PROSPECTS FOR PLANTATION BASED COMMERCIAL FORESTRY: ISSUES AND INVESTMENT OPPORTUNITIES

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An Overview Paper prepared for a Forest Seminar being Organised by Uganda's Sawlog Production Grant Scheme

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PROSPECTS FOR PLANTATION BASED COMMERCIAL FORESTRY:

ISSUES AND INVESTMENT OPPORTUNITIES

John Spears [2]

SUMMARY

This paper has been prepared as input to a forthcoming Seminar on Plantation Forests being sponsored by government of Uganda. Uganda's Saw Log Production Grant Scheme (SPGS) which is being supported by the European Union ,by Government of Norway and by private sector investors, is successfully involving many small holders and local communities in planting fast growing pines, eucalypts and other timber species.

The purpose of the paper is briefly to summarise world wide experiences of plantation based commercial forestry, lessons from which could be of relevance both to future development of Uganda's SPGS and also to other countries that are investing in intensively managed plantation forests .

Recent FAO studies of the world's "Planted Forests" [3] estimate that in total they cover about 270 million hectares of which about 110 million ha are classified as "Production " Forests . A recent report by The Forests Dialogue (TFD) [4] reviewed the current status of Intensively Managed Planted Forests (IMPF) covering about 25 million ha of that total. . Although they cover . less than 1 % of the global forest area those 25 million ha already contribute about 40 % of global industrial roundwood (IRW) supply.[5] .

In addition to meeting world demands for IRW , planted forests including woodlots and plantations being established as components of agro forestry farming systems, are also making a significant contribution to the fuelwood, building pole, and non traditional forest products needs of low income communities. Those benefits of planted forests are of special relevance to the goals of the World Bank and IFC to address poverty alleviation and to harness the potential of forest resources to contribute to income generation , to sustainable agriculture to economic growth. and to protection of forest environmental services.

Given mounting global concerns about global warming ,much effort is being directed in Uganda and in many other countries to the potential of plantation forests to sequester carbon . Such plantations are creating an alternative source of wood supply that will help to take the pressure off natural forests and to reduce the rate of tropical deforestation currently running at 13 million ha a year .The fact that deforestation contributes approximately 20 % of global carbon emissions has triggered intensive interest in mobilizing substantial both public and private sector financing of plantations as one component of an emerging global strategy for reducing deforestation and degradation (REDD).

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[3] *FAO's definition of " Planted Forests" includes plantations, semi natural planted forests and various forms of agroforestry. See FAO Global Planted Forest Thematic study (Del Lungo et al 2006)*

[4] *The TFD is a multi stakeholder group of industrial companies , conservation community , financial and policy research institutions . It is providing a Forum for developing collaborative approaches to resolution of global forest issues. See their forthcoming report "Intensively Managed Plantation Forests – Towards Best Practice" (TFD 2008 in print)*

[5] *IRW includes pulpwood fibre and industrial roundwood being used for the manufacture of lumber, plywood, veneer, reconstituted panels (MDF, OSB chipboard etc) and modular components such as laminated products , mouldings framing and flooring*

Legitimate concerns have been expressed by some conservation groups that inappropriately sited plantation forests and poorly-designed or managed plantations can have negative both social and ecological impacts . The paper refers to guidelines developed by FAO in collaboration with ITTO, the TFD and several leading conservation agencies for ensuring socially and environmentally responsible management of plantation resources.

In reviewing global experiences of plantation based commercial forestry this paper gives special emphasis to three key issues namely:

- ***How to ensure that in the course of identification and demarcation of land being targeted for plantation establishment, the rights of indigenous peoples and local communities are respected and that advantage is taken of the potential of plantation forests to contribute to poverty alleviation and to sustainable economic growth?***

- ***How to create an enabling environment for attracting socially economically and ecologically responsible private sector investment in plantation forests in ways that on the one hand, will help to take the pressure off indigenous forests and thereby help to reduce current rates of deforestation and degradation (REDD)and on the other, create opportunities for small holder and local community involvement?***

- ***The potential of ongoing tree breeding , silvicultural research and adoption of well proved best management practices, to contribute to significant increases in productivity and improvements in the timber quality of commercial plantation forests.***

Given a combination of careful land use planning, resolution of land tenure constraints , adequate up front grant funding to *kick start* small holder tree planting, adoption of already available technologies for increasing plantation productivity and increased private sector investment, plantation forests could conceivably be supplying at least 75% of world industrial roundwood requirements by 2050 [6] as well as making a significant contribution to increased carbon sequestration .

As a hypothesis for further analysis to achieve the above objectives would require the establishment between now and 2050 of an additional approximately 230 million hectares of new plantations. That would imply the need to double the current rate of planting globally . If half of that area were to be established by small holders and local communities about 100 million low income families could benefit. Mutually beneficial partnerships between industrial companies, small holders and local communities would greatly help to accelerate progress towards achievement of that goal. A key policy issue will be how to strengthen the bargaining power of such out growers and to ensure that they obtain equitable prices for farm and local community grown industrial and bio energy roundwood.

The paper concludes with summary of follow up actions that could be taken by different stakeholder groups to accelerate progress towards achievement of the above targets .

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6 *The TFD study suggests 50 % by 2040 . The hypothesis being developed in this Uganda paper is based on conclusions of a draft FAO paper titled " Outlook for Wood and Wood Products from Planted Forest" That paper projects three possible future plantation scenarios. .The most optimistic of those three projections suggests that, by 2030 the area of planted forests might be in the order of 344 million ha with a potential output of about 1.9 billion m3 a year. Given that many studies have highlighted the fact that current rates of plantation establishment are well below what could be achieved given stronger government support for creating an enabling investment climate a stretch target" aimed at establishing a global planted area of about 500 million ha. by 2050 may not be unrealistic The fact that substantial private sector REDD related carbon finance may be forthcoming could help to achieve such a target*

THE CURRENT STATUS OF PLANTATION FORESTS

Plantation forests have expanded since 1990 and are being established for a variety of purposes that include industrial, home and farm (e.g. fuelwood, fodder, orchards), agroforestry, and environmental services (e.g. windbreaks, wildlife management, amenity) and of increasing importance amelioration of the global climate.

Modern comerciallly oriented plantation establishment started in the 1920s and has undergone several distinct developments. Contemporary forms of IMPF are distinguished from other forests by composition, scale, management and productivity. IMPF are typified by reliance on one or a few species or inter specific hybrids, established and managed as even-aged plantation stands. Tables 1 and 2 below summarise the finding of recent FAO analyses of Plantation Forests .

Table 1
Main categories of Intensively Managed Plantation Forests

Category	Date Established	Key species	Production purpose	Rotation length	Geographic area
Solid wood	Since 1920s	Temperate softwoods (mostly pine)	Solid-wood	25-45 years	50% in U.S., rest in Australia, New Zealand, S. Africa, S. America, Europe
Industrial Fibre	Since 1980s	Temperate and tropical hardwoods (acacia, eucalyptus)	Wood fiber	5-20 years	Asia and South America
Agriculture Tree crops	Since the early 1970s	Waste wood from rubber, coconut, oil palm plantations	Fiber and wood based furniture		Malaysia and Indonesia

Source; Kanowski (2005)

Table 2
Global Area of Productive and Protective Plantation Forests

	Total Planted 1990		Total Planted 2000		Total Planted 2005	
Regions	Productive	Protective	Productive	Protective	Productive	Protective
Africa	11,207	2,577	11,585	2,787	11,838	3,000
Asia	64,952	35,943	74,028	40,793	86,172	45,812
Europe	54,594	13,806	60,817	15,511	63,014	16,106
North and Central America	14,571	187	24,858	1,227	27,859	1,190
Oceania	2,447	1	3,477	14	3,833	32
South America	9,119	39	11,408	54	12,158	57
Grand Total	156,890	52,553	186,172	60,384	205,149	66,197
	209,443		246,556		271,346	

Rapid growth has occurred world wide in the area of plantation forests especially between 1990 and 2000 . China's plantation forest programme is the largest in the world (about 31 million hectares) . Other Asia/ Oceania region countries with a significant plantation area include Indonesia , India , Thailand , Vietnam Malaysia and Philippines Australia and New Zealand . Plantations in Russia cover about 17 million ha in western Europe about 11 million ha. in North America about 18 million and in Brazil , Chile, Argentina and Venezuela a further 12 million ha.

.In Africa the main plantation areas are in Sudan (about 5 million ha) . and in South Africa (1.4 million) Although still modest on a global plantation scale, plantations currently being established of planned in Kenya ,Uganda , Tanzania , Malawi, Mozambique Zambia Zimbabwe, Madagascar, Ethiopia Rwanda, Burundi Gambia, C.A.R Cote d" Ivoire and Nigeria, all have the potential to supply foreseeable domestic industrial wood demands and to contibute to carbon sequestration. Existing plantations in South Africa have supported a substantial forest product export industry . Planned future plantation developments in Mozambique , Angola and Ghana could also have the potential to supply major export oriented forest products industries.

COMMERCIAL END USES OF PLANTATION FORESTS

FAO's 2005 thematic studies of the areas of productive Planted Forests devoted to the predominant industrial end-uses cover :

- Pulpwood/fiber. (Chips, pulpwood and fibre for cellulose and paper)
- Sawlogs. (Solid roundwood, used as sawn timber, veneer and panel products.)
- Bio-energy. (Wood for use as bio-energy on a large scale)
- Non-wood products. (Large scale production of poducts such as rubberwood , Gum Arabic,, palm fibres,and cork) .
- Unspecified. Wood for industrial but unspecified uses

Table 3 below summarises the main findings of this FAO Review .

Table 3
Planted Forests, industrial end-use (1000 ha

End-use	*1990*	*2000*	*2005*
Pulpwood/fiber	188826	24,880	26,843
Sawlogs	57,296	61,958	67,334
Bio-energy	7,116	7,368	8,614
Non-wood products	10,645	17,320	23,376
Unspecified	19,156	19,531	19,586
Global	113,039	131,057	145,754

Global trends in commercial end uses of planted forests output are briefly summarised below:

Industrial Pulp wood and Fibre

The global totals illustrate the rapid growth in the demand for industrial pulpwood and fibre, especially between 1990 and 2000, The region with the largest area of Planted Forests devoted to production of industrial pulpwood and fibre in 1990, 2000 and 2005

is North America. South and East Asia, the region with the second largest area of pulpwood and fibre in all three years showed very rapid growth in all three periods. South America lies in third place, with more modest growth, while Europe reflects the trend in the USA.

There has been a shift in investment by European and North American multi-national companies into Asia (particularly into China) and South America (particularly Brazil) in short rotation intensively managed plantation forests for pulpwood/fibre production. A combination of short rotations and good financial returns to small holders and local communities make such plantation crops an attractive option for low income rural households .

In South Africa pulpwood crops are a major source of income for many thousand outgrowers who supply a significant proportion of the pulpwood fibre requirements of the country's two largest pulp companies (SAPPI and MONDI) Ongoing substantial private sector investment is being targeted towards developments that will supply a proposed future pulp industry in Mozambique.

Saw and veneer logs

The global area of Planted Forests devoted to sawlogs is the largest of all the end-uses and showed a significant increase between 1990 and 2000. From rural development and poverty alleviation perspectives village level small scale forest enterprises (SSFE) (e.g sawmilling, furniture joinery, mouldng and flooring enterprises) , make a significant contribution to off farm employment and to generation of rural incomes[7]. They present expanding market opportunities for small holder and local community owned plantations To illustrate, In Indonesia an IFC /WWF financed project has played a useful role in developing market outlets for small holder and local community managed *Acacia mangium* and Teak plantations .[8]

Through it Advisory Services and building on its extensive experiences of supporting SME's in other sectors, IFC is well placed to play a proactive role in linking small holder and local community outgrowers to SSFE's that could benefit from IFC grant aided technical assistance programmes, These would need to targeted in particular towards improving technical efficiency , business management and facilitating access by SSFE's to capital and emerging market opportunities. .

As one illustration of that potential, In India for example fast growing on farm acacia pine , and eucalyptus wood lots and plantations have potential to make a significant contribution to IRW needs . About 94% of India's paper mills, ,87% of the wood based plywood factories, 98% of sawmills , (which produce 82% of the sawn timber in the country) fall into the small- medium enterprise category. In total, wood processing industries in India process about 24 to 30 million m3 of wood per annum the bulk of *which is processed by* SSFEs.

Through processing and sale of non traditional forest products (NTFP's) such as wood carvings, sports goods and other products. NTFP-based SSFEs provide up to 50% of the income of 20-30% of India's rural labour force. However within India and in many

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[7] *See a 2003 Winrock/IIED Study of Small – Medium Scale Foreest Enterprises in India by Sushil Saigal and Sharmistha c*

[8] *Refer to IFC /WWF/ GFTN financed PENSA project experiences and an ongoing dialogue within IFC about how to strengthen IFC"s capacity to support the forest product industry.*

other countries forest industrial development has focused mainly on large enterprises and traditional forest products such as paper, lumber and wood based panels The potential of the SSFE sector to create market opportunities for small holders and local community owned and managed farm forests has not received the attention it deserves.

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BioEnergy

Earlier FAO studies have quantified the importance of wood fuels as a source of energy particularly in Sub Saharan Africa in which region they account for 90 percent of household energy use. Commonly, a large number of traders are involved in buying, transporting, and reselling wood fuels.This is where most of the commercial value added is obtained in this mainly informal sector.

The population of Sub-Saharan Africa is increasing by about 2.2 percent a year and will exceed more than a billion people by 2025 . If current trends continue, many areas, will experience increasing shortages of fuelwood and charcoal.Even though some of these trends may be compensated for through the adoption of alternative energy sources, such as natural gas and biofuels, it is expected that the overall trend will lead to increases in wood fuel consumption over the next 15 to 20 years. Such developments reafirm the importance of on farm wood lots and plantations to contribute both to meeting domestic fuelwood requirements as well as generating income from sale of fuelwood and charcoal into urban markets .

Wood energy produced with efficient technology is already competitive with fossil energy in many countries and can offer some of the highest levels of energy and carbon efficiency among bioenergy feedstocks. Most notably, combined heat and power plants have conversion efficiencies of up to 80 percent and wood pellet stoves have similarly high rates of conversion. It is anticipated that technology will also be available in the medium-term for commercially competitive production of liquid biofuels from cellulosic materials including wood.

Dependent on progress of ongoing research into second generation cellulosic based bio fuels extensive degraded lands in many developing countries indicate longer term possibilities for expansion of bioenergy plantations. However e xpansion of biofuel production will need to be accompanied by clear and well enforced land-use regulations, particularly in countries with tropical forests at risk of conversion to other land uses such as oil palm, soya bean and cattle ranching. Analyses by the World Agroforestry Centre, suggest that up to 1 billion hectares of developing country degraded forest and farm lands could be suitable for establishment of carbon oriented agroforestry projects. Of this amount, roughly two-thirds is currently being farmed by the poor for subsistence or low productivity agriculture.

To quote an observation by a senior staffer of the World Agroforestry Centre (ICRAF) :

> *"Such areas would be outstanding candidates for conversion to highly productive agroforestry systems that could provide numerous co-benefits to the poor and, at the same time, sequester significant amounts of above- and below-ground carbon. Within the foreseeable future carbon credits generated by small holder farmers could easily approach current levels of agricultural ODA, now estimated at roughly US $3.6 billion per year".*

Despite these optimistic perspectives , to date there are comparatively few wood based planted forest expansions that have been specifically designed to meet emerging bio energy markets. Currently the main sources of raw material are waste wood including sawdust, and woodchips. Recently major areas of wind, insect or fire damaged forests in Europe, Sweden and the United States are being targeted to supply wood raw material for bio-energy use. The potential of fast growing poplar species as bio fuel crops is being investigated in Central Europe .Roundwood harvested from a eucalyptus plantation forest in the Republic of Congo is being sold to European power stations as bio-fuel. A woodchip plant and fibre export facility was built for this operation in 2007. [9]

Agroforestry farming systems incorporating planted forests are a well documented form of land use in most Eastern and Southern Africa region countries. To illustrate, - a study by Holding ,Njuguna and Gatundu, of family farms, averaging 3.4 hectares in eastern Kenya [10] documented mixed cropping patterns with maize, beans, bananas, dairy cows and different tiers of plants and trees providing fruits (avocados, mangoes), nuts (macadamia), medicines , shade etc It was not uncommon to find 19 different tree species on one farm. As in Uganda spontaneously planted farm forests in western Kenya have made a significant contribution to sustainable land use and to increased agricultural productivity, An earlier World Bank study [11]quantified the potential of well designed on farm shelter belts and leguminous nitrogen fixing trees to contribute to increased crops yields and maintenance of soil fertility.

Non Wood Products

The large area of planted forests devoted to non-wood products in Eastern and South and Eastern Asia reflected the inclusion in FAO's recent studies of data on the extent of rubberwood plamtations in Malaysia , Indonesia and Viet Nam. The rubber tree which is native to Brazil is widely planted for the production of latex in South East Asia, mainly in Indonesia, Malaysia and Thailand.

Rubber plantations in these three countries amounting to almost 7 million hectares account for 75 % of the world total. Between 25 to 30 years of age when the production of latex is uneconomical rubber plantations are felled for replanting. Previously the felled trees were of low commercial value and were mainly used as fuelwood, but since the mid 1980s, rubberwood is one of the most popular timbers for making furniture and other wood based products. Malaysia's rubber wood based export industry generates more than $ 1 billion a year [12]. UNCTAD/GATT through ITC is making an effort to globalise the utilization of this timber especially in African and Latin American countries that have rubber plantations

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[9] *MagForestry Inc.a Canadian Company is successfully operating its recently commissioned wood-chip plant, located in the port of Pointe-Noire, Republic of Congo. Production has achieved a target rate of about 2,000 tonnes of eucalyptus chips per day, with total production to date of approximately 70,000 tonnes. The annual production target is 500,000 tonnes of wood chips. De-barked eucalyptus logs are provided to the chip mill in six metre lengths from the forestry operations of Eucalyptus Fibre Congo SA (EFC) which is 100% owned by MagForestry.*

[10] *Farm Sourced Timber Restructuring of the Timber Industry in Kenya. Opportunities and Challenges Christine Holding , Paul H Njuguna and Catherine Gatundu (IUFRO 2001)*

[11] *See " The Economics of Afforestation in Afrtica " by Dennis Anderson Worl d Bank 1987*

[12] *Rubberwood Utilization: A Success Story L.T. Hong (1995)*

FINANCIAL RETURNS

Timber investment returns have been estimated for the principal exotic and selected native species in the Southern Cone of Latin America and in the Southern United States. Exotic eucalyptus plantations in South America were most profitable, with internal rates of returns (IRRs) ranging from 13% to 23%, followed by exotic loblolly pine, with IRRs from 9% to 17%. Average loblolly pine plantation returns in the US South were less profitable, with an IRR of about 9.5%, and natural forest management in the South had IRRs of 4% to 8%. Subtropical native species plantations of the best *araucaria* and *nothofagus* species had reasonable financial returns, with IRRs ranging from 5% to 13%. Subtropical or tropical native forests had fewer commercial timber species, and had much lower growth rates and returns.

Through its investment in four of India's" pulp mills IFC financed support is being channeled to about 170,000 farm forest owners who are obtaining good prices for delivered pulpwood . India's plywood industry is partly dependent upon farm-grown (eucalypts and poplars for core veneers) and a major industry has been established around this resource in the northern states of Haryana and Punjab. Prices being paid for veneer logs are about US $ 95 per green ton and for Eucalyptus pulpwood logs 10–20 cm diameter (with bark) —US 64 per green ton. [13]

SUBSIDY POLICIES

An important factor which has underpinned successful planted forest expansion projects internationally has been the application by governments of generous direct subsidies, and/or tax concessions for planted forest establishment and management. [14] Despite reservations about the potentially negative impact of subsidy policies on forests (particularly in the agribusiness sector), past experience suggests in many countries subsidy policies have played a very powerful role in kick starting planted forest expansion .

For example as is being well demonstrated by the Uganda Sawlog Grant Scheme Government supported subsidies are playing a key role in attracting small holder and local community investment in plantations.

One of the most successful and well documented global planted forest schemes was initiated by the Chilean Decree Law 701, which ran from the early 1970s to the mid-1990s without change. Under this scheme selected companies were able to plan for a long- term planted forest expansion programme, knowing that part of the development and management costs were going to be reimbursed by the Chilean Government. This scheme has transformed the Chilean forest products industry into a leading world exporter of paper and paperboard products.

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[13] *See A Strategy for Developing Market Opportunities for Australian Forest Products in India Stephen Midgley Piare Lal Padam Bhojvaid Alan Brown October 2007*

[14] ***Investment dimensions of planted forests" Dennis Neilson, Director, DANA Limited, Rotorua, New Zealand***[14]

Another very generous tax based scheme occurred in Brazil from 1967 to the early 1980s, which significantly expanded the softwood planted forest base. However, as expected, expansion stopped almost immediately after the scheme was cancelled, and Brazil now suffers from a planted forest softwood shortage as a result. A much focused subsidy scheme established by the Uruguayan government successfully increased the area in planted forests in that country.

A change to the tax structure in New Zealand in 1992 enabled a major expansion of its planted forest resources for the next decade. Very attractive subsidies and tax concessions have enabled Indonesian pulp companies to establish several hundred thousand hectares of fast growing eucalyptus and acacia crops.

Generous subsidies and land rental deferment policies in Vietnam supported a very large planted forest base to be established by (mostly) small farmers. A recent subsidy initiative in Kenya for planting pine trees has commenced and looks promising, if suitable monitoring audits can be put in place and be maintained.

Presently one of the most attractive tax concession schemes for expanding planted forests is offered by the Australian government and has resulted in several hundred thousands of hectares of new planted forests being established since the late 1990s. Because of its structure, most of the money invested has come from small, independent investors, paying into syndicated "Managed Investment Schemes" .

Demand for this scheme has been so great that it has forced up the price of rural land from ~US $ 2580, per hectare to $ 8,600 over the last five years, and has caused serious competitive issues with farmers. This scheme attracted almost US$ 540 million into planted forest investment funds in 2006-07.

To summarise - the positive impact of generous subsidies and/or tax concessions can been seen in a great many examples around the world. By contrast, investor behaviour in not planting trees which occurs without subsidies or when subsidies are removed, provides a very clear picture of the critical importance of carefully designed incentives as a policy instrument for accelerating global planted forest development .The prospect of REDD funding should help .

TRENDS IN PLANTATION OWNERSHIP

Recent policy trends in decentralization and devolution by the promotion of privatization (with or without increased participation) have meant that the ownership of Planted Forests has been moving increasingly to the private sector.s and to greater community and small holder involvement..

Table 4 below summarises the findings of an FAO survey of the evolving ownership status of Plantation Forests.

Table 4

Ownership of Productive Planted Forests (1000 ha)

	Public			Corporate			Small-holder			Other		
Reg/Sub reg	1990	2000	2005	1990	2000	2005	1990	2000	2005	1990	2000	2005
E. & S Africa	367	155	90	837	1,036	1,124	0	155	207	0	5	6
Northern Africa	6,281	5,838	5,600	10	9	9	105	99	95	0	0	0
East Asia	34,075	24,149	24,953	0	230	159	0	17,509	28,990	0	0	0
S & SE Asia	18,568	18,645	18,270	3,664	3,606	3,448	4,899	5,005	5,114	22	154	65
W & C Asia	2,131	2,486	2,554	0	0	10	31	31	72	0	0	0
Europe	22,823	23,084	24,014	2,140	2,545	2,592	6,218	7,306	7,611	0	30	62
North America	515	976	1,024	7,214	9,602	9,895	2,576	5,696	6,142	0	0	0
Oceania	1,142	827	782	801	1,658	2,178	340	562	531	0	205	106
South America	69	64	65	6,369	7,303	7,760	1,008	1,146	1,219	159	223	254
Total Prod	**85,972**	**76,223**	**77,352**	**21,033**	**25,988**	**27,176**	**15,178**	**37,509**	**49,980**	**181**	**617**	**492**

Globally, the FAO survey showed that the absolute area of productive Planted Forests in ***public ownership*** has decreased since 1990, while the area in ***corporate ownership*** has increased by nearly one third and the area ***in smallholder ownership*** has increased three times. Proportionately, the area in public ownership in 1990 formed 70% of the total area of Planted Forests, but by 2000 it had fallen to 54% and by 2005 it was 50%. Corporate ownership accounted for 17% of the total area in 1990, 19% in 2000, and 18% in 2005. ***Smallholder ownership, on the other hand, increased from 12% in 1990, to 27% in 2000 and 32% in 2005s*** .

DEBATE AND CONFLICT ABOUT IMPF

The rapid expansion of IMPF over the past few decades has been accompanied by strong debate - locally, nationally, and internationally- and, in some cases, by varying degrees of conflict between opponents and proponents of particular IMPF proposals or projects. In certain cases, this debate and these conflicts have generated dialogue, and the eventual resolution of differences between stakeholders; in others, differences between actors remain un-, or only partially, resolved.

Critics of IMPF are concerned by the consequences of large-scale land use change and wood fibre-based industrialisation, especially for the rural poor, indigenous peoples, migrant and landless workers, women and other disadvantaged groups, and for the environment. The most prominent social concerns relate to IMPF development models

that exclude or marginalise the interests of indigenous peoples and local communities, or take place in areas where land tenure is unclear. There are also concerns about labour arrangements, whether IMPF benefits are distributed equitably, and the exacerbation of conflicts within local communities, sometimes associated with an influx of migrant labour.

Environmental concerns focus on the impacts of IMPF on natural assets and associated ecological processes – principally biodiversity, carbon, soil and water - especially where IMPF replace natural forests or grasslands, or might impact adversely on high conservation value ecosystems.

Processes for ensuring the adoption of IMPF best practices include the development of ITTO's Guidelines for Planted Tropical Forests[15];plantation forestry standards for forest certification under both Pan European Forest Certfication (PEFC) and Forest Stewardship Council (FSC) processes, (See FSC's Plantations Review) WWF's New Generation Plantation project .and the development by FAO of Voluntary Guidelines for the Responsible Management of Planted Forests[16]; *(See Box below :)

Guidelines for : Responsible Management of Planted Forests
FAO. 2007

Institutional principles

Good governance
Integrated decisionmaking and multi-stakeholder approaches
Effective organisational capacity

Economic principles

Recognition of the value of goods and services
Enabling environment for investment.
Recognition of the role of the market

Social and cultural principles.

Recognition of social and cultural values.
Maintenance of social and cultural services

Environmental principles

Maintenance and conservation of environmental services.
Conservation of biological diversity.
Maintenance of forest health and productivity

[15] *ITTO. 1993. ITTO Guidelines for the Establint and Sustainable Management of Planted Tropical Forests. ITTO Policy Development 4. www.itto.or.jp*
[16] *FAO. 2007. Responsible Management of Pl Forests: Voluntary Guidelines. wwww.fao.org/forestry/plantedforestsguidel*

Despite the attention that has been given in recent years to processes such as those summarized above for achieving social economically and environmentally responsible investment and protection of indigenous peoples and local community rights in many countries performance on the ground is still falling far short of expectations.

Over-zealous and top-down intervention by governments and NGO's have in some situations contributed to disappointing or failed planted forest results, especially with community forest enterprises (CFEs). A July 2007 report by the International Tropical Timber Organization identifies major challenges in avoiding these enterprises being sidelined. [17]

It cites examples of the gap between "official" plans and actual control by villagers. Examples include: in Gambia, 170,000 hectares have been categorized as community forests, but only 13,000 hectares are actually in the hands of local villagers.In Cameroon, 4 million hectares are designated for communities, yet only 40,000 hectares (1.0%) are approved for legal use.

FUTURE DRIVERS OF PLANTATION FORESTRY

To sumarise as concluded in the TFD report a conjunction of forces favours IMPF for industrial wood production. The principal of these are demand and supply factors: the growth in demand for forest products, as a result of both population increase and increasing per-capita consumption; the depletion of the world's natural forests; and, in some countries, the increasing exclusion of some or all remaining natural forests from production.

IMPF have comparative advantages over natural forests in wood and fibre production in terms of: biological productivity; the consistency and quality of wood and fibre products, and the suitability of these products for technologically-advanced processing; the economies of scale associated with large-scale production; and rapid technological advances in growing and processing, and the relatively quick return on investment, enabled by shorter harvest cycles. As a consequence, IMPF form the resource base for capital-intensive, technologically-advanced forest products industries. They can also create market opportunities for small holder and local community forestry plantation and agroforestry woodlots targeted towards meeting the roundwood needs of small scale wood based enterprises.

Demand for wood products, particularly the pulp and paper products for which many IMPF are grown, is strongly correlated with population and GDP[18]. Given the projected increase in global population, from 6.3 billion to 9 billion by 2050[19], and the growth of economies in Asia, Latin America and Russia, demand for IMPF products is expected to continue to increase. Market growth for IMPF products expected to be greatest in the emerging economies of the global South, rather than those of the global North in which there are already high per capita and aggregate levels of consumption of forest products.

Although IMPF establishment is driven by demands for wood products, well-situated and well-managed IMPF can also deliver environmental benefits – such as landscape

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[17] *Community Based Forest Enterprises . Their Potential and Status in tropical countries(ITTO October 2007)*
[18] *See discussion in, eg, James & Del Lungo, ibid.*
[19] *UN. 2007. World Population Prospects (2006 revision). esa.un.org/unpp*

restoration, the protection of HCV ecosystems, and carbon sequestration. These environmental services benefits are creating additional motivation for policymakers to encourage IMPF establishment. The emergence of markets and payments for environmental services will shape further IMPF establishment, favouring it in some cases and constraining it in others.

CREATING AN ENABLING POLICY ENVIRONMENT FOR ATTRACTING RESPONSIBLE PRIVATE SECTOR INVESTMENT

Policies suggested by FAO [20]adoption of which could help to ensure the putting in place of an enabling investment climate for planted forests include:

- Good governance and supportive policy, legal, regulatory and institutional frameworks for long term investments in planted forest developments.
- Taking advantage of the impact of globalization on the nature of investment portfolios available for planted forest developments and access to global forest products markets.
- Availability of land suitable for planted forest developments that does not compete with existing land-uses, including food and energy production through agricultural crops, livestock or naturally regenerating forests - Native forests should not be cleared to establish planted forests, but they should benefit from the reduced harvesting pressure on them for forest products.
- Recognition that planted forests are a land-use that provides, among other benefits, wood products that are renewable, energy efficient and environmentally friendly unlike competing construction industry products such as cement, steel, aluminium and plastic products.
- Recognition that climate change adaptation, but particularly mitigation can benefit from planted forest developments to sequester carbon and provide carbon sinks both in planted forest stands and in the forest products harvested and utilized.
- Advances in technology particularly in commercially viable processes to convert lingo-cellulosic biomass to liquid biofuels from planted forests, potential of biotechnology to develop high yielding planting stock that is resistante to insects and diseases and with improved end-use qualities,
- Iinvestment in silvicultural best practices aimed at maintenance of forest health, fire management and invasive species
- Adoption of low impact harvesting practices
- Investment by wood based industries in technologies for making more effective use of planted forest species, small lpiece sizes and for improving the quality and wood properties for a range of solid, panel and reconstituted products.

[20] *Outlook For Planted Forests SOFO 2009 (in draft)*

THE WAY AHEAD : A PROGRAMME OF POSSIBLE FOLLOW UP ACTIONS

The following have been suggested by the TFD as practical actions that major stake holder groups engaged in supporting IMPF investments might wish proactively implement:

National and sub-national governments could:

- Endorse the principles enunciated by FAO for Responsible Management of Planted Forests, and work with other IMPF stakeholders to give effect to these principles;
- Implement integrated land-use planning processes addressing all land uses relevant to IMPF development; these processes should recognise and address the rights and interests of all relevant stakeholders, and protect areas of High Conservation value.
- Provide technical assistance to build the bargaining power capability of local communities to achieve equitable pricing and benefit sharing arrangements with both companies and governments

Institutions financing or underwriting IMPF investments could:

- Implement the Equator Principles[21], which are currently applied in only a minority of cases;
- Institute effective due diligence for IMPF-related investments;
- Co-invest with governments to develop good governance structures and build capacity

Businesses engaged in IMPF activities could:

- Be proactive in exercising their corporate social responsibilities, in particular to address gaps in government's capacity and processes. This could be enabled prior use of a "Sustainable IMPF Decision Support Framework, such as that developed by the TFD.
- Ensure appropriate land use planning, comprising: land acquisition and management only under the principle of free, prior and informed consent of indigenous and traditional landowners, and with appropriate consultation with local communities and other stakeholders
- Establish effective stakeholder engagement and conflict resolution processes;
- Commit to sustainable forest management, and its verification through credible certification schemes;
- Advocate for the necessary basic legal infrastructure for engagement with, and participation of, indigenous peoples and local communities, and IMPF-based labour. on each of economic, environmental and social terms - of IMPF projects;
- Develop locally-appropriate resource supply and labour participation arrangements that respect relevant ILO core labour standards;
- Foster partnerships between stakeholders that promote and enhance the sustainability
- Adopt a resource-prudent approach that matches investment in processing capacity to existing and anticipated future IMPF resource supply.

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[21] *A set of investment guidelines developed originally by the IFC which many private banks have adopted . They set out a mandatory set of prerequisites which their client companies have to adopt as a precondition for securing private bank financial support ,*