek forestry research centre. Stellenbosch.
- Breen, C. and Mander, M.. (1995) *Sustainable Forestry: An International Perspective*. Institute of Natural Resources. Pietermaritzburg. South Africa.
- Budlender, D., May, J., Mokate, R., Rogerson, C. and Stavrou, A. (1998) *Poverty and Inequality in South Africa*. Report prepared for the office of the executive Deputy President and the Inter-Ministerial committee for Poverty and Inequality.
- Cairns, R.I. (1993) *Small growers commercial timber schemes in KwaZulu*. Durban: Centre for social and Development studies. Research paper.
- Carrere, R. (1999) *Pulpwood Plantations: A growing problem*. World Rainforest Movement, Montevideo, Uruguay.
- Carpus, P. (1999) Tree Talk. *S. A. Forestry*. May/June : 5.
- Cedara Bioresource information. (1999) *Bioresource Programme*. Cedara Agriculture College. Howick.
- Cellier, G.A. (1993) The Changing Landscape - is there room for forestry in the New South Africa? *South African Forestry Journal* 167: 57-61.
- Cellier, G. A.(1994) *The Development Potential and Impacts of Commercial Eucalyptus Woodlots in Selected areas of KwaZulu, South Africa*. University of Natal, Pietermaritzburg, South Africa.
- Cellier, S. (1994) Are All Trees Green: The forestry Industry replies, *Africa - Environment & Wildlife*, 2 (1): 81-85.

- Centero, J.C.(1993) Study no 1, historical background. Shell, WWF *tree plantation review*. V-VI.
- Christie, S. and Gandar, M. (1995) *Commercial and Social Forestry*. Workshop paper No. 18. The Land and Agriculture policy Centre. Johannesburg, South Africa.
- Claasen S.(1995) *Water conservation - is public criticism justified?* Paper read at National Forestry Policy Conference 2-3 March, Johannesburg.
- Cook, C.C. and Grut, M. (1989)(Eds). *Agroforestry in Sub-Saharan Africa; a Farmers Perceptive*. World Bank Technical Paper. No. 112. The World Bank Washington, D.C.
- De Laborde, B. (1999) *South Africa: Resistance to tree monoculture in grasslands*. <http://www.soft.co.za/sawac/articles>.
- Department of Forestry(1969) *The management of man-made Forests and Industrial Plantations: Problems and Solutions*. *Forestry in South Africa*.10 : 7-14.
- De Vaus, D.A.(1986) *Surveys in social research*. George Allen. London.
- De Villiers, J.A. and Van Jaarsveld, A.S.(1993) *Is sustainable development achievable in Africa?* Paper presented at symposium in sustainable Development in Africa.
- Dixon, J.A. and Fallon, L.A.(1989) The concept of sustainability, origins, extensions and usefulness for policy. *Society for natural resources*. 2:73-84.
- Dye, P.J. and Pouter, A.G. (1995) A field demonstration of the effects on streamflow of clearing invasive pines and wattle trees from a riparian zone. *South African Forestry Journal*. 173: 27-30.
- DWAF. (1997) *The white paper on Sustainable Forest Development in South Africa*. Pretoria.

DWAF, (1997) *South Africa's National Forestry Action Programme*. Pretoria.

Edwards, E.M.(1997) *The forestry situation in KwaZulu Natal: a situation analysis*. Presented at KwaZulu Natal Indaba held at The University of Natal, Pietermaritzburg.

Edwards, M.(1999), Strategies for forest industry survival. *S A Forestry*, May/June :16.

Edwards, M. B. P.(1997) *Commercial Forestry's Perspectives*. In :Little. T and Hornby, D. 1994. Socio-Economic Effects of changes in Land use resulting from Afforestation Initiatives: Report on proceedings of a Workshop Held in Durban, Institute of Natural Resources. Pietermaritzburg, South Africa.

Erskine, J. M.(ed)(1990) *The Physical, Social and Economic Impacts of Large-Scale Afforestation in Natal/KwaZulu*. Institute of Natural Resources, Pietermaritzburg. South Africa.

Everson, C. S., (1993) Comparative estimates of evaporation from a Eucalytus plantation and grasslands. In: *Proceedings of the Sixth South African National Hydrological Symposium*, Volume 1. (Eds. S.A. Lorentz, S.W. Kienzle and M.C.Dent.) 8 - 10 September, University of Natal, Pietermaritzburg. 725 - 735.

Everard, D. and Kruger, F.J. (1996) *Criteria and Indicators*. National Forestry Action Programme. Working group: Industrial Forestry. DWAF. South Africa.

Forest Owners Association (1999) 29th Annual Report for period April 1998 to March 1999.

Foy, T.J., Pitcher, M.J. and Wills, C.B. (1998) Participatory development of forest policy: Some practical lessons from recent South African experience. *Commonwealth Forestry Review*. 77(2)100-106.

Fuggle, R.F. (1992) Environmental Evaluation. In: Fuggle, R.M. and Rabie, M.A. (1992) *Environmental Management in South Africa*. 726 - 779. Juta. Cape Town.

- Fuggle, R. F. (1990) *Integrated Environmental Management. A Framework for Minimizing and Mitigating Environmental Consequences of Development Action in Countries of Southern Africa*. Paper presented at South African Regional Commission for the Conservation and Utilization of the Soil, May 1990, Malawi.
- Gandar, M. and Forster, S. (1994) *Impact of Commercial Afforestation on the Rural Areas of South Africa*. Working paper No 1. LAPC. Johannesburg.
- Garland, I. Cited in Cellier (1994) Are All Trees Green: The Forestry Industry Replies. *Africa - Environment & Wildlife*, 2(1): 81-85.
- Government of South Africa (1997) *NFAP, South Africa's National Forestry Action Programme*. Department of Water Affairs and Forestry. Pretoria.
- Haila, Y. (1994) Preserving Ecological Diversity in Boreal Forests: Ecological Background, Research and Management. *Annales Zoologici Fennici* 31(1):203 - 217.
- Hashatse, L. (1998) Responsible Stewardship of Our Forests. *Earth Year: The Essential Environmental Guide*. 17: 74 -75 .
- Holling, C.S. and Meffe, G.K. (1996) Command and Control and the Pathology of Natural Resource Management. *Conservation Biology*. 10(2) : 328 - 337.
- http://www.poliy.org.za/govdocs/green_paper/biodiv1.html#1.1.
- Huntley, B., Siefried, R. and Sunter, C (1989) *South African Environments into the 21st Century*. Human and Rousstau. Cape Town.
- Johns, M. (1993) Are All Trees Green: The Spotlight on Forestry. *Africa-Environment and Wildlife*, 1(3) : 77-85.

- Keppeler, E.T. and Ziemer, R.R.(1990) *Logging Effects on Streamflow: Water Yield and Summer Lowflows at Casper Creek in Northwestern California*. Water Resource. Res.26: 1669 - 1679.
- Kim, K.C. (1993) Biodiversity, Conservation and Inventory: Why Insects Matter. *Biodiversity and Conservation* 2:191 - 214.
- Leedy, P. D. (1993) *Practical Research planning and Design*. Macmillan Publishing Company. New York.
- Liebenberg, (1995) Agriculture, Forestry, conservation and the use of water. *Agrifutura Bulletin* 2(2): 36 -42.
- Low, A. B. and Rebelo, A.G. (Eds) (1996) *Vegetation of Southern Africa, Lesotho and Swaziland*. Department of Environmental Affairs. Pretoria. ISBN 0-621-17316-9.
- Lückhoff, H.A. (1973) The story of forestry and its people. In Immelman, W.F.E. *Our Green Heritage*. Cape Town, Tafelberg, 20-32.
- May, J., Govender, J., Mokate, R. And Rogerson, C. (1998) *Poverty and Inequality in South Africa*. Report prepared for the office of the Executive Deputy President and the inter-Ministerial Committee for poverty and Inequality. South Africa.
- Menne, W.(1995) Negative effects of plantations. *The Zululand Observer*. Feb. 10.
- Mckenzie, C. (1999) Changing industry factors impact forest profits. *S. A. Forestry*. May/June: 15
- Miller, J.C. (1993) Insects natural history, multi-species interactions and biodiversity in ecosystems. *Biodiversity and conservation* 2: 233-241.

- Murphy, C., Peden, M. and Gandar, M. (1995) *Consultation For Sappi Forests' Environmental Management System*. Report recording workshops and interviews held with interested and affected parties. Occasional Paper 161. Institute of Natural Resources, University of Natal.
- Musto, J. W. (1992) *Impacts of plantation forestry on various soil types*. Institute of commercial forestry research report 1992.
- Natal Witness. (1999) *Growers look to conservation*. June 12th.
- Ngobese, P. and Cock, J. (1995) Development and Environment. In Fitzgerald, P., Mc Lennan, A. and Munslow, B (ed) *Managing Sustainable Development in South Africa*. Oxford University Press. London.
- Niemelä, J. (1996) Invertebrates and Boreal Forests Management. *Conservation Biology*. 11(3): 601-610.
- Othusitse, B. (1997) *An evaluation of Small scale Forestry in the Kwambonambi Region KwaZulu-Natal*. MSc. Thesis, University of Natal, Pietermaritzburg.
- Owen, P. (1999) *South Africa: The big Lie.*, World Rainforest Movement. 27. <http://www.soft.co.za/sawac>.
- Perley, C. (1999) Trust me, I'm a Forester. *S A Forestry May/June*: 25.
- Pott, R. McC. (1992) Environmental conservation practises in a commercial Forestry enterprise. *South African Forestry Journal*. 163: 36-39.
- Pott, R. McC., (1996) Conservation Developments in South African Forestry. *South African Forestry Journal*. 177: 51-53.

- Pott, R.McC. (1997) Plantation Forestry in South Africa and its impacts on Biodiversity and Water. *Southern African Forestry Journal*. 180: 45- 48.
- Roberts, P.(1996) in Van Der Zel, D.W. (1996) *How Much Water do South Africa's plantations use?* *Arbor* 4(2): 8 -9.
- Sarantakos, S. (1998) *Social Research*. Machmillian Press Ltd. London.
- Saville, A (1994) *The Forestry Sector in KwaZulu/Natal*. Land and agriculture policy centre, South Africa.
- Scholes, R.J., Berns, J., Everard, D.A., Scott, D., Van Tiehoven, M. and Viljoen, P., (1995) *The Cost and Benefits of Forestry, case studies from Mpumalanga*. CSIR, Division of Forestry Science and Technology, Pretoria.
- Scotcher, J. (1999) Seeing the wood through trees. *Earthyear: the essential environmental guide*. 19:108-109.
- Scott, D. F. (1992) and Smith, R.E. (1992) The effects of afforestation on low flows in various regions of South Africa. *Water S.A.* 18(3): 185 - 193.
- Scott, D. F and Smith, R.E. (1997). Preliminary empirical models to predict reduction in annual and low flows resulting from afforestation. *Water S.A.* 23: 135-140.
- Sharma, P. N.(ed)(1992) *Managing the World's forests: Looking for Balance between Conservation and Development*. Kendall/Hunt publishing Company. Iowa.
- Sim, T.R. (1906) *The Forest and Forest Flora of Cape Colony*. Taylor and Henderson, Aberdeen: 361.
- South African Legislation, http://www.poliy.org.za/govdocs/green_paper/biodiv1.html#1.1
- South African Legislation, <http://www.polity.org.za/govdocs/legislation>.

- Toman, M. A. (1992) The difficulty in defining sustainability. *Resource for the future*.
106: 3 - 6.
- Van Wyk, B. (1997) *Grassland the Most Threatened Biome in South Africa*.
[Http://www.soft.co.za/sawac/articles/grassland.htm](http://www.soft.co.za/sawac/articles/grassland.htm).
- Van Der Zel, D.W., (1996) How Much Water do South Africa's plantations use?
Arbor 4(2): 8 -9.
- Van der Zel, D. W (1995) Accomplishment and Dynamics of the South African Afforestation
Permit System. *South African Forestry Journal*. 172. 49 - 58.
- Van der Zel, D. W (1992) Department of Agriculture, Pretoria.
- Van der Zel, D.W (1997) In Pursuit of Sustainable Forestry Development. *Southern African
Forestry Journal* 180: 55 - 60.
- Van Gelder, B and O'Keefe, B(1995) *The New Forester*. Intermediate Technology publications
ltd. London.
- World Commission on Environment and Development, (1987) *Our Common Future*. Oxford
University Press. Oxford.
- Yeld, J., (1997) *Caring for the Earth: South Africa, A strategy for sustainable living*. S. A
Nature Foundation, Stellenbosch.

PERSONAL COMMUNICATION

LIST OF PEOPLE WHO INTERVIEWED IN THE STUDY

NAME	ORGANIZATION	CONTACT NUMBER
GOVERNMENT OFFICIALS/OFFICIAL BODIES		
Mr Norman Wood	Department of Water Affairs and Forestry	(031) 3362700
Mr Khanyile	Department of Water affairs and Forestry	0331 452484
Mr James Wakelin	KZN Nature conservation services	0331 8451999
Prof. Peter Roberts	Private Consultant	(0331) 433902
Mr Lionel Sydenham	Department of Environmental Affairs and Tourism	(0331) 3558796
Tembeka Ndlovu	Department of Land Affairs	0349 809469
AGRICULTURAL BODIES		
Mr Bev Foster	Donnybrook Farmers Association	0398 341812
Mr M.C. Holdcrot	Mooi River Farmers Association	0332 631404
Mr Friedel Kaiser	Conservation Committee	(0325) 81660/082 7749901
Mr Kelson Camp	Bio Resource Programme- Cedara	(033) 355 9100
Mr Steward Orma	Department of Agriculture (Cedara)	(0331) 452484
Mr Prof T. O'Connor	Agriculture Faculty, UNP	(0331) 2605505
FORESTRY INDUSTRY: MEDIUM AND LARGE GROWERS		
Mr Ricky Pott	Mondi	(0331) 8974000
Mr Bruce Ferguson	SA Timber Association	(0331) 451366
Mr Dopson	Wattle Growers Union (appointment)	(0331) 451368
Mr Mike Edwards	Forest Owners Association (Johannesburg)	(011) 8033403
Mr Gcumisa	Umbrella body for wellington Gcumisa Small wattle Growers	033 5030035
Mr Grant Little	Sappi Forests	0331 473666
Mr Terry Teder	Contractor (Illovo Nek)	

Environmental/Social/ Conservation bodies		
Mr Wally Menne	Plantnet (Timber Watch)	082 4442083
Mr Bob Delobody	Private consultant	3434792
Mr Sanjay	Association of Rural Advancement	(0331) 457607
Mr David Newton	Endangered Wildlife Trust	(011) 4861102
Mr Keith Cooper	Wild life Society, Durban	(031) 2013126
Prof. Braam Van Wyk	Botany Department, University of Pretoria	(012) 4204411
Mr Philip Owe	South African water crisis association (Timber Watch)	
Dr Jason Londt	Natal Museum	(0331) 451404
Mr Adrian Armstrong	KZN nature conservation	(0331) 8451999
Prof. Perrin	Zoology Department, UNP	(0331) 260 5102
OTHERS PEOPLE		
10 former Sappi employees and 10 Neighbouring community members		

**FOR SAPPI FOREST EMPLOYEES AND THE NEIGHBOURING COMMUNITY
INTERVIEW SCHEDULE FOR RESEARCH ON STAKEHOLDERS KNOWLEDGE AND
PERCEPTION OF THE FORESTRY INDUSTRY.**

Thank you for agreeing to participate in this study.

BACKGROUND:

In recent years the forestry industry has been concerned about it's image. As a result, in 1995, Sappi Forestry commissioned a study to enable them to have a better understanding of perceived benefits and weaknesses of the industry. The study, of which some of you were part, raised a number of concerns. Some of the concerns were addressed and then incorporated into Sappi's management policy.

CURRENT STUDY:

In continued efforts to improve the forestry image, this study aims to establish a better understanding of stakeholders perceptions of the Industry, how they have changed and what has led to this change. To achieve this, views of some of Sappi employees and members of the neighbouring community will be obtained through focus group discussions. Interviews will be held with environmentalists, conservation authorities, government officials, and with Sappi Management.

Note: Please feel free express your views openly and frankly. It will not be possible for Sappi or the forestry industry to trace responses to particular individuals. Do not hesitate to request clarification should you find it will help you provide an answer.

PART 1

Because we all have different views depending on our ages, gender, level of education race and occupation, the following questions are meant to enable the researcher to understand the background people come from.

DEMOGRAPHIC INFORMATION

1. Questionnaire no
2. Date
3. Language used by respondent(s).....
4. Type of interview
 - a) Telephonic
 - b) Personal(face to face)
 - c) Focussed Group Discussion

5. Translator Name:.....
6. Gender 1) Male 2) Female
7. Age of respondents (years)(Please use ticks (✓) to indicate respondents age)

Categories
 - 1) Below 18
 - 2) 18-25
 - 3) 26-35
 - 4) 36-45
 - 5) 46-55
 - 6) 56-65
 - 7) ABOVE 66

8. Level of education (Please use ticks(✓) to indicate respondents level of education)
 - 1) Primary (Sub A to standard 5)
 - 2) Secondary/high (Std 6 -8)
 - 3) High School (Std 9-10)
 - 3) Tertiary education(technicon/University)
 - 4) Others, e.g certificate, short training course (specify).....
9. Current occupation
 - 1) Employed
 - 2) Unemployed
 - 3) Part time

8. Have you worked on a forestry plantation(s) before?
 Yes No
9. If yes to question 10, how many different plantations did you work for?

10. If yes to question 10, what work did you do on the plantation? (Respondents will not be led , but responses will be categorised.)
- 1) Labourer
 - 2) Foreman
 - 2) Administration clerk
 - 3) Manager
 - 4) Mechanic
 - 5) Driver
 - 6) Security guard
 - 7) Others, please specify.....
11. If you have, for how long did you work on the forestry plantation(s)?
- 1. Less than a year
 - 2. one year to two years
 - 3. two to four years
 - 4. More than five years
12. Have you had any training in forestry?
 Yes No
13. If yes to question 14, what training have you had in forestry ?
- 1) Formal training
 - 2) Informal
 - 3) Others(specify).....
14. Did you receive training while employed in the industry?
 Yes No

PART 2

The forestry industry has been operating for a long time and will continue. Perceived benefits and concerns form the basis of peoples opinions of the industry. In addition, attitude changes and perceived sustainability of land use practise also form the basis of peoples perceptions of the industry. The questions in this section are meant to help the researcher understand:

- changes in stakeholders perceptions
- the causes of stakeholder perceptions
- the manner in which stakeholders perception has changed post 1995 and,
- external forces influencing stakeholders perceptions.

FORESTRY PERCEPTIONS

These questions are included to help with understanding stakeholders perceptions of the forestry industry. In view of this, I would like you to focus on your understanding of benefits, concerns and opportunities stemming from the industry. This may help improve benefits and design of mitigatory measures to reduce impacts of the industry.

17. Are you interested in the forestry industry?

Yes No

18. If no to question 17, what are your reasons? (The respondent will not be led, but by suggesting reasons, responses will be classified).

1) Have not benefited from it

2) Lack of social concern for surrounding community

3) Damage to infrastructure

4) Lack of environmental concern

5) Others specify)

.....

.....

18. If yes to question 17, where does your interest stem from?

1) Benefits you derive from the industry

2) Concerns about the industry

3) Both of the above

19. When you think about commercial forestry, what are the main issues which come to mind? (For question 20, 22 and 26 Respondents will not be led by suggestions. Their responses will be categorised as indicated below)

VIEWS	COMMENT
Social	
Biodiversity	
Conservation	
Land practises	
Water	
Others(specify)	

20. Does forestry bring benefits to individuals?

Yes No

21. If it does, please state the benefits it brings and your perceptions of their importance.

POTENTIAL BENEFITS	VERY HIGH	HIGH	MEDIUM SIGNIFICANCE	NOT AT ALL
Fuel Wood				
Construction timber				
Paper and pulp products				
Jobs				
Training				
Others (specify)				

22. Does forestry bring benefits to community?

Yes No

23. If it does, please state the benefits it brings and your perceptions of their importance.

POTENTIAL BENEFITS	VERY HIGH	HIGH	MEDIUM SIGNIFICANCE	NOT AT ALL
Fuel Wood				
Construction timber				
Paper and pulp products				
Jobs				
Training				
Others (specify)				

24. Do you have concerns about the commercial forestry?

Yes No

25. If yes in question 25, please state what are your main areas of concern about commercial forestry and rate them accordingly as below?

SOCIAL CONCERNS	VERY HIGH	HIGH	MEDIUM SIGNIFICANCE	NOT AT ALL
Displacement of people				
Negative aesthetic impact				
Loss of grazing land				
Cultural conservation				
Land Tenure				
Others (specify)				
ENVIRONMENTAL CONCERNS	VERY HIGH	HIGH	MEDIUM SIGNIFICANCE	NOT AT ALL
Biodiversity loss				
Depletion of indigenous forests				
Land-use practises				
Road damage				
Water Depletion				
Others (specify)				

27. What has led to these concerns (Probe reason for attitude)

Concern	Which action caused your concern
Community disruption	
Expansion of trees	
Construction of roads	
Others (specify)	

28. What mitigatory actions do you think are necessary to deal with your concerns of commercial forestry industry?

Concern	Possible solution
SOCIAL CONCERNS	
Displacement of people	
Negative aesthetic impact	
Loss of grazing land	
Cultural conservation	
Land Tenure	
Others (specify)	

29. How well informed are you about the forestry industry?

- 1) Very Well
- 2) Well
- 3) Poorly informed
- 4) Not at all

30. Would you like to be better informed?

- Yes No

31. If yes to question 27, how would you like to be informed?

- 1) Radio programmes
- 2) Newspapers
- 3) Magazines
- 4) Newsletters
- 5) Friends
- 6) Others(specify).....

EVOLUTION OF PERCEPTIONS

These questions have been included to determine whether there have been in changes in peoples attitudes towards the forestry industry post 1995, following changes in Sappi Forests management policy.

32. Have your attitude towards commercial forestry changed over the years?

Yes No

33. If yes to question 29, how have your attitudes towards the industry changed over the years? (Probe post 1995)

- 1) More positive
- 2) More Negative
- 3) Not at all

34. What do you attribute your change in attitude to?

Cause of change in attitude	Specify
1. Working conditions	
2. Benefits from the industry	
3. Change of management	
4. Social concern(s)	
5. Environmental concern(s)	
6. Change in policy	
7. Others (specify)	

LAND USE

These questions have been included to assess how sustainable forestry is as a land use practise and what can be done to make it more sustainable.

35. How do you feel about replacing other land uses with forestry? Please use ticks (✓) to mark answers.

LAND USES	CONTENT	DISCONTENT	NOT CONCERNED
Livestock and dairy			
Crop farming			
Sugar plantation			
Other(specify)			

36. What are your reasons for the response in question 35?
-
-

37. Is forestry discussed amongst members of your community?

Yes No

38. Has it become more or less of an issue in recent years (compared with the past, say more than 5 years ago)?

Yes No

39. There are many type of commercial land uses. How do you think forestry compares with other forms?

LAND USES	BETTER	WORSE	NOT DIFFERENT
Livestock and dairy			
Crop farming			
Sugar plantation			
Other(specify)			

40. Do you think commercial forestry is a long term land-use option
- 1) To a large extent
 - 2) Moderately
 - 3) Not at all

If no to question number , please specify your reasons

.....

41. What do you think are the main threats to the long term Sustainability of commercial forestry?
- 1) Loss of Biodiversity
 - 2) Reduction in water
 - 3) Any other.....
-

UNDERSTANDING OF FORESTRY

These questions are included to assess the perceptions of Sappi as a commercial forestry company. Sappi will not be able to trace a patterned response to an individual . Therefore you need not have any fear that you will be disadvantaged by your answers

42. Do any of your concerns about commercial forestry apply specifically to Sappi forests?
- Yes No
43. Do you benefit from Sappi forests activities
- Yes No
44. Are you aware of Sappi's environmental management policy and programmes?
- Yes No
45. If yes to question 44, how did you get to know about Sappi's environmental management policy and programmes (The respondent will not be led by suggestions, but responses will be classified)
- 1. Through the radio
 - 2. Through Newspaper, newsletter or magazine
 - 3. Through leaflets
 - 4. Others (specify)

46. Do you think Sappi's afforestation practices have improved post 1994?

Yes No

47. If yes, how do you think they have changed and what have been the principle changes?

Nature of Changes	Principles Change

48. Would you say the forestry industry is changing towards becoming more environmental friendly?

Yes No

49. Would you say the forestry industry is changing towards becoming more social friendly?

Yes No

50. What general suggestions would you give to the commercial forestry industry?

.....
.....

51. Would you like to be informed of the outcomes of this study? Yes No

If yes, how would you like this to be done?.....

**INTERVIEW SCHEDULE FOR FOR THE FORESTRY INDUSTRY STAKHOLDERS,
GOVERNMENT OFFICIALS, AGRICULTURAL AND ENVIRONMENTALIST
AND CONSERVATIONIST STAKEHOLDERS**

Thank you for agreeing to participate in this study.

BACKGROUND:

In recent years the forestry industry has been concerned about it's image. As a result, in 1995, Sappi Forestry commissioned a study to enable them to have a better understanding of perceived benefits and weaknesses of the industry. The study, of which some of you were part, raised a number of concerns. Some of the concerns were addressed and then incorporated into Sappi's management policy.

CURRENT STUDY:

In continued efforts to improve the forestry image, this study aims to establish a better understanding of stakeholders perceptions of the Industry, how they have changed and what has led to this change. To achieve this, views of some of Sappi employees and members of the neighbouring community will be obtained through focus group discussions. Interviews will be held with environmentalists, conservation authorities, government officials, and with Sappi Management.

Note: Please feel free express your views openly and frankly. It will not be possible for Sappi or the forestry industry to trace responses to particular individuals. Do not hesitate to request clarification should you find it will help you provide an answer.

1. What are your views about commercial forestry?
2. What are the benefits of commercial forestry?
3. What are your main area of concern about commercial forestry?
4. What are the specific issues of concern and how would deal with each issues?
5. What are the main differences between commercial forestry and other land uses?
6. To what extent is commercial forestry a long-term land-use option? Consider both

environmental and social issues.

7. What are the main threats to its sustainability? What can be done to improve its long term sustainability?