

Industrial Tree Plantation on AR-CDM

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Abstract

The purpose of the Industrial Tree Plantation is securing raw materials supply of the certain products. The Industrial Tree Plantation is distinguished from the other plantations in the point of (1) existence of the market, (2) necessity of the infrastructure for transportation, (3) large-scale areas with many small plots, and (4) limited preferred species.

There are many conditions of land for establishing Industrial Tree Plantation. Those are (1) post-harvested area of natural re-growth or planted trees, (2) degraded lands of grass or poor bush, (3) uneconomical areas for agriculture, and (4) agro-forestry.

There are many risks associate with Industrial Tree Plantation. Those are (1) political risks: the policy changing for land utilizations, trades of products, investments and tax schemes, (2) economical risks: price fluctuations of products, supplies and demands, foreign exchange fluctuation, and (3) other risks: uneasiness of the land title security/registration, forest fires, damages from the disease and insects, and natural disaster.

The positive effects regarding Industrial Tree Plantation to the local community are (1) the opportunity of employment, (2) the chance of productions and sales of same products for surrounding residents, and (3) the improvement of the local infrastructure.

Richer biodiversity is expected in the Industrial Tree Plantation than mentioned pre-established land, such as degraded lands and uneconomical areas for agriculture.

It seems to be difficult for the Industrial Tree Plantations to be approved as CDM projects, because proving the differences in BAU is hard.

It has been anticipated that if the A/R CDM is applied on the Industrial Tree Plantation, the political risks and uneasiness of the land title security/registration may be reduced, due to both governments of host countries and investment countries approve the project. However, the hard stance to the Industrial Tree Plantation seems to interfere with the chance on many activities.

Keywords

Industrial Tree Plantation, degraded lands, uneasiness of the land title security/registration, BAU, hard stance

1. Introduction (Industrial tree plantation)

The overseas industrial plantations operated by Japanese companies are mainly for securing the row material for the pulp and the total plantation area is about 360,000 ha in 2002 (Table 1). There are 33 projects in 9 countries and the most projects are located in Australia and New Zealand. However 10 projects (about 90,000 ha) are in the developing countries

Table 1 Overseas Industrial Plantation Projects of Japanese Companies in 2002 (from JOPP 2003a)

Project	Company	Shareholders	Country	Region	Landuse before plantation	Start year	Planted area (1000 ha)	Target area (1000 ha)	Tree species
1	Chip Project Harris-Dathowal(Australia) Pty. Ltd.	Nippon Paper Industries Co. Ltd., Itochu Corp.	Australia	N S W	Pasture	1989	2.9	5.0	Eucalyptus
2	Albury Plantation Forest Co. of Australia Pty. Ltd.	Oj Paper Co. Ltd., Itochu Corp., Senshu Co. Ltd., TOHOKU ELECTRIC POWER Co. Inc.	Australia	WA	Pasture	1993	23.8	26.0	Eucalyptus
3	Bunbury Treefarm Project	Nippon Paper Industries Co. Ltd., Misui & Co. Ltd.	Australia	WA	Pasture	1996	11.3	20.0	Eucalyptus
4	Tas Forest Holdings Pty. Ltd.	Mitsubishi Paper Mills Ltd., Mitsubishi Corp., The Tokyo Electric Power Co. Inc., Guims Ltd.	Australia	TAS	Pasture, Bush, Harvested plantation	1996	10.6	25.5	Eucalyptus
5	Victoria Treefarm Project	Nippon Paper Industries Co. Ltd., Misui & Co. Ltd., Midway Pty. Ltd.	Australia	VIC	Pasture	1996	3.7	8.0	Eucalyptus
6	Green-triangle Treefarm Project	Nippon Paper Industries Co. Ltd., Misui & Co. Ltd.	Australia	SA, VIC	Pasture	1997	2.7	10.0	Eucalyptus
7	Green Triangle Plantation Forest Co. of Australia Pty. Ltd.	Oj Paper Co. Ltd., Nishio-hwa Corp., Ltd., Toppam Printing Co. Ltd., Hokkaido Electric Power Co. Ltd.	Australia	SA, VIC	Pasture	1997	5.8	10.0	Eucalyptus
8	Australian Afforestation Pty. Ltd.	Toraya Motor Corp., Misui & Co. Ltd.	Australia	WA	Pasture	1999	0.8	2.0	Eucalyptus
9	Bairnsdale Plantation Forest Co. of Australia Pty. Ltd.	Oj Paper Co. Ltd., Itochu Corp., Kadansha Ltd., Electric Power Development Co. Ltd.	Australia	QLD	Pasture	1998	4.0	10.0	Eucalyptus
10	East Victoria Plantation Forest Co. of Australia Pty. Ltd.	Oj Paper Co. Ltd., Nishio-hwa Corp., Ltd., Shogakukan Inc., Japan Pulp and Paper Co. Ltd.	Australia	VIC	Pasture	1999	2.9	10.0	Eucalyptus
11	Southern Plantation Forest Pty. Ltd.	Manubeni Corp., THE CHUGOKU ELECTRIC POWER CO., INC., ROHM Co. Ltd., Shueisha Inc.	Australia	SA, VIC	Pasture	1999	2.8	10.0	Eucalyptus
12	VIZ Australia Pty. Ltd.	Shogakukan Inc.	Australia	VIC	Pasture	2000	0.6	0.5	Eucalyptus
13	Plantation Platform of Tasmania Pty. Ltd.	Daijo Paper Corporation, Kawasato Corporation, Nissen Co. LTD., Nakabayashi Co. LTD., We'll Corporation, Nikkel Business Publication Inc., Guims Ltd., Forestry Tasmania, Kobunsha Co. Ltd., NBS RICOH Co. Ltd.	Australia	TAS	Pasture, Bush, Harvested plantation	2000	1.5	7.5	Eucalyptus
14	Yonden Afforestation Australia Pty. Ltd.	Shikoku Electric Power Co., Inc.	Australia	VIC	Pasture	2001	0.2	1.0	Eucalyptus
15	Eco Tree Farm Pty. Ltd.	Ozaka Gas Co. Ltd., Mitsui & Co. Ltd.	Australia	WA	Pasture	2001	0.2	1.0	Eucalyptus
16	Portland Treefarm Project	Nippon Paper Industries Co. Ltd., Misui & Co. Ltd., Toyota Motor Corp.	Australia	SA, VIC	Pasture	2001	1.1	3.0	Eucalyptus
17	WA Plantation Resources Pty. Ltd.	Manubeni Corp., Nippon Paper Industries Co. Ltd.	Australia	WA	Harvested plantation	2001	30.0	32.0	Eucalyptus
18	Adelaide Blue Gum Pty. Ltd.	Mitsubishi Paper Mills Ltd., Hokuriku Paper Mills Ltd., AEON Co. Ltd., CHUBU Electric Power Co. Ltd., TOKYO GAS Co. Ltd., NYK LINE, Mitsubishi Corp.	Australia	SA	Pasture	2003	0.0	10.0	Eucalyptus, Pinus radiata
19	Australia TOTAL Southern Plantation Forest Co. of New Zealand Ltd.	Oj Paper Co. Ltd., Itochu Corp., Fuji Xerox Co. Ltd., Fuji Xerox Office Supply Co. Ltd.	New Zealand	South Island	Pasture	1992	104.9	197.5	Eucalyptus
20	New Zealand Plantation Forest Co. Ltd.	Chugoku Pulp & Paper Co. Ltd., Hokuriku Paper Mills Ltd., Matsunori Paper Co. Ltd., Manubeni Corp., Marubeni New Zealand Ltd.	New Zealand	North Island	Pasture	1997	1.7	10.0	Acacia
21	New Zealand TOTAL Forestal Anchie Ltda.	Daijo Paper Corp., Nagoya Pulp Corp., Itochu Corp.	Chile	X Region	Pasture, Bush, Harvested land	1989	11.5	24.4	Eucalyptus, Pinus radiata
22	Forestal Tierra Chilena Ltda.	Mitsubishi Paper Mills Ltd., Mitsubishi Corp.	Chile	VIII, IX Region	Pasture, Bush, Degraded land	1990	28.7	40.0	Eucalyptus
23	Volterra S.A.	Nippon Paper Industries Co. Ltd., Sumitomo Corp., Inversiones Magallanes S.A.	Chile	XIII Region	Pasture	1991	13.5	13.5	Eucalyptus
24	Eucalyptus Pacific S. A.	Mitsubishi Paper Mills Ltd., Sumitomo Corp., Electric Power Development Co. Ltd., EPDC Environmental Engineering Service Co. Ltd., Expo Forestal S. A.	Ecuador	Esmeraldas	Grass land, Degraded land	2001	1.7	10.5	Eucalyptus
25	Latin America TOTAL JAINT Ltd.	Environmental Engineering Service Co. Ltd., Expo Forestal S. A.	Papua New Guinea	Madang	Harvested secondary forest	1975	51.4	74.0	Eucalyptus
26	Quy Nhon Plantation Forest Co. of Vietnam Ltd.	Oj Paper Co. Ltd., Nomura Securities Co. Ltd., Nomura & Land Building Co. Ltd., The Daiichi Kangyo Bank Ltd., Sumitomo Mitsui Banking Corp.	Papua New Guinea	Bin Dinh Province	Grass land, Degraded forest	1995	9.9	10.0	Acacia, Eucalyptus
27	Guangxi Oj Plantation Forest Co. Ltd.	Oj Paper Co. Ltd., Nishio-hwa Corp., Dainippon Printing Co. Ltd.	Vietnam	Quangxi Zhuangzu Zhenqu	Grass land, Degraded land	2002	9.6	10.5	Acacia, Eucalyptus
28	Forest Resources Pty. Ltd.	Oj Paper Co. Ltd., Marubeni Corp.	China	Kazulin Nhai	Harvested plantation	1996	4.2	10.0	Acacia, Eucalyptus
	CHIP Project TOTAL	Nippon Paper Industries Co. Ltd., Sumitomo Corp., Central Timber Co.	South Africa				24.9	36.5	
	CHIP Project TOTAL						192.7	326.4	
	Pulp Project								
1	Celulose Nipo-Brasileira S.A	Japan Brazil Paper & Pulp Resources Development Co., Ltd.	Brazil	Minas Gerais	Harvested plantation	1973	121.2	110.0	Eucalyptus
2	Pain Pac Forest Products Ltd.	Oj Paper Co. Ltd., Nippon Paper Industries Co., Ltd.	New Zealand	North Island	Harvested plantation	1991	31.7	30.0	Pinus radiata
	Pulp Project TOTAL						152.9	140.0	
	Lumber project								
1	Open Bay Timber Pty. Ltd.	Kowal Lumber Corp., Papua New Guinea Government	Papua New Guinea	East New Britain	Harvested natural forest	1985	12.7	14.0	Eucalyptus
2	TEPCO Forests Australia Pty. Ltd.	The Tokyo Electric Power Co. Inc.	Australia	N S W	Pasture	2000	3.1	10.0	Eucalyptus, Pinus radiata
3	Gala Forest Plantation Company Pty. Ltd.	NEC Corp.	Australia	SA	Pasture	2002	0.3	3.0	Eucalyptus, Pinus radiata
	Lumber project TOTAL						16.1	27.0	
	TOTAL						361.7	493.4	

such as Brazil, Chile, China, Ecuador, Papua New Guinea, South Africa and Vietnam, which might be applicable to AR-CDM.

The industrial plantation is different from other kind of plantations that it stands on the sustainable forest production and management, and requires the market. The conditions for organizing industrial plantation projects are;

- (1) infrastructures such as port and road facilities
- (2) suitable environment for the target tree species, such as climate and soil
- (3) labor force is available
- (4) sufficiently large land area for producing materials continuously

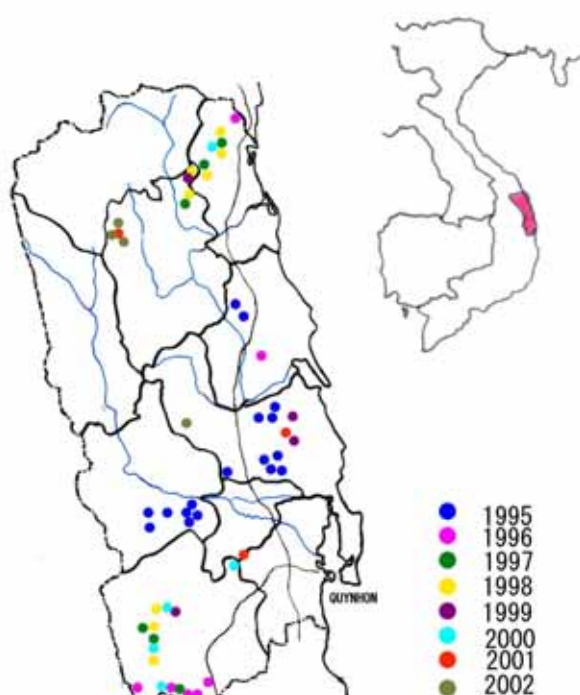


Fig. 1 Location of a company's plantations in Binh Dinh Province, Vietnam
The company plantation area (10,000 ha) is separated to 57 small sites and scattered in the province.

One extensive area for plantation is favorable considering the profitability of the project but it is difficult to find such vast land area for plantations in many cases. A company's plantation area in Vietnam which is about 10,000 ha, is separated to 57 small sites and scattered in a province (Fig 1).

The previous land use of the industrial plantation is generally unutilized land as secondary forests, grass land, abandoned agricultural lands and degraded lands. The most of the plantation area is previously abandoned grazing land and unutilized and/or degraded land. If a clump of natural forest is included in the project area, it was left uncut according to the country's laws and regulations. The actual utilization efficiency of the land in a project is said to be 70 % for excluding the natural forests etc. from the plantation area.

2. Risks of Industrial Plantation Project

One of the reasons that there are not many projects in developing countries is the difficulty in securing land. To make clear the land title is not easy sometime in those countries but it is necessary for the land registration and important for the project. There are also political, economic and other risks from the view point of investors. For example, political risks are the instability of government, and the changes of land use policy and tax system, economic risks are goods price and foreign exchange fluctuation and other risks are such as forest fire, pest and disease. Those risks could be barriers to launch industrial plantation projects in developing countries.

3. Biodiversity and Industrial Plantation

Natural forests would NOT be cut down for the planting in our plantation projects for the natural forest is not the target land using for the project. Since only the degraded land and

Table 2 Observed understory plant species in industrial plantations in Vietnam (JOPP 2003b)

Plantation (6years)	Number of Species	Crown Condition	Understory Vegetation
<i>Eucalyptus camaldulensis</i>	6 - 13	open	<i>I. cylindrica</i> still dominated the understory
<i>Acacia auriculiformis</i>	10 - 22	close	<i>I. cylindrica</i> domination declined and some tree species were found

Plantations were established on abandoned agricultural land covered with *Imperata cylindrica*

abandoned grazing lands are converted to industrial plantations, increment of biodiversity would be occurred rather than decrease.

Nijima and Yamane (1991) reported that the reforestation of grassland might provide favorable environments and increase the number of soil fauna. Our study in a *Eucalyptus camaldulensis* plantation and an *Acacia auriculiformis* plantation indicated that the number of understory plant species was increased comparing to its previous land use, *Imperata cylindrica* dominating grassland (Table 2). This study also shows that seeds of the plant species found in the plantations might be provided by the neighboring natural forest. It suggests the importance of natural forest in or around the project area.

There would still be criticisms on biodiversity of the industrial plantation by its monoculture. However, planting single species which has high utility value and competitive in the market would encourage the sustainable forest management and consequently keep the carbon stock level high.

4. CDM and Industrial Plantation

If the industrial plantation is approved as an AR-CDM project, the difficulty on securing lands for the project mentioned above will be solved. The government of the host countries will face these problems for preparing to launch AR-CDM projects. It would be a glad movement for operators of the industrial plantations as well as gaining credits from the carbon to overcome the economic barriers.

However, we are worried that it would be difficult for the industrial plantation project to be approved as a CDM project. According to the COP 9 results and the examples of Emission reduction CDM, the proof of the clear difference between the baseline scenario and the business as usual scenario is required and examined very severely.

In most developing countries, they make every efforts of reforestation on degraded lands under the national policy but it doesn't progress satisfactory because of the shortage of funds. In such cases, it would be helpful and meaningful to use AR-CDM for the reforestation of degraded land without distinguishing industrial plantations from environmental plantations and consequently AR-CDM could contribute to the conservation of local environment and also to the prevention of global warming in consequence. The industrial plantation is based on sustainable forest management and once the business is set on its way, higher carbon stock is continuously kept in the project area. The collaboration of the industrial plantation and CDM may possibly provide new opportunities to contribute to improve the natural and social environment particularly in CDM host countries.

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