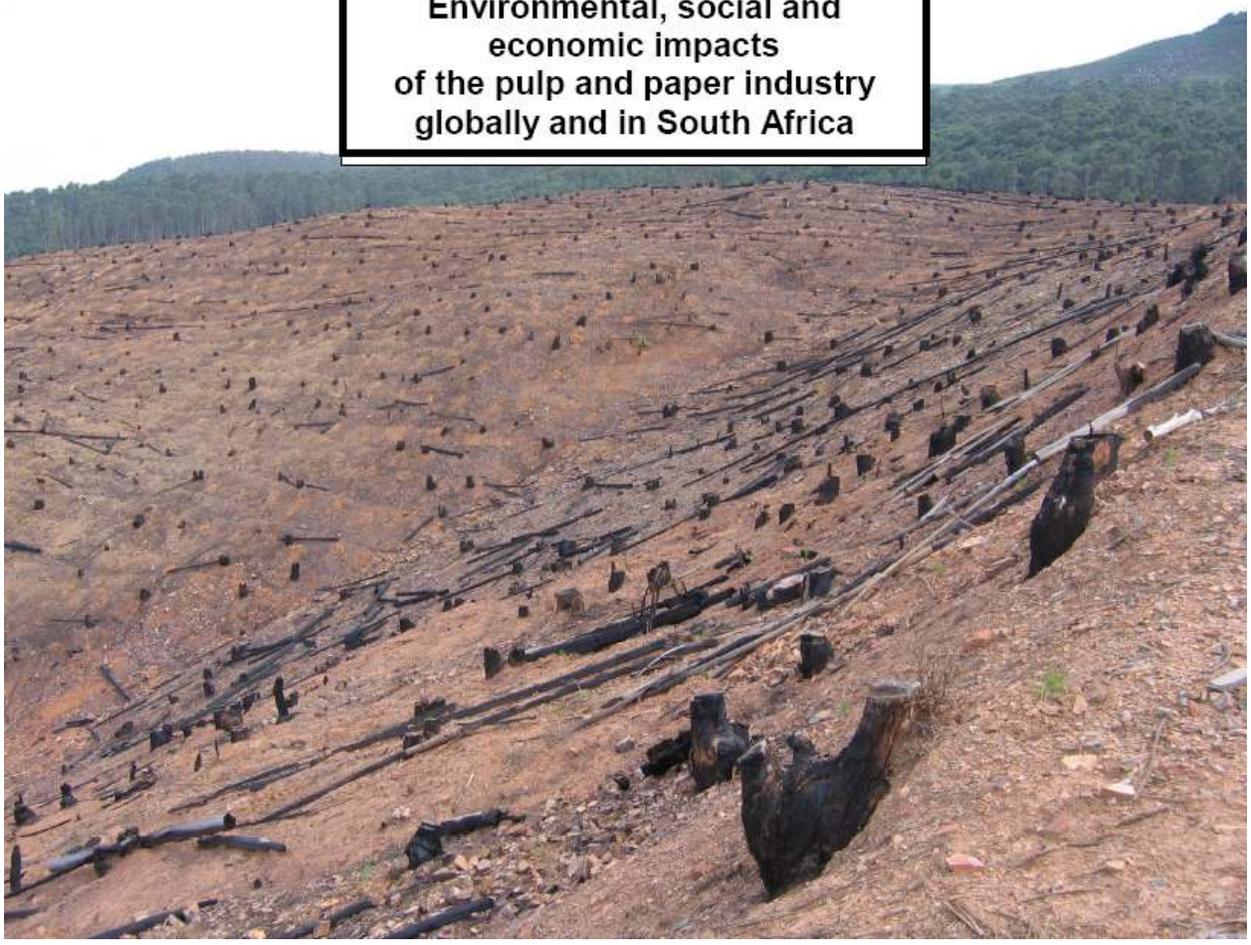


**PULP MILLS AND
PLANTATIONS**

**Environmental, social and
economic impacts
of the pulp and paper industry
globally and in South Africa**



PULP MILLS AND PLANTATIONS

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of the pulp and paper industry
globally and in South Africa**

**An awareness project supported by
The Grassroots Foundation, Germany**

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Contents

THE GLOBAL PULP AND PAPER INDUSTRY

General background
Pulp Manufacturing Processes

THE PULP AND PAPER INDUSTRY IN SOUTH AFRICA

PRIMARY CONCERNS

Pollution
Impacts on workers and communities
The spread of plantations

POSSIBLE SOLUTIONS

- Totally chlorine free (TCF) paper
- Totally effluent free (TEF) mills
- Maximising the use of recycled fibre
- Alternative fibre
- Government policy
- Reducing paper consumption
- Penalties and incentives
- Reform of the FSC certification process
- Addressing Labour issues

GLOBAL RESISTANCE TO THE PULP AND PAPER INDUSTRY

- Gunns Tasmanian pulp mill proposal
- Cellulose plant conflict between Uruguay and Argentina
- Networking and sharing strategies in the fight against pulp and paper mills
- Land conflict in Brazil and Chile
- The Fox River Cleanup Campaign

SOURCES AND FURTHER INFORMATION

Note: The views expressed in this document do not necessarily represent the views of the Timberwatch Coalition

THE GLOBAL PULP AND PAPER INDUSTRY

General Background

• Introduction

Paper is considered to be an essential commodity. Throughout the ages it has provided a means for people to keep written records, communicate ideas and information and create works of art. It has made a major contribution to the progress and development of many people, but in some regions of the modern world, the consumption of paper has reached an all time high, and much of it is wasteful and unnecessary. As a result of this excessive consumption, pulp and paper manufacturing has become one of the worlds biggest industries. As of 1999, it was calculated to annually consume 670 million tons of pulpwood to produce approximately 178 million tons of pulp and 278 million tons of paper and paperboard – thereby generating waste material of 214 million tons in addition to chemicals, fuel and water. Estimated industry growth over the next decade could be up to 3.5% per annum, and this would require an increase in logging of 1.2 million hectares per year, of both plantations and natural forests. This would be in spite of growing electronic communication and the ideal concept of the paperless office. Paper consumption in the developing world is increasing rapidly (at up to 7% per annum) but is still relatively low. Currently, average consumption per capita per annum in the developing world is 15kg, in Western Europe it is 160kg and in the US it is 200kg (2003). The annual minimum needed to meet basic needs for literacy and communication is generally considered to be 30-40 kg. Most consumers give little or no thought to what goes into the making of the paper they use on a daily basis, or the packaging they casually throw away. The story needs to be told of the environmental degradation, the social dispossession and the health problems that lie behind the whiteness of an apparently inexpensive sheet of paper. Needless to say this also applies to all industrial products derived from wood pulp. Only with this awareness can we begin to reduce the impacts of way the global pulp and paper industry operates.

• Reducing consumption

Bringing down consumption is not however, just a matter of individual choice - it is a political issue. The pulp and paper industry has huge financial resources and is backed by a complex web of both private and public companies and organisations, as well as having the backing of governments in the form of various subsidies and means of support, that are needed in order for it to remain viable, function efficiently and continue to expand its operations. The organisations that support the pulp and paper industry form a powerful and influential network. Each has its own interests but is, in many ways, also dependent upon the others. These companies consist of machinery suppliers, consultancy firms, export-credit agencies, private and multilateral banks, chemical companies and others. They profit enormously from the industry and there is no doubt that they will react strongly to any efforts aimed at reducing consumption of wood pulp derived products. Therefore, a successful opposition campaign will depend on bringing together efforts to create awareness among consumers, and all those impacted negatively by plantations, deforestation and pulp/paper production, to help form a united resistance movement.

• Corporate green wash

Due to its great size, the pulp and paper industry is economically and therefore politically powerful. It can spend large amounts of money to divert attention away from the negative impacts it has on communities and the environment and instead, is able to portray itself as socially and environmentally responsible. This corporate green wash has been successful in convincing governments and many ordinary people, that the industry has great value in terms of job creation, investment opportunities, and development in general. It maintains that the benefits it brings far outweigh the detrimental effects it has on people's health and the environment, which are claimed to be minimal – but often this could not be further from the truth.

Pulping Processes

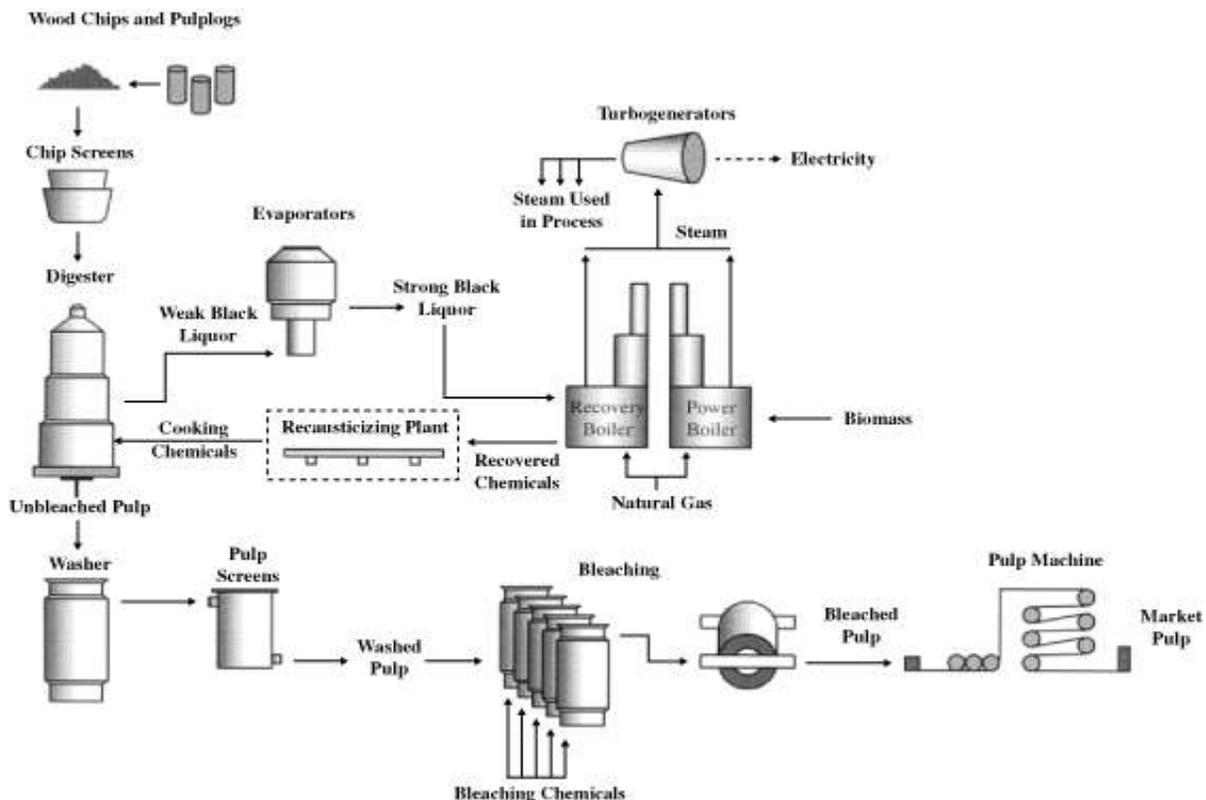
• Mechanical processing

This process uses only soft woods and produces 'wood containing' papers. The milling process physically shreds logs into chips, and the fibre is then separated by pressing the wood chips against grinding stones in the presence of heat or steam, thus producing thermo-mechanical pulp (TMP). Bleaching is usually done using hydrogen peroxide or other chlorine-free alternatives. Due to the high lignin content (i.e. the natural polymer that binds the fibres in wood), these papers discolour quickly, and because the process breaks the fibres, the paper is not very strong. Although mechanical processing consumes a lot of energy, the overall cost of production is relatively low as the method utilises about 95% of each log, so less raw material is needed and less solid waste is produced.

• Chemical processing

This process uses both soft and hard woods. Chemicals are used to dissolve the lignin. Paper made with this method is strong due to the longer fibres and it can be bleached to a high brightness. The most common method of chemical processing is known as the Kraft process. Sodium hydroxide and sodium sulphide are used as pulping agents, which has the advantage that the pulping chemicals can be recovered and re-used. The pulp is then washed, screened and bleached according to the requirements of the paper to be made. Kraft pulp is dark and in order to achieve the highest levels of whiteness, it is often bleached using chlorine compounds. A major disadvantage of this method is that only about 45% of the wood is used and as a result, a large amount of toxic sludge (also known as black liquor) is produced. This is usually disposed of by burning, as a fuel source for boilers and generators at the mill, or it may be disposed of in a waste disposal site. Depending on the method used, sludge can pollute soil, air and water.

THE CHEMICAL PULP MAKING PROCESS



History and general background

• Origins

The South African pulp and paper industry had its beginnings after the First World War with the first large-scale, government backed timber plantation projects, and the development of a domestic wood product manufacturing industry. The first pulp and paper company to be established was South African Pulp and Paper Industries (SAPPI) in 1936. Enstra, its first mill, was built at the town of Springs, and used straw, a by-product of maize, for paper production. Mondi was established in 1967 by Anglo American and after 1984 became one of the two major players in the South African timber, pulp and paper industry.

• Growth and expansion

In 1997 the value of the South African pulp and paper industry was an estimated R10 billion per annum and considered likely to grow at an average rate of 3% with certain sectors of the paper market projected to grow at 8%. Tissue in particular was expected to rise 9%. This is largely what has happened. Consumption of paper products in South Africa increased 5.2% (2001 to 2002) and 2.1% (2002 to 2003). This was indirectly as a result of increased government spending, business growth, use of computer printers, housing delivery and sanitation, rising standards of living, service delivery in the education system, and the demand for packaging and advertising. In a 2005 Engineering News report, John Hunt of PAMSA said that paper and its related industries contribute the same amount to the gross domestic product as the gold industry. Other “positive developments” are the growth of small paper companies and mills, small growers in the timber sector and the industry’s involvement in skills development and training. This ‘positive’ image has helped it to gain substantial government support and in 2005, a forum made up of industry associations led by the Paper Manufacturers of South Africa (PAMSA) and government departments – DTI (Trade and Industry) and DWAF (Water Affairs and Forestry), was established to promote the expansion of the industry in South Africa.

• Production and market share

Sappi, Mondi, Kimberley Clark and Nampak produce 90% of the paper in South Africa and own 16 of the 30 paper mills. Sappi and Mondi are the only producers of virgin pulp and also own or manage most of the timber plantations that provide the raw material for downstream industrial activities such as pulp milling, paper manufacture, saw milling, construction and some furniture manufacture. Sappi and Mondi dominate the industry locally. Sappi has a 62% share of pulp production capacity with 6 mills and Mondi produces the remaining 38% with 4 mills. Both have expanded globally and are internationally listed. Until recently Mondi was a subsidiary of Anglo American PLC, but in late 2006 Anglo American announced its intentions to establish Mondi as an independent entity. Mondi is ranked globally as the fifteenth largest forestry, pulp and paper producer and Sappi as twentieth (2004). South Africa overall, is ranked the eighteenth largest producer of pulp, and twenty-fourth in terms of paper and paper board (2003)

Mondi produces the most mechanical pulp with a production capacity of 286 000 tons per annum at its Merebank Mill. Sappi Ngodwana has a mechanical pulp output of 100 000 tons per annum. Mondi has recently expanded and upgraded at both Richards Bay and Merebank. The upgrades include a new wastewater treatment plant at Richards Bay and the construction of PM 31 (paper machine) at Merebank. Sappi is the biggest producer of chemically produced pulp with a total of 910 000 tons per annum compared to Mondi’s output of 705 000 tons per annum (2003), although this was expected to increase to 850 000 tons after completion of the Richards Bay expansion. Sappi Saiccor is the only South African producer of dissolving pulp (cellulose) and is the largest (and lowest cost) dissolving pulp plant in the world with a 15% share of the market. All of Sappi Saiccor’s production is exported, and with the current mill expansion project, production is expected to increase by 38% to 810 000 tons per annum.

In 2003, nine pulp mills produced 2.3 million tons of pulp, making South Africa the eighteenth largest producer of pulp internationally. Presently only Sappi and Mondi produce pulp, but this could change if Pulp United builds another 300 000 ton per annum capacity mill in Richards Bay, KwaZulu-Natal. This was originally a joint venture between NCT Forestry Co-operative and the Swedish company Sodra Cell, but Sodra Cell withdrew. Recently Rottneros, another Swedish company has reached agreement with NCT to go ahead with relocating a dormant mill from Sweden at an estimated cost of US\$143 million that could be 'online' by 2009.

Most pulp produced in South Africa is used for paper manufacture but chemical pulp (dissolving pulp) is also used in the cellulose industry to produce textile fibres, cellulose acetate film and explosives. Mechanical and/or chemical pulp is used for printing and writing grades of paper. The cheap, bulk production of mechanical pulp makes it suitable for mass produced items such as newspapers, low cost magazines and packaging board. Packaging is generally made from unbleached chemical pulp but the use of bleached fibres is increasing as more use is made of combining advertising with packaging materials.

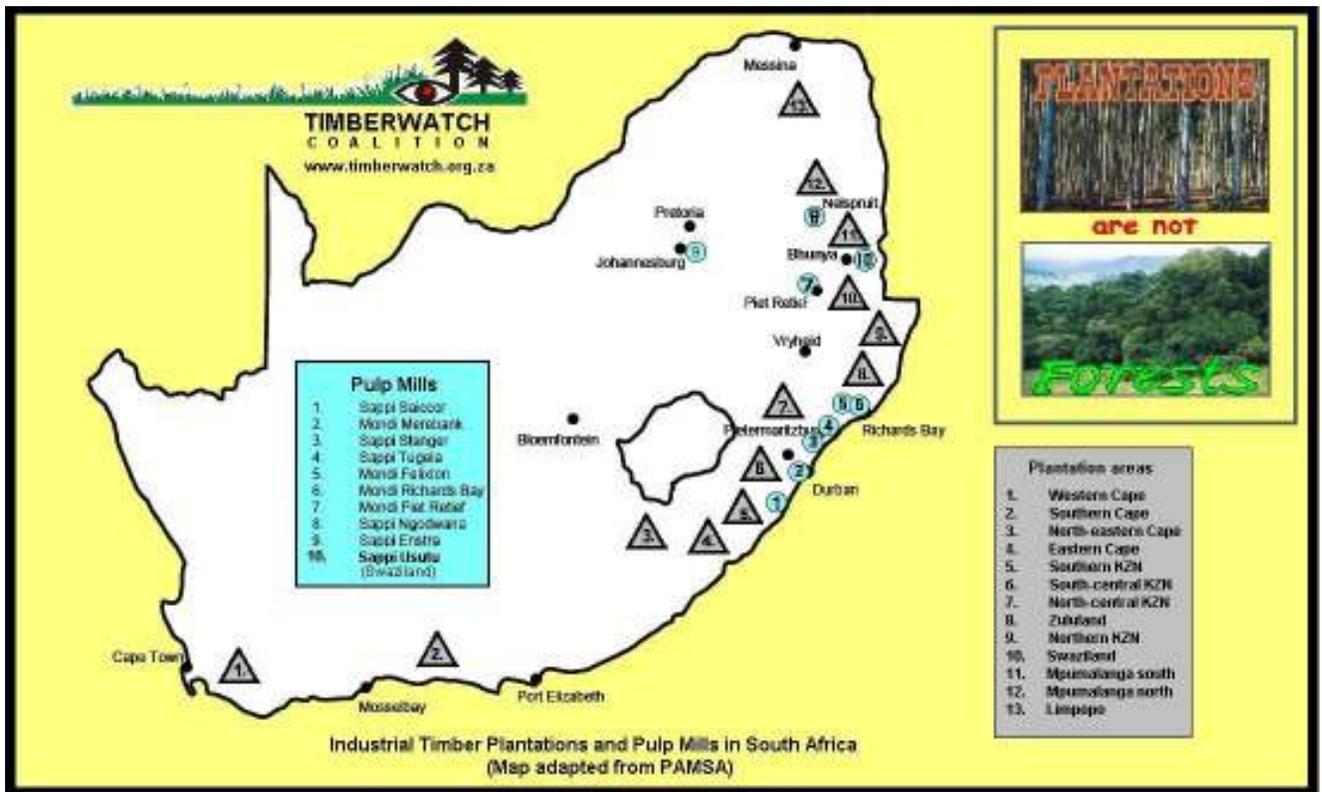
● **Raw material and recycling**

The main source of fibre is wood from local plantations. According to 2002 –2003 figures, 64% of all timber produced was for pulpwood. This is supplemented by plantation and saw milling residues i.e. thinnings from saw log plantations, and the by products of the milling process. In some areas bagasse, which is a waste product derived from sugar cane processing, is added. Waste paper is a source of secondary fibre, providing 39% of material, however it cannot be recycled indefinitely as the fibres become shorter and weaker.

In South Africa, recovered paper as a percentage of paper consumption is 51% and is the basis for 39% of all paper produced in South Africa (2004). Collection includes pre-consumer and post-consumer waste. Pre-consumer is paper collected from converters, printers and packaging manufacturers such as off-cuts, trimmings and other uncontaminated waste, as well as unsold newspapers and magazines. It accounts for 22% of recovered paper while 5.4% is collected at a domestic level through post-consumer collection schemes. Countrywide, there are 280 centres that operate as buy-back depots.

There is clearly still much potential for recovery but the problem with post-consumer waste is that, if salvaged from municipal dumps, it is mixed with other waste and contaminated with materials such as dirt, wax, staples and glue. The key to waste paper retaining its value is separation at source. Most collectors therefore concentrate on offices, schools, cardboard cartons from shops and supermarkets, and used telephone directories. Mondi and Sappi also control waste paper collection, although there has been more opportunity for diversification, with small and informal business involvement. A lot more needs to be done however, to provide more meaningful employment for individuals who presently have to collect huge amounts of paper, in order to make the most meagre living.

New producer–responsibility environmental legislation in the pipeline, could help to increase the rate of recycling and re-use if it is ever implemented, let alone enforced. However the solution lies largely in finding a way to ensure that all the social and environmental costs that are presently externalised by the industry, and therefore borne by taxpayers, rural and fence-line communities and the natural environment, are fully incorporated into the selling price of pulp and paper products as taxes or in the form of trusts funded by the industry, so that the value of paper and packaging is increased to a realistic level. This should have the end effect of both discouraging waste, and making it practical and desirable to recycle almost all paper in the system.



• **Locations** (See map above)

In South Africa, pulp mills are mainly concentrated along the coast of KwaZulu–Natal (KZN) where they are close to pulpwood supplies (timber plantations) and have near access to the harbours of Richards Bay and Durban. The exceptions are Mondi – Piet Retief, Sappi Ngodwana near Nelspruit, and Sappi Enstra in Springs, although these are all close to wood fibre sources with the exception of Enstra. The Sappi Usutu mill at Bhunya in Swaziland exports pulp through South Africa.

• **Timber plantations**

By 2003, 1.5 million hectares or 1.2% of the total land area of South Africa had been so-called ‘afforested’ land, i.e. mostly industrial timber plantations, which have replaced farmland and natural habitat (primarily grasslands). Prior to the government plantation privatisation process in 2000, the state owned 30%, Sappi and Mondi owned 47%, smaller companies and white farmers owned 22%, and small growers owned 1%. Since then, 20% of state plantations have been transferred to private sector consortia, with well established South African timber growing and processing companies as majority shareholders in both cases. As from 2003, a further 45% has been subject to disposal via tender processes, and 18% is earmarked for alternative land use, land reform and conservation. Illegal, abandoned or neglected plantations, or areas that have become infested by invading plantation tree seedlings, cover another 1.7 million hectares. Government has plans to further promote and subsidise the timber plantation and processing sector, and new areas of up to 200,000 hectares have been identified in southern KZN and the Eastern Cape. The argument being used to justify this expansion is based on claims that there will be economic benefits to previously disadvantaged rural communities if they give up their land for timber plantations. A WRM research project conducted by Timberwatch in 2005 investigated the social and economic impacts of timber plantations in northern KZN province and found that local communities and indigenous people had not benefited meaningfully from the timber plantation industry and had in fact suffered numerous negative impacts. See Blessing Karumbidza report: <http://www.wrm.org.uy/countries/SouthAfrica/book.html>

● **Grasslands – an irreplaceable natural resource**

In a country like South Africa where the primary vegetation type was originally grassland, together with wetlands and scattered areas of forest, there has been a general disregard for the environmental value and socio-economic importance of grasslands. They support a wide range of unique flora and fauna and have traditionally been used to graze livestock, provide materials for building and for cultural artifacts, as well as being a source of plants and herbs for food and medicinal purposes. Grasslands worldwide are under considerable threat from 'development', large-scale agri-business including timber plantations, and invasive alien vegetation. In South Africa, up to 80% have already been destroyed or degraded.

The establishment of plantations in these areas is usually referred to as 'afforestation' - a plainly misleading term used by industry and government, which leads people to believe that growing trees where previously none existed, is a beneficial practice that is good for the environment as it is 'creating forests'. Due to the long-term nature of growing timber plantations, they are in fact even more environmentally destructive than other large-scale monoculture crops. They consume vast amounts of water and, because they are usually an invasive alien species, the spread of feral trees has become a major problem. Once plantations have damaged grasslands, there is little hope of rehabilitating them. The natural processes that established grasslands over thousands of years is so intricate and complex that it would be impossible to replicate artificially.

The benefits of grasslands - They

- conserve biodiversity in a unique and threatened biome.
- act as a water catchment – roots hold soil and capture and retain water like a sponge.
- help reflect solar heat from the Earth instead of absorbing it. As with the arctic tundra, this has recently been acknowledged as an important factor in reducing global warming.
- therefore also reduce evaporation, helping to conserve water in a dry environment.
- protect soil without excessive water usage, as root systems do not have deep penetration.
- prevent soil erosion from heavy rainfall and runoff.
- help to preserve and restore soil nutrients.
- are adapted to a fire cycle that restores and revitalises biodiversity rather than destroying it.
- provide sustainable food supplies for humans e.g. small mammals, birds, fish and plants
- provide indigenous herbs for food, medicine (muthi) and cultural purposes
- provide pastureland for cattle and other livestock.
- provide thatch for roofing, mats and baskets – both for sale as curios, and for personal use.
- have a spiritual dimension with their natural beauty and sense of place.
- provide opportunities for eco-tourism and avi-tourism.

● **Expansion of timber plantations**

Current plans for the expansion of existing pulp mills, as well as plans for a brand new mill at Richards Bay, could increase pulp production capacity in South Africa by over a million tons per annum. This will mean that additional plantations covering a land area of more than 150,000 hectares will need to be established in order to meet the raw material wants of the industry. According to a Creamers Engineering News report, environmental legislation is largely responsible for preventing expansion, as it has "*taken away something like 100 000 hectares*". It goes on to say "*fires, which we seem regularly not able to control, remove another 10 000 hectares per annum, and then there are pests and pestilence*". This is a typical industry attitude, which regards any action taken to protect the environment (however limited) as unreasonable, even irrational because it stands in the way of perceived progress in the form of industrial development. At the same time, it appears no connection is made between uncontrollable fires and pestilence, and the industry's mismanagement and abuse of the environment.

A further interview with Martin Creamer of Engineering Weekly on public broadcaster SAFM 15th June 2007 makes the grossly exaggerated point that the South African climate ensures fast growth which will help boost Mondi's share price. "*South African trees grow ten times faster.*"

We grow our timber in seven to ten years, whereas Sweden and Finland take 70 to 100 years to do that. Fast growth brings down costs, which is important because pulp-and-paper producers are on a high-fibre diet, as humans should be, with a third of their operating costs from timber. So, fast southern hemisphere (tree) growth is a very important advantage for Mondi as it dually lists in a very interesting way in both London and Johannesburg”

These giant corporates and their investors may get excited at the thought of increased profits, but the fact is that South Africa is water scarce and cannot sustain more timber plantations. In spite of this, in collaboration with the paper industry, government has embarked on a campaign to make up to 200 000 hectares, of mainly community land in the Eastern Cape Province available. However it does not appear to have properly consulted the affected communities, or to have investigated negative environmental, social and economic impacts. The industry is also looking to expand plantations into Angola, the Democratic Republic of the Congo (DRC), Malawi, Zimbabwe, Tanzania and Mozambique, where the World Bank and various timber industry players, have identified 7 million hectares as being suitable for growing plantations.

- **GE trees**

Genetic engineering (GE) has been introduced into most commercial farming and it appears that timber will be no exception. The fast growth of plantations, thanks to climatic conditions, has led to South Africa becoming a world leader in selective breeding and cloning of Eucalyptus species. The Forestry and Agricultural Biotechnology Institute (FABI) was established in 1997 for the express purpose of incorporating new technologies into the timber plantation industry. The following information is from the FABI website, and clearly illustrates the direction in which South Africa is being taken with regards to genetically engineered trees, the support from industry and government, and the collaboration that exists with similar bodies worldwide.

“Opportunities for Forestry and Agriculture that have emerged in recent times from the application of biotechnology and bio informatics are immense, and almost beyond imagination. Currently, forestry and food crops containing novel genes are already being deployed worldwide. Well-recognised examples include the incorporation of genes conferring herbicide and pest resistance to plants. Other products are also appearing increasingly rapidly and this trend will not slow in coming years. The rapid developments in genomics and the many full genome sequences that are emerging will certainly facilitate the development of novel food and fibre crops ... Remaining competitive with products that are internationally attractive will, in all likelihood, become progressively more important to South African Forestry and Agriculture in the future. The objectives of FABI are to assist this sector of the local economy, to meet these goals. This is achieved through goal directed research undertaken in partnership with major players in these markets ... FABI was established on the foundation of the highly successful and internationally acclaimed Tree Protection Co-operative Programme (TPCP). This programme, initiated in 1990, has supported South African Forestry for more than a decade and has become an Institution of that industry... The group includes projects not only in South Africa, but in other parts of Africa, South America, South East Asia, Europe, Australia and North America.”

- **CDM carbon offset projects and the pulp and paper industry**

In terms of the Clean Development Mechanism (CDM) of the Kyoto Protocol, the South African pulp and paper industry is showing an interest in projects to earn carbon credits, which could potentially be very lucrative. The Mondi Richards Bay Biomass Project is currently at the validation stage. This project would utilise waste by-products from the pulp production process as well as biomass residues from plantations and nearby chipping facilities. These would be

shredded and fired as fuel in a co-fired boiler (i.e. combined with coal) to produce energy for the mill. With the implementation of the project, biomass residues and toxic sludge would no longer go into the municipal landfill, and the total quantity of fossil fuel used by the mill would be reduced, thereby supposedly qualifying for tradable carbon credits. However the burning of the waste, particularly using a 'dirty' fuel like coal, will still release emissions containing carbon and dangerous toxins into the atmosphere, and still contribute to global warming. With expansion resulting in increased quantities of waste being burnt, this contribution, together with other toxic emissions, could increase overall, and not decrease.

● **Political support for the industry**

All of the existing pulp mills in South Africa were established during the Apartheid era, usually with considerable political and financial support from the government of the day. Financial support took the form of a number of different direct cash subsidies, as well as various schemes that allowed the industry to avoid having to pay tax, such as through export incentives, offsets of capital costs against tax and exemption from paying tax on diesel fuel. Other schemes enabled the large industry players such as Sappi, to borrow money from investors to buy land for new plantations on the understanding that investors would be able to offset part of their income tax against the costs of establishing the plantations. Many of these measures were a way to overcome sanctions on South African exports that were introduced by the international community in order to pressure the South African government into undergoing political transformation. By taking advantage of the situation, and accepting the benefits that flowed from all the incentives and subsidies on offer, both Mondi and Sappi indirectly contributed to helping keep the Apartheid government in power. In spite of this, the democratically elected ANC government, which took power in 1994, continues to indulge the pulp and paper industry to the detriment of the natural environment, and the millions of people whose rights to clean air, adequate, unpolluted water and healthy, productive terrestrial and marine environments have been undermined. Often this is justified in terms of Black Economic Empowerment (BEE) which has helped to make many well-connected ANC / government members fabulously wealthy – in some cases instant billionaires. Unfortunately it has not always served the purpose for which it was intended, instead leading to vested interests, corruption, the inevitable undermining of rules and regulations, a lack of honesty and transparency and a complete disregard for the rights of ordinary people and the environment.

● **The Forest Stewardship Council (FSC)**

In South Africa, over a million hectares of industrial timber plantations (ITP's) which is 80% of the total area, carry the FSC label, although it is disputed whether any of these ITP's deserve to be certified. In establishing them, valuable and irreplaceable grasslands have been destroyed, water sources and soil quality have been detrimentally affected, and communities have been displaced. The use of chemical insecticides, herbicides and toxic fertilisers further affects the environment by killing indigenous plants, insects and small mammals, as well as contaminating ground water, streams and rivers in a manner that should not be allowed under FSC rules. Recently the FSC was challenged by an international grouping of environmental NGO's to withdraw all timber plantation certification in South Africa. FSC even certifies the so-called 'chain of custody' (COC) by which it is claimed to be able to guarantee that the wood used in certified timber products can be traced back to its source in order to be able to demonstrate that it has originated from a FSC certified plantation where theoretically at least, all the FSC principles and criteria have been met. Unfortunately there are many flaws in the COC system, but although it seems it has only been possible to verify the sources of a small percentage of the wood in the supply chain, the FSC logo is still proudly displayed on pulp mill products such as the cellulose produced by Sappi Saiccor. Timberwatch has investigated the legality of plantations in South Africa, and has found that a substantial number do not have the requisite government permits or licences, apart from breaking the law in various ways, and should therefore be disqualified from being certified. See the Timberwatch Illegal plantations video: http://www.wrm.org.uy/countries/SouthAfrica/Illegal_Timber_Plantations.html

- **Black Economic Empowerment (BEE)**

In 1999, the state forestry company (Safcol) sold some of its plantations to two BEE consortiums, Singisi Forest Products and Siyaqhubeka (KwaZulu-Natal), while negotiations are still underway to sell those of Komatiland Forests in Mpumalanga. Safcol has always been primarily a saw log producer with only 15% of its timber sold as pulpwood. Mondi and a BEE partner, Imbokodvo Lemabalabala, now own Siyaqhubeka while Singisi is 50.43% owned by Hans Merensky Holdings and 14.57% by the Eastern Cape Development Corporation (ECDC).

In December 2003, Cyril Ramaphosa announced an empowerment deal for MCI Resources (later Mondi Shanduka) to buy almost half of Mondi's newsprint division in Merebank, Durban south. This was the first Black Economic Empowerment (BEE) transaction in the paper and packaging industry. Shanduka Resources and Mondi agreed that Shanduka would acquire a 42% equity stake in Mondi Packaging South Africa. It was also agreed that Mondi would inject 3% and Shanduka 2% of their equity into a vehicle to facilitate participation of Mondi's 6400 employees nationally. Mondi would contribute a further 4% of its 58% equity stake in Mondi Shanduka Newsprint. In January 2007 it was announced that the Mondi Shanduka Trust would be established through the allocation of 4% of their joint shareholding. Worth millions, it is intended that the proceeds be split equally between the 4 communities of Merebank, Wentworth, Umlazi and Lamontville. This is in spite of an agreement reached with the Merebank community in 2006 that they would receive 40%, while the other communities would receive 20%. This action by Mondi is regarded as discriminatory and divisive as it is based on the assumption that Merebank is somehow a less 'needy' community, even though it is the community most directly impacted by the Mondi pulp and paper mill.

As part of a corporate strategy, often in the guise of broad-based black economic empowerment (BBBEE) and corporate social responsibility (CSR), the industry has begun 'cutting deals' with local communities and poor landowners to grow timber. This enables plantation expansion without having to purchase land or take any responsibility for rehabilitation once the land is no longer productive. Although the corporations promise an outlet for the timber, sale of the wood is not guaranteed and the market dictates prices. As a result, it is not unusual for communities to rebel by breaking contracts and even burning plantations. Farmland conversion to timber often ends up marginalising instead of empowering communities, as they are displaced onto poor quality land, surrounded by plantations, which inevitably further degrade the soil and dry up water sources.

An April 2007 report in the Farmers weekly left little doubt as to where the government positions itself with regards to the timber industry, and that it clearly regards promotion of the industry as being in the interests of BEE and BBBEE. The Minister of Water Affairs and Forestry, Lindiwe Hendricks, addressing the AGM of Forestry South Africa (FSA) stated that the timber plantation sector's growth was being hindered by a range of factors including lack of "afforestation" land; a lack of awareness of the economic potential of the "forest" industry, especially by black people; *stringent* regulations on the issuing of licences for water usage and a lack of financing for an industry in which dividends and profits take a long time to be realised. She said she would support the industry in its efforts to raise its profile, and that the water licence application process needs to be *streamlined*. In addition, a countrywide environmental assessment needs to be undertaken in order to determine where new "afforestation" could take place. (*Our emphasis and inverted commas*)

● **The reality of BEE, the timber industry and rural development: A case study**

Based on a Finweek report "PLANTING TREES, UPROOTING POVERTY" 16.11.2006

The government-backed Industrial Development Corporation (IDC) assisted Hans Merensky Holdings by investing R103 million for a 42,6% stake to create South Africa's second largest softwood saw-milling company. Hans Merensky - through Singisi Forest Products – now has 60 000 hectares of plantations stretching from Mthatha to Pietermaritzburg and has started the construction of a R130 million plywood factory at Kokstad. The IDC has approved a R69 million-debt facility for the factory, with the company raising the rest. The factory is expected to be completed by April 2007. This is just the first part of a R1,34 billion expenditure programme, which will include sawmill, biofuel and medium density fibre plants to be completed by 2010. Singisi currently has four wood processing facilities in the Eastern Cape and KwaZulu-Natal. In a 70-year agreement, Singisi has leased the land from the 350 000-strong local community at R6, 5m per year. The community, through the Singilanga Directorate Trust, is a 10% shareholder in Singisi. Singisi and the community have also entered into a new lease agreement for another 30 000 hectares of land - on which planting has already commenced - and is currently involved in negotiations with the Department of Water Affairs and Forestry (DWAF) to acquire a further 30 000 hectares under the department's management in the Eastern Cape.

The group generates R118 million per year in operating profit. The Mthatha facility has been turned around from an R80 million loss-maker at privatisation in 1999 to show a profit of R55 million in 2006. One reason for the turnaround has been the outsourcing of the transporting of logs to the sawmill. Truck drivers were offered an opportunity to buy their own trucks, and the company gave them guarantees to provide them with jobs. To quote Piet Van Zyl, MD of Hans Merensky, "This gave them the confidence to approach financial institutions for funding to start their own small businesses. The result is that they look after their trucks properly because as soon as they've repaid their loans, the trucks belong to them. We no longer have to maintain the trucks and there aren't as many accidents as before." The IDC is in constant discussion with leading forestry companies to "promote the development of new entrepreneurs with a high developmental effect in rural areas".

This sounds like good news for a poor community, but there is another side to the story and the outcomes are unlikely to be as 'rosy' as this report seems to indicate – at least not for the *local* community. There are several sawmills and timber-based industries that have long established operations in the area dependent upon a wood supply from Singisi Forest Product's plantations. However, Hans Merensky has introduced a tender system of marketing raw logs, which has restricted the timber supply to these local private mills and industries. Many of these previously viable businesses are now threatened with closure or reduced efficiency. The shortage of timber has also resulted in price increases of up to a 150%. The businesses concerned are generally large employers of unskilled or semi -skilled labour in region with few job opportunities, so job losses as a result of their scaling down or closure will have huge social repercussions in the affected rural areas. One might think that Hans Merensky will make up for this loss of employment and in fact provide even more job opportunities, but instead they are mechanising which will require them to employ only very few, more highly skilled people - and they admit to outsourcing in order to increase profits. Although this practice is portrayed in an extremely positive light, experience has shown that these small entrepreneurs do not always succeed and that the "guarantees" they were given, are far from secure.

The affected saw millers and timber product manufacturers are now hoping that media exposure will get the relevant authorities to listen to their concerns, as they have repeatedly tried to raise the issue with DWAF and other bodies without avail. However one has to wonder whether a government so heavily invested in a venture (Hans Merensky holdings) can be truly impartial or can be trusted to act in the interests of ordinary people.

LOCALLY RELEVANT GLOBAL CONCERNS

Pollution

The pulp and paper industry is one of the most polluting industries in the world and is the third most polluting industry in North America. Communities all over the world have had their rivers polluted; their fisheries ruined and have suffered the detrimental effects of ill health caused by this pollution. There are 500 kraft mills and many thousands of other types of mills worldwide. Globally, the industry is planning to expand its pulp producing capacity by 25 million tons. This will represent a five-fold increase in the rate of production during the last 2 decades, with most of this expansion taking place in the developing countries of the south.

• The use of chlorine-based bleaches

Most virgin pulp and paper is made using many highly corrosive and hazardous chemicals including chlorine. Chlorine is an absorbable organic halide (AOX). Halides are highly reactive elements in the halogen family that bond easily with organic substances, allowing quick entry into the environment and the food chain. The use of chlorine-based bleaches results in toxic emissions to air, water and soil, and they include dioxins and furans, which are considered to be among the most toxic substances known. These are produced when chlorinated compounds such as chlorinated plastics are burnt, or as a by-product in the manufacture of chlorine compounds, such as certain pesticides and wood preservatives. The herbicide known as Agent Orange, which was used in Vietnam with horrific consequences, is one such compound.

In the case of the pulp and paper industry, when sludge is burnt to recover pulping chemicals for re-use and to generate energy, dioxins, furans, organo-chlorines and other hazardous air pollutants (HAP's) are released into the atmosphere. Dioxins are also found in waterways and in the tissues of fish downstream from pulp mills as a result of the effluent discharged from the mills. Measurable levels of dioxin can be found in the fatty tissue of the average person living in an area with a high concentration of polluting industries. This is because dioxins resist biological breakdown and accumulate in the environment. The pulp and paper industry has known about the dioxin problem since at least 1985, but continually tries to downplay its significance.

"The paper industry is the world's second largest chlorine consumer, using about 3 million tonnes each year to bleach wood pulp bright white. Chlorine is used in a number of different forms such as elemental chlorine gas (Cl₂), chlorine dioxide (ClO₂) or sodium hypochlorite (NaOCl). All result in the discharge of toxic organochlorine by-products ... Over 300 organochlorines have been identified in the discharges of bleached pulp mills, including dioxins, furans, chlorinated phenols, acids, benzenes, and many others. These identified compounds account for less than 10 percent of all the organochlorines in the effluent; the majority remain "mystery" chemicals that have not been specifically identified or assessed. Many of these are large, complex organochlorines that are transformed in the environment into more persistent and toxic compounds." **Greenpeace report 1992.** For the full report go to:

<http://archive.greenpeace.org/toxics/reports/gopher-reports/chlora3.txt>

• Water pollution and excessive water usage

Both timber plantations and pulp mills use massive amounts of water. In water scarce countries, and in a world beginning to suffer the effects of climate change, this can be detrimental to the availability of water in general. Plantations reduce the amount of water entering rivers (run off) by the equivalent of 100 to 200 mm of rainfall per year. Depending on species, age, climatic and soil factors, a mature timber plantation can reduce stream flow by up to 500 mm per year. In the pulping and papermaking processes, specific consumption rates for water vary from 8 tons of water per ton of paper produced, to 35 tons of water per ton of paper produced. It has been

estimated that an average integrated pulp and paper mill consumes approximately 229 260 m³ of water per day i.e. 72 m³ of water for every ton of paper produced.

This large-scale use of water can harm aquatic habitats near mills by reducing water levels and altering the water temperature. This, and the effluent in the water, affects fish and other aquatic life, also wreaking havoc in neighbouring ecosystems. Effluent from mills has been shown to contaminate water in rivers for hundreds of kilometres, with chemicals having been found to cause reproductive impairment in zooplankton, shellfish, invertebrates and fish. Genetic damage and immune system breakdown have also been shown to occur in fish. In addition, untreated biodegradable organic material in effluent affects oxygen levels in water making it uninhabitable, and the use of toxic pesticides and herbicides in plantations are known to cause contamination of both ground and surface water.

- **Air pollution**

The air pollution caused by the pulp and paper industry has not been well studied and much more needs to be done to establish exactly what the emissions contain. In 1997, British Columbia's environment ministry calculated that, per annum, 17 000 tons of particulates and 2.7 million tons of carbon dioxide, besides other unreported emissions, were released into the atmosphere by the 17 kraft mills situated there. Air quality needs to be monitored for a range of emissions including particulate matter, carbon dioxide, sulphur dioxide, hydrogen sulphide, volatile organic compounds (VOC's), chlorine, chloroform, and chlorine dioxide. In addition, air discharges are known to contain hormone disrupting, carcinogenic chemicals such as chlorinated phenols and polycyclic aromatic hydrocarbons (PAH's).

- **Sludge**

This is the waste product produced from the pulp production process. It contains power boiler ash, waste chemicals and waste wood fibre. These waste by-products from the chemical process can be used as a fuel supplement for coal or gas, and there is a possibility that some paper mills could contribute surplus power to their countries national grids. The problem is that the burning of the waste still produces toxic substances, which are released into the atmosphere. In some countries, such as Canada, the idea of spreading sludge on farmlands, forest areas, and parks as 'fertiliser' has been suggested, but environmentalists have opposed this due to the many potentially lethal chemicals it contains.



This pipeline conveys effluent from the Sappi Saiccor mill into the Indian Ocean

Impacts on workers and communities

• Labour issues

The pulp and paper industry often lauds itself as being good for job creation. However, both internationally and in South Africa, expansion has been characterised by an overall shedding of jobs. This has been due to mechanisation and industry efforts to cut costs, while reducing staff responsibilities and limiting exposure to a large unionised labour force. The bulk of low-skilled tasks is now performed by casual labour, or is sub-contracted out. Overall, outsourcing has caused working conditions to deteriorate, and productivity and efficiency to decrease.

• Worker and community safety

Bleaching using elemental chlorine has, in most cases, been replaced with processes that use chlorine dioxide, however chlorine dioxide gas is so dangerous that it cannot be shipped and has to be manufactured on site. It is far more lethal than chlorine and could represent a great danger to workers and people living near mills in the event of an accidental release. There are safer methods of bleaching, but much of the industry is seemingly 'addicted' to chlorine in one form or another. The following information is from the website of the Australian Department of the Environment's National Pollutant Inventory (NPI) Chlorine Dioxide fact sheet.

Chemical Properties: *Chlorine dioxide gas is flammable, and is violently explosive in air at concentrations over 10%. It can be ignited by almost any form of energy, including sunlight, heat, or sparks. Chlorine dioxide is strongly oxidising, and reacts violently with organic chemicals and can be detonated by sunlight, heat, or contact with mercury or carbon monoxide*

Chronic Health Effects: *The following chronic (long-term) health effects can occur at some time after exposure to chlorine dioxide and can last for months or years: irritation of the lungs; repeated exposure may cause bronchitis to develop with cough, phlegm, and/or shortness of breath. Permanent lung damage may occur, especially with repeated exposure to the vapours. There is limited evidence that chlorine dioxide may damage the developing foetus.*

Exposure: *Workers and people living near industries that produce or use chlorine dioxide. From using disinfectants or bleaches that contain chlorine dioxide. From foods and drinking water that have been treated with chlorine dioxide.*

• Health risks associated with pulp mill pollutants

Asthma – Asthma is the most common. In areas like Merebank in Durban south, South Africa, the asthma rate is 200% over what is considered to be normal. Other lung diseases and respiratory problems are frequently reported.

Cancer – The World Health Organisation (WHO) estimates that 80% of cancers are caused by occupational or environmental factors including exposure to various hazardous chemicals, many of which are associated with the operation of pulp mills.

Reproductive and hormonal problems – human infertility and, in certain animal species, changes in sex ratios are caused by pollutants mimicking natural hormones.

Learning disabilities – a broad spectrum of learning disabilities are thought to occur as a result of exposure to certain chemicals and pollutants.

Other health problems – heart disease, immune system damage and allergic reactions.

• Key pulp mill pollutants affecting health

Particulate matter – tiny air borne particles, linked to asthma and heart disease.

Dioxin - toxic in minute amounts, linked to cancer, diabetes, learning difficulties

Chlorine / chlorine dioxide gas – lung diseases and organo-chlorines have been linked to cancers, hormone problems and reproductive problems.

Hydrogen sulphide – a gas associated with damage of the immune system, respiratory problems and allergies.

Formaldehyde / Acetaldehyde – found in hundreds of tons of cancer causing by-products released into the air every year.

The spread of timber plantations

Because the main source of new fibre for pulp and paper manufacture is pulpwood derived from industrial timber plantations (ITPs), growth in the industry is dependant on their continued expansion. ITPs are not forests, although they are often incorrectly referred to as planted forests or forest plantations. Compared to forests, plantations are an environmentally destructive, sterile mono-crop, usually of alien tree species with invasive tendencies. A common misconception widely encouraged by the timber industry, is that planting trees - any trees, is a good thing. This is certainly not the case, and it is therefore vital that people are made aware of the differences between alien and indigenous tree species, as well as understanding the value and importance of different biomes such as grasslands, forest and wetlands, and the biodiversity they support.

The implications for farming communities whose land and water are targeted by the so-called 'forestry' companies are serious. The sheer size and aggressiveness of these corporates, and the fact that governments often back them, makes it very difficult for communities to resist their advances. For poor people displaced by plantations, the future is far from secure – landowners may have capital to invest in land elsewhere, but farm workers and their families frequently end up on the street, penniless and unemployed. With severely limited options, they often move to slum settlements near to local towns or cities, where there may be a place to build a shack or 'jondolo' as they are called in South Africa. The outcome is similar all over the world and occurs wherever rural people, who had previously enjoyed self-sufficient existences on their own land, are displaced by ITP's and other industrial scale mono-crops

Characteristics of forests (the real thing)

- Forests are biodiverse and are a vital part of the planetary ecosystem.
- Forests conserve and purify water and help to regulate its flow and supply.
- Forests support a wide range of indigenous flora and fauna.
- Forests prevent soil erosion, and contribute to soil production.
- Forests host a variety of biological processes that ensure the availability of soil nutrients.
- Forests provide for the needs of rural communities by way of food, shelter and medicines.
- Forests absorb and hold Co₂, limiting global warming caused by industrial emissions.

Industrial Timber Plantations (ITP's)

- Plantations deplete soil nutrients and consume excessive amounts of water.
- Plantations obliterate indigenous vegetation and the habitats of insects, birds and mammals.
- Plantations lead to localised extinctions, loss of bio-diversity and destruction of ecosystems.
- Plantations use toxic chemicals that contaminate water, causing human health problems.
- Pesticide use leads to further destruction of ecosystems, killing indigenous plants and animals.
- Plantations deplete ground water causing adjacent vegetation to become susceptible to fires.
- Communities near plantations can be displaced when water shortages prevent growing crops.
- Plantations absorb little Co₂ but add to greenhouse gases when transported and processed.
- Paper products from plantations release methane when decomposing in waste dumps.
- Destruction of grasslands and forests by plantations releases Co₂ from biomass and soil.

• Certification of Forests and plantations

The Forest Stewardship council (FSC) promotes itself as an independent, not for profit, non-governmental organisation and is based in Bonn, Germany. The mission of the FSC is stated as being: to support environmentally friendly, appropriate, socially beneficial and economically viable management of the world's forests. (This includes plantations). The FSC develops, supports and promotes international, and national standards in line with its mission; evaluates, accredits, and monitors certification bodies which verify the use of FSC standards; provides training and information; and promotes the use of products that carry the FSC logo.

On this basis the public are led to believe that the FSC logo on wood and paper products guarantees that the raw material has come from 'responsibly managed forests', which are environmentally and socially sustainable. However there is a great deal of dissatisfaction among members and other stakeholders about the way FSC certification has been awarded, often to forest and plantation companies with performances that are far from environmentally and socially beneficial. It is widely believed that the FSC's certification process lacks credibility and needs urgent and fundamental reform. It appears to be unwilling or unable to properly control its accredited auditors, and certification bodies that monitor the performance of timber companies. Also some of the FSC standards are worded in such a way that they allow for easy abuse during the certification process. In response to pressure from its critics, the FSC has instituted a process to review its plantation certification policy, due for finalisation during 2007.

- **GE (Genetically engineered) Trees**

Traditional breeding has focused on tree growth, however genetic engineering now widens the scope to manipulate genes for specific characteristics. For example, trees that can grow in unsuitable (e.g. dry, cold or saline) areas, or produce pulp with special characteristics, as well as for increased yields, resistance to pests etc. The interest in GE trees is not confined to the pulp and paper industry. Collaborative ventures between biotech companies and the paper, timber, food, pharmaceutical, oil and car industries are well underway. There is worldwide concern over GE organisms, sometimes referred to as GMO's, and their long-term effects on the environment. There is also concern about impacts on people's health and the independence of small farmers to be able to grow their crops without having to pay for patented seed. However, in the case of the timber industry, there are additional concerns about the length of time the environment is exposed to the seed and pollen of GE plants, since trees are slow growing compared to other crops. Some of the projected environmental impacts of the general release of GE trees include the accelerated conversion of natural areas into plantations causing an even greater loss of biodiversity. Other impacts include more rapid depletion of soil and water resources, as well as increased use of toxic pesticides. The potential contamination of forests with pollen from trees engineered for reduced lignin, insect resistance, or faster growth, is predicted will have devastating impacts on the eco-systems of the Earth.

- **Global warming, carbon sinks and bio-fuels**

The industry is the third largest energy consumer in the US. From its source – plantations which destroy carbon absorbing natural areas, to its transportation and processing in mills using huge amounts of fossil fuels, to accumulation in waste dumps where it decomposes and releases methane (a major greenhouse gas) - the manufacture of pulp and paper is a major contributor to global warming and climate change. Instead of facing up to these realities and making a serious effort to curb harmful expansion, carbon trading and large-scale bio-fuel production are now perceived to be lucrative new 'solutions'. Plantations are being promoted as carbon sinks, both to earn carbon credits under the Clean Development Mechanism (CDM) of the Kyoto Protocol, and as a source of bio-fuel. As a result, community land is being appropriated and converted to monoculture tree plantations, not only to feed the world's insatiable appetite for paper, but now justified as being in the interests of a stable climate and the environment by absorbing Co2 and producing "green" alternative energy. In the process, once self-sufficient communities are being displaced, natural forests, grasslands and wetlands destroyed, bio-diversity threatened, and water resources depleted. In combination the destructive capacity of these 'solutions' may be even greater than the effects of climate change.

"Carbon offset forestry is another manufactured industry promise, presented to lull the populations of the industrial North into believing that they can maintain their massively consumptive lifestyle, with no long term consequences, by simply planting trees"

Anne Petermann

"Global Justice Ecology Project"

POSSIBLE SOLUTIONS

• **Totally Chlorine Free (TCF) paper**

Currently, most pulp and paper made from virgin fibre involves the use of literally hundreds of chemicals, many of which are highly corrosive and hazardous, and with chlorine being one of the worst. This presents enormous problems in reducing pollution from mills because elimination of dioxins, furans, chlorinated phenolics, and other chlorinated organics cannot be achieved unless all forms of chlorine bleaching are discontinued and replaced with alternatives. In the chlorine bleaching process, the concentration of chloride ions is too corrosive to be recirculated, so instead it is discharged to the effluent treatment system and ultimately into rivers and oceans. Pulp mill sludge is a complex and changeable mixture of dozens or even hundreds of compounds, as is mill wastewater. Some are well known, such as heavy metals, dioxins and other organo-chlorines, however there are others that are transformed by bacteria in the treatment ponds into other compounds, some of which could be unknown to science.

In response to public pressure, and stronger pollution regulations, more mills have converted to producing Elemental Chlorine Free (ECF) paper, which removes chloride ions from bleach plant effluent. This leads to reduced effluent, but emissions from the recovery boiler and the contents of the boiler ash may still contain dioxins. So chlorinated organics may no longer end up in the water, but they can still end up in the air and soil. Industry argues that AOX (Absorbable Organic Halides) reductions through the use of chlorine dioxide gas are adequate, however this does not eliminate organo-chlorine creation, and chlorine dioxide gas is highly explosive and therefore presents a safety risk.

*“Many pulp makers have tried to avoid investing in chlorine-free technology by switching from elemental chlorine to chlorine dioxide bleach. But chlorine dioxide still results in the production and release of large quantities of organochlorines, though less than elemental chlorine. With an effective alternative available that can solve the problem completely, there is no good reason to go only halfway. A switch from chlorine to chlorine dioxide can reduce organochlorines by up to 80 percent but even if all the world’s pulp mills were converted to chlorine dioxide and equipped with state-of-the-art pollution control equipment, the paper industry would still discharge at least 140,000 tonnes per year of organochlorines into waterways, plus additional releases to air, land, and products, based on the industry’s own estimates. These effluents would contain about 2,000 tonnes per year of very persistent and bio accumulative compounds such as dioxins, furans and chlorophenols. Chlorine-dioxide effluents also contain chloroform, chlorinated acids, sulfones, and other toxic compounds that can be taken up into the tissues of fish. Further, chlorine dioxide bleaching produces large amounts of chlorate, a powerful herbicide that kills both plants and fish. Finally, the vast majority of the organochlorines found in these effluents have not been specifically identified or assessed. The environmental and economic benefits of a closed-loop system are not available to mills that use chlorine dioxide, because of the presence of corrosive chlorination by-products in the effluent. Only at great expense can effluent from such mills be recycled; even then, organochlorine contaminants must be removed and incinerated, resulting in their dispersal into the air.” **Greenpeace report 1992***

Environmental health and human health cannot be separated. The effects of exposure to bleaching chemicals, process gases, emissions from treatment ponds and bacteria and fungi on wood chips and sludge, have serious implications for the health of both humans and ecosystems. Countries such as Sweden, Germany and Japan have already made progress in this area. In Sweden, the dioxin problem has been reduced 75% by using bleaching processes that rely more on oxygen, ozone and hydrogen peroxide. Government, the paper industry and public interest groups have also launched an aggressive consumer education programme to promote unbleached or chlorine-free products. This has been so successful that it is now almost

impossible to sell anything else. Although there are still some problems with TCF production, such as a higher concentration of metals in wastewater, overall, studies have shown that environmental improvements can be achieved by process changes, and the complete elimination of chlorine based chemicals is key to this. Worldwide, 75% of pulp and paper is ECF, 20% is produced using traditional chlorine bleaching methods, and only 5% is TCF.

- **Totally Effluent Free (TEF) mills**

TEF or 'closed-loop' mills aim to eliminate discharge into rivers and seas, to recycle and re-use as much solid and liquid process waste as possible, and to reduce air emissions to the lowest possible quantity and toxicity. The ultimate goal is for a mill to be able to produce its main product with most, or even all, of its waste by-products rendered suitable for use in the manufacture of secondary products. Burning much of its waste by-products as a source of energy for the mill qualifies as 're-use' but this is not ideal as it still produces toxic emissions. Research is needed to develop more sustainable re-use options for solid waste, as well as pulping methods that result in purified by-products which can be used in other manufacturing processes. The upgrades inherent to the design of a closed-loop mill should lead automatically to other improvements, such as the removal of foul-smelling fumes and an increase in workplace safety.

- **Maximising the use of recycled fibres**

Recycling of paper provides employment and reduces the volume and cost of solid waste removal and disposal. Recycled fibre is also a cheaper source of raw material than virgin fibre from forests or plantations. It has been estimated that each ton of recycled waste paper used, results in a reduction of 3 cubic meters of landfill and 17 trees. The paper recycling process requires only half the amount of water, when compared to the wood pulping process, and results in energy savings of up to 40% while producing less pollution. Advances in papermaking technology have resulted in an improvement in the quality of recycled converted paper, and it can now be used for a wide range of high quality products. Recycling is becoming increasingly popular due to both environmental pressure, and economic incentives. Unfortunately however, it has also become part of the global economic system, which is focused on serving the interests of a few major corporate players. This often results in the transporting of huge quantities of waste paper from one country to another, which once again, is environmentally damaging and economically inefficient. The global market can also negatively affect prices, which can lead to an over-supply in local markets. This can affect local businesses detrimentally, and creates a dis-incentive to recycle. Unfortunately, the concept of recycling is also used by the paper industry in order to portray itself and its products as 'green'. In so doing, it presents an image of concern for the environment that is far from an accurate reflection of the situation. As with TCF paper, recycled fibre pulp does cause some problems as a many chemicals are used in the cleaning and de-inking process however, overall the production method is more benign than virgin pulping.

- **Alternative fibre sources**

There are many possible alternative fibre sources that can be used in papermaking. Governments need to initiate and support research into other fibre crops that consume less water, provide higher yields of good quality fibre and have a crop rotation of 5 to 12 months as opposed to 12 to 15 years. Industrial hemp is just one possibility. Using this approach could also increase employment as many smaller growers using non-specialised, basic farming equipment, could then become involved in production. In South Africa, fibre from a sugar cane by-product known as bagasse is used in combination with wood fibre to manufacture paper at the Sappi Stanger mill, and South Africa's first mill at Enstra in Springs, used a maize by-product This demonstrates that there is potential for the greater use of agricultural residues in paper manufacture - however, the surge in demand internationally for bio-ethanol is likely to create increasing demand for biomass that could also be used for paper.

• **Government Policy**

Governments should prioritise enforcing compliance with existing legislation and regulations. However, in order to: further reduce health risks to communities; ensure that raw fibre sources are truly sustainable; and that the environment is protected from further abuse and destruction - more stringent regulations may need to be applied. As an example, in Sweden, industry cannot expand unless output can be increased without an incremental increase in effluent. This need not necessarily be financially detrimental to companies. Due to anti-chlorine sentiment, Sweden has environmental legislation that has helped make it the world leader in TCF pulp production, a market that is showing signs of expanding and could be further encouraged.

Policy should also be designed to ensure greater added value, which could then contribute to higher levels of more rewarding employment locally. Currently, products produced in southern countries such as pulp and woodchips are often exported in their basic form at low cost for value-adding and processing elsewhere. Woodchip export to Japan is an example of how the Japanese paper industry has developed an efficient, cheaper method of producing paper with the creation of a wood fibre supply network that extends all over the world. On average, the wood fibre in a piece of Japanese paper will have traveled more than 6 000 km. but the cost of this impact is borne by the countries whose forests or grasslands have been effectively colonised by Japanese paper companies. In South Africa, 100% of dissolving pulp and much of the unbleached pulp produced is exported. This may earn South Africa foreign exchange, but if the product was converted locally and the finished product exported, it would be of far greater economic benefit. It would create much needed employment, as well as new opportunities within the local textile and paper industries. Instead, the present situation results in what has become commonly referred to as 'jobless growth'. Destruction and depletion of a country's environment and natural resources, which is to the disadvantage of its people, while generating huge profits for multinational corporations, is simply unacceptable.

• **Reducing paper consumption**

Reducing consumption would be an unpopular option and difficult for many to accept. However, it is essential to curb the demand for paper and paper products if we are ever going to prevent the drain on resources, and the environmental degradation it causes - and which simply cannot be justified in the name of short-term profit. The corporate ambition of achieving endless economic growth, while we live on a finite planet with finite resources, is incompatible with reality. Yet this is what people are being misled into believing is both possible and desirable. Government policy needs to discourage wasteful consumption, but must also institute more efficient systems of waste collection whereby every household and business takes responsibility for sorting its own waste for the purpose of recycling. This should extend to achieving the highest possible level of reduction, re-use and final recycling of cardboard containers and other paper-based packaging. The present situation supports a system whereby the resources of the global south are being pillaged at an alarming rate in order to allow consumers in northern countries to live unacceptably wasteful lifestyles. Little thought is given as to how such high standards are maintained, the complete imbalance between the amount consumed by the average person living in the north compared to the south, or what the true costs of supporting such extravagant levels of consumption really are.

“Consumerism and poverty live together in an unbalanced world where there is no political will to stop the wasteful over-consumption of some people and to enhance the standard of living of those in most need. Present paper (over) consumption is based on mortgaging humankind's future, and mainly to the benefit of a few corporations, which control the global market through manipulation of markets, cartel agreements, price fixing and other similar practices.”

From: The World Rainforest Movement Bulletin #53

- **Penalties and incentives**

Another possible way to limit demand and thereby consumption would be to introduce environmental taxes. This revenue could then be allocated to projects that promote recycling and re-use by businesses and within communities. This would also help limit wasteful over consumption, as the higher price of the products would discourage buyers. The ultimate deterrent however, would be to apply taxes / penalties that would reflect the many social and environmental impacts (i.e. the full cost of the 'cradle to the grave' cycle of industrial timber production and processing) and which have historically, always been externalised and borne by the rest of society. A system to provide rebates for some of these taxes could be implemented to recognise good environmental, labour and social practices, and could provide an incentive for the industry to act more responsibly.

- **Addressing labour issues**

A system that penalises bad labour practices and makes it more profitable to treat workers fairly, could facilitate an improvement in both plantation and mill worker employment conditions. This could put an end to the shameful industry practice of using contract labour in order to avoid having to employ permanent workers and provide decent salaries and employment benefits. Worker organisations should be established, in order to support efforts by timber industry workers to communicate and negotiate with management on an equal basis.

- **Reform of the Forest Stewardship Council (FSC) certification process**

The FSC also has a role to play in ensuring that only environmentally sustainable and socially responsible plantations will ever receive certification. Unfortunately the existing system of forest certification as applied to plantations has become severely compromised and suffers from a lack of credibility. It needs to be reformed accordingly. At the moment it is being used by the timber plantation industry to blatantly green wash and legitimise unacceptable environmental and social practices.

Timberwatch has been involved in trying to influence the FSC plantation policy review process, and has been represented at a number of international meetings as part of this process. In 2004, Timberwatch issued a statement at the first plantation policy review meeting held in Bonn, which is still fully relevant. See <http://www.fsc.org/plantations/docs/Resources%20-%20Stakeholder%20submissions/Timberwatch%20Coalition%20-%20FSC%20certified%20plantations%20in%20South%20Africa.pdf>

GLOBAL RESISTANCE TO PULP MILLS AND PLANTATIONS

With the global expansion of the pulp and paper industry, opposition to it has been increasing throughout the world. In Europe, South East Asia, and in North and South America, community pulp mill campaigns are gaining momentum. Some successes have been achieved in having dioxins and other toxic compounds reduced or eliminated by calls for chlorine-free processes. Resistance to the spread of monoculture tree plantations, the destruction of natural forests and the establishment of new pulp mills is also growing. The following are just a few accounts of this ongoing struggle. They illustrate the extent of the problem - the power of the corporations and the influence they wield over governments, even those that have been democratically elected. But they also show what can be achieved when ordinary people become aware and sufficiently motivated to stand up and actively fight for their rights. In the face of a groundswell of well-organised, well co-ordinated civil society action, industry and governments are more likely to change their position.

● Resistance to Gunn's Ltd. Tasmanian pulp mill proposal

On September 18th 2006, eight thousand people marched through Launceston to protest against Gunn's planned \$1.4 billion pulp mill to be built in the Tamar Valley near Bell Bay in Northern Tasmania. The rally was organised by The Wilderness Society, The Tamar Residents Action Committee, The Rainforest Action group and The Tasmanian Greens.

Bell Bay is on the doorstep of large tracts of natural forest and if the mill proceeds, it will consume 4 million tons of logs each year. Tamar Valley residents already suffer from poor air quality, odour emissions, and ultra fine particulate pollution due to geographic and atmospheric conditions combined with their close proximity to industry. The Australian Medical Association (AMA) expressed concern about the pulp mill, saying that it would increase health problems, particularly in young children and asthmatics, and could add to the estimated 8 deaths per year directly attributed to pollution. There was also concern about the long-term cumulative affect of highly toxic pollutants being released into the Bass Strait. These could contaminate fish, and the mammals that feed on them, such as seals and dolphins. People eating fish could also be affected.

In February 2005, the government established a Pulp Mill Task Force, supposedly to look into all aspects of the proposed mill including the concerns of environmentalists and the people who would be most directly affected. However, it was found to be biased towards situating the mill at Bell Bay, although an alternative site had been proposed, and of corrupting the integrity of the process by actively working against the Resource Planning and Development Commission (RPDC). The government also organised a pulp mill public relations bus. Its one-sided message was promptly counteracted with the launch of the Wilderness Society's pulp mill trailer. An independent report then found that Gunn's had failed to adequately address concerns about air and water pollution and they would have to re-do the key environmental assessment report.

In April 2005 The Wilderness Society took legal action against the Federal Government for not properly assessing the impact of the proposed mill. They also maintained that there was no transparency in the process, that deliberate loopholes were created in the new air quality laws so that bleached eucalypt kraft pulp mills would be exempt, that the project was being fast-tracked for approval and that an alternative site in Hampshire, where there is already 60 hectares of plantations, was dismissed without due consideration. It is believed that the reason for the choice of the site at Bell Bay is for access to land for creating new plantations *after the native forest had been cleared*. Gunn's also took unprecedented legal action against the Wilderness Society and 19 other environmentalists, for an amount of \$6.9 million. Described by the judge as unjust and embarrassing, it was eventually thrown out of court for the third time on 20th August 2006.

On the 17th May 2007, The Wilderness society filed further legal action against the Federal Environment minister for breaking the national environment laws he is responsible for enforcing, and allowing Gunns to avoid rigorous assessment of its proposed pulp mill. After obtaining the release of documents under freedom of information laws, which had previously been withheld, it has also been revealed that the water supply to Gunns can be increased by up to 40 billion litres per annum, although pro-mill newspaper advertisements have claimed it is only 26 billion litres. This is in spite of the fact that the Great Lake water system is at historically low levels and farmers have had water restrictions imposed. With climate change, this situation can only get worse. A rally and protest march is planned for the 16th June, in Launceston. Eighty thousand leaflets providing information about the mill and promoting the rally have been distributed to households across Tasmania. The leaflets are also aimed at counteracting the dubious and misleading newspaper advertisements that have been promoting the mill. For more details, and the latest developments on the campaign go to:

http://www.wilderness.org.au/campaigns/forests/tasmania/gunns_proposed_pulp_mill/

The campaign against Gunn's has been well coordinated and very successful. Activists have used all means available to them and have managed to create a great deal of awareness, which has caused a groundswell of public anger against the mill project. Although the struggle is far from over and Gunn's have the support of the government, as well as huge financial resources, there can be little doubt that ordinary people and civil society action groups are becoming more effective in forcing those with power to reconsider the way they operate. This is further illustrated by the ongoing pulp mill conflict between Uruguay and Argentina.

• **The cellulose pulp plant conflict between Uruguay and Argentina**

This conflict involves affected individuals, civil society groups and the governments of the two countries. In October 2003, the Uruguay Government authorised a Spanish company ENCE and in February 2005, a Finnish company, Botnia Metsa, to build two huge pulp mills at the town of Fray Bentos in Uruguay. Argentina argued this would pollute the Uruguay River, which is shared with Uruguay and protected by a treaty, which is now disputed by both countries.

The first protests against the two new mills in Uruguay date back to 2002, when environmental activists and area residents unsuccessfully called on the government to halt the projects, due to a lack of reliable studies to measure the combined impact of both operations. It may be that the Kirchner administration in Argentina did not think the conflict would develop, and therefore gave Uruguay the impression it could carry on with the two projects, but the residents of Entre Rios responded with a degree of awareness and organisation that caught everyone off guard. This unexpected public reaction forced the Argentinean national and provincial authorities to end their former complacency, and to take a leading role in opposing the projects, which in turn angered the Uruguayan government. In April 2005, between twenty and thirty-five thousand people, mainly the residents of Gualequaychu, which is 35 km down river from Fray Bentos in the province of Entre Rios, blockaded the Libertador General San Martin Bridge in protest. Since then the protests and blockades have become scheduled events and the case has gone to the International Court of Justice (ICJ) at The Hague.

With ongoing blockades, public protests and negative publicity, ENCE eventually decided to withdraw in September 2006, although Botnia Metsa, which is the biggest private investment in Uruguayan history, was determined to continue. Uruguay insisted that the Argentine government must take action against the protesters, as the blockades have cost millions in lost tourism. However, President Kirchner has refused to do anything to prevent them to date. At the blockades, volunteers hand out pamphlets explaining their reasons for the rejection of the pulp mills. There has also been a counter demonstration by about 10 000 residents of Fray Bentos who are in favour of the mills. Other protests have included Evangelina Carrozzo, Queen of the Carnival of Gualequaychu, wearing only a tassel bikini, parading with a banner protesting the

mills in front of 58 heads of state at the “European Union, Latin States and Caribbean Business Summit” in May 2006, before being removed by security. There have also been protests outside the Finnish and Swedish embassies in Buenos Aires by the Citizens Environmental Assembly of Gualequaychu, and the government of Entre Rios has distributed a 100 000 pamphlets informing people about the potential impact of the mills. Planned future action could see the blockading of the river to prevent supplies reaching Botnia, while activists are also working on the possibility of challenging the technical report by the International Finance Corporation.

The Assembly of Gualequaychu then created another blockade by erecting a 1.8 metre high concrete wall, displaying a sign in English and Finnish protesting against the pulp mill, and which blocked International Route 136 for nearly 3 days. The controversy took another turn on the 8th January 2007 when the Argentinean province of Entre Rios, said it would ban all wood sales to Uruguayan pulp mills, while picketers announced plans to stage a complete blockade of Uruguay sometime in mid January. On the 23rd January, the ICJ ruled against Uruguay and since then, Spain has become involved in trying to mediate the dispute. On 20th April 2007, this resulted in the signing of a joint declaration between Uruguay and Argentina, which includes the possibility of relocating the mill. This is a huge blow to Botnia as the mill is nearing completion, and particularly in view of the fact that, in the early stages of the dispute, Argentina had suggested paying for it's relocation. This offer was, however, refused by CEO Erkki Varis. Now, should this be the final decision, Botnia will have to carry the whole cost.

Unfortunately for Botnia, it arrogantly assumed that the dispute would go away given time, and assured it's financial backers accordingly. Instead it has become worse. Fifteen claims have been filed internationally, and criminal complaint charges even implicate the World Bank Board of Directors. The conflict comes at a particularly bad time for the World Bank, as it's now ex-CEO, Paul Wolfowitz and his key advisors, were instrumental in getting the project approved in the first place. With the mill 95% completed, and with the very legality of the project now in question, many more questions are being asked by it's financial backers, and the strain between Botnia and it's host country Uruguay, is beginning to show. The extent of the conflict generated by this pulp mill project is unprecedented, and the social-environmental movement that has risen against Botnia Metsa, has reached record-breaking levels. Recent marches of up to a 120 000 people have set a world record for local community opposition to an industrial investment. For a detailed report go to http://www.cedha.org.ar/en/more_information/u-a.php “Botnia Pulp Mill Conflict: Uruguay and Argentina Agree to Put Relocation of Mill on the Negotiations Table.”

● **Networking and sharing strategies in the fight against pulp and paper mills**

An interesting development has been the coming together of the two campaigns in order to share their experience and strategies. The following is from a report by the Centre for Human Rights and Environment (CEDHA) entitled “Cellulose Mills: Australia / Uruguay Workshop in Tasmania Shares South-South Advocacy Strategies in Fight against Papermills”

“Wednesday 4th of May, Tasmania, Australia - CEDHA of Argentina met with an array of community leaders, NGOs and other advocacy actors in Tasmania to share advocacy strategies to oppose the installation of a large-scale pulp mill on the Tamar River in northern Tasmania. The workshop, organized by CEDHA and hosted by the Tamar Residents' Action Committee, offered participants discussion on advocacy options relevant to the cellulose industry, and focused on human rights violations caused by the pulp mill industry and human rights and environmental protection obligations of private actors in the promotion of pulp production. CEDHA brought the experience of growing local opposition to the installation of two pulp mills on Argentine-Uruguayan border, while a growing number of Tasmanian residents are expressing their own local opposition to the installation of a pulp mill on the Tamar River, concerned over the social, environmental and economic effects expected as a result of the chlorine-based production process to be used by the proposed mill”

For the full report go to http://www.cedha.org.ar/en/more_information/tasmania-workshop.php

- **Land conflict in Brasil and Chile**

From: “Plantations, Indigenous Rights, and Genetically Engineered Trees – Confronting Corporate Strategies to Expand Plantations” by Anne Petermann and Orin Langelle - The Global Justice Ecology Project

In Brazil, the indigenous Guarani community has begun the process of reclaiming 11,000 hectares of land stolen from them under the Brazilian dictatorship and given to Aracruz Cellulose for tree plantations. In open defiance, the community has cleared several hectares of the plantation and is building a village there, using eucalyptus for the poles of their traditional palm frond huts. They and their Tupikinim neighbours joined forces in 2005 to take over the nearby Aracruz Cellulose pulp mill for several days to demand the return of their land. Their story has inspired movements against plantations all over the world. The landless workers' movement has achieved great notoriety for their successful campaigns to take back land from large landowners and redistribute it to landless peasants. They have also recently taken over a portion of a plantation owned by Aracruz Cellulose and removed the trees to build their camp, complete with a well, a community space, and a very elaborate system of non-hierarchical decision-making.

Mapuche communities in Chile are also in an ongoing battle to reclaim their traditional lands from the pine and eucalyptus plantations and the toxic pulp mills that have taken over. In Chile, plantations are concentrated on former farmland in the traditional territory of the Mapuche people in the Lumaco region. Since 1988, plantations in Lumaco have increased from 14 percent of the land to over 52 percent in 2002. Ninety-eight percent of Chile's forestry products are exported to the North and to Asia. Throughout the country over two million hectares of eucalyptus and pine plantations are controlled by only two companies. As a result of this farmland conversion, Mapuche communities are being forced on to poor quality lands where they are surrounded by plantations. The communities lose access to water from the end of spring until the beginning of autumn and must rely on water trucks. The contamination of ground and surface water from toxic pesticides and herbicides used on the plantations are resulting in rising levels of sickness. In addition, the heavy pollination from the pine plantations contaminates water and causes allergies and skin problems. Poverty rates among Mapuche communities have risen dramatically. In Lumaco, one of the poorest regions of Chile, 60 percent of the population lives under the poverty level, with 33 percent in extreme poverty.

- **The Fox River cleanup campaign**

The Fox River cleanup campaign has been an ongoing 30 years struggle for environmental justice. It is a tale of reckless disregard for people and the environment in the pursuit of profits, inadequate compensation, delaying tactics by the pulp and paper companies responsible, of corporate collusion with government, and of the government deliberately blocking public access to information about the problem. Since the advent of the current Bush administration, environmental legislation has been further weakened while the issue is far from resolved. By the 1970's it was well known that PCBs (polychlorinated biphenyls) were a lethal pollutant, yet companies continued to use them. In the case of the Fox River, river and bay bottom sediments have been badly contaminated with thousands of pounds of PCBs, which continue to flow downstream and spread throughout Green Bay and Lake Michigan. These PCBs threaten public and wildlife health. PCBs are toxic oils that were used in the ink on the back of carbonless copy paper. When two companies made the paper, and five others recycled it, they dumped PCB chemical wastes into the Fox River and Green Bay, some as recently as the early 1990s. The companies were NCR Corporation, Appleton Papers, Georgia Pacific (formerly Fort James Corporation), P.H. Glatfelter (formerly Bergstrom Paper), Wisconsin Tissue Mills (owned by Chesapeake Corporation), Sonoco (formerly U.S. Paper Mills Corporation), and Riverside Paper. For further reading go to the following website: Fox River Watch

<http://www.foxriverwatch.com/index.html>

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What is Timberwatch?

Formed in 1995 and officially launched in April 1997, the Timberwatch Coalition is a voluntary alliance of South African NGO's and individuals that are concerned about the negative impacts of industrial timber plantations on people and the environment. Timberwatch co-operates with overseas organisations with similar aims such as the World Rainforest Movement (WRM), the Grassroots Foundation, and the Global Forest Coalition (GFC)

What does Timberwatch do?

- Timberwatch monitors, researches and reports on the socio-economic and environmental impacts of alien industrial timber plantations.
- Calls for the removal of illegally established plantations and those plantations that have an unacceptably high negative effect on communities and the environment.
- Opposes applications for new timber plantations that could be detrimental to the environment and may not be of benefit to local communities. Small woodlots that provide wood for fuel and building materials and that do not jeopardise water resources, grazing for livestock, and food production, could be supported.
- Opposes the establishment of industrial-scale monoculture alien tree plantations as carbon sinks and for the production of biofuels. Carbon trading and the development of bio-fuels are perceived as lucrative new industries. New plantations are being promoted with a view to generating carbon credits under the Clean Development Mechanism (CDM) of the Kyoto Protocol, and as a possible source of bio-fuel. There is no evidence that timber plantations are fully effective in absorbing Co2. The whole papermaking process in fact adds enormously to greenhouse gas emissions, from its source – the plantations, which destroy carbon absorbing natural areas, to its transport and production, and finally when it decomposes as waste in rubbish dumps. Attempting to justify plantations as carbon sinks or as a source of alternative fuel, delays meaningful action to prevent global warming and leads to further displacement of communities and destruction of the environment.
- Opposes the use of genetically engineered plantation trees, on both socio-economic and ecological grounds. The known impacts of monoculture tree plantations could become even more severe if this new technology is used to alter tree characteristics, further depleting water resources, destroying biodiversity and impoverishing local, rural communities.
- Timberwatch believes governments; industry; the Forest Stewardship Council (FSC) and the UN must transform timber plantation policy, practice and governance. Industry efforts to portray highly destructive, industrial timber plantations as providing the same socio-economic and environmental benefits as biodiverse forests are misleading, as are false claims of job creation, empowerment through outsourcing, infrastructure development and preserving the environment.

Visit www.timberwatch.org for more information



