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Changing Ownership and Management of State Forest Plantations: Chile

Draft prepared by

Eduardo Morales

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International Institute for Environment and Development (IIED)

following the International Conference of the same title

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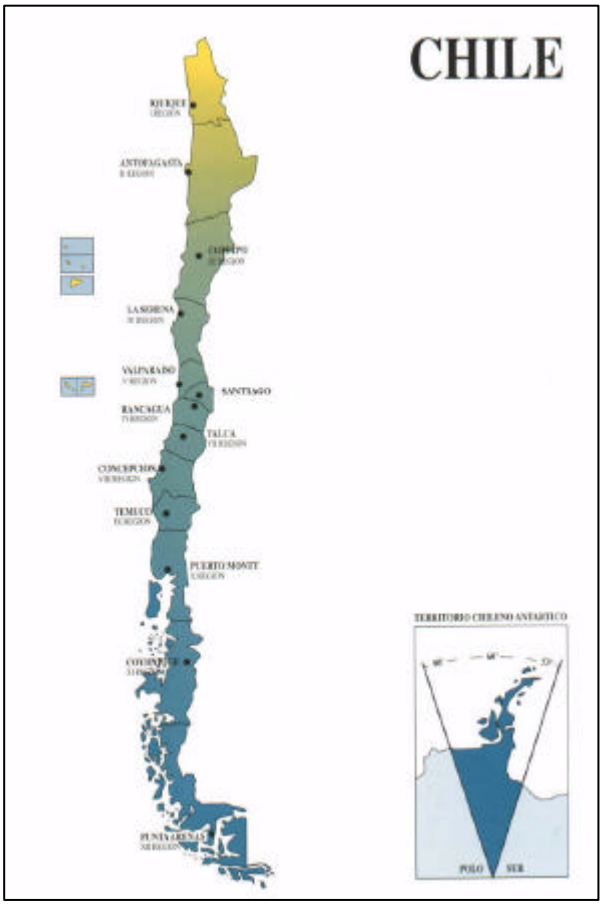
The conference was jointly organised and run by the Department of Water Affairs and Forestry of the South African Government, the UN Food and Agriculture Organisation and the UK Department for International Development. It is anticipated that this case study, together with several other country case studies and an overview, will be published as a book during 2004.

Chile

The Chile case study was prepared by Eduardo Morales.

1.1 Geography and demography

Chile is located along the south-western coast of South America. Its territory covers a land area of 26,626 sq km, 37.4 per cent of which is on the South American continent (750,765 Km2) and 62.3 per cent on the Antarctic continent (1,250,000 Km2), while the remaining area is made up of island possessions. The greater part of the country's activity takes place on the mainland, where nearly all of Chile's 15.4 million population lives.



Administratively, the country is divided into 13 regions, 51 provinces and 355 municipal districts. Forestry activity takes place from Region V de Valparaíso south to Region XII de Magallanes y de la Antártica Chilena, since in this zone the climate is typically Mediterranean, with cold, wet winters and warm, dry summers. On moving southwards, the rainfall gradually increases, resulting in a more exuberant vegetation made up of native forests and forest plantations.

Nearly one third of the 4,600 kilometres length of the country is covered by the Atacama Desert, stretching for nearly 1,600 kilometres from the border of Perú in the North to nearly La Serena in the centre. Another third of the country is either broken land split in thousands of small islands or continental ice, that stretch from just South of Chaiten to Southern Tierra del Fuego for about 1,700 kilometres. The remaining 1,300 kilometres is Central Chile, where most of the forest and agricultural land is found.

Region VIII (Concepción) is the centre of the country's forest activity because its abundant plantations have enabled it to sustain such industries as pulp and paper manufacturing, sawmills, and the production of wood panels. Regions IX de la Araucanía and X de Los Lagos are the centre of native forest activity due to the abundant native forest resources that sustain the sawmilling of native timbers, and the production of wood panels such as veneers and plywood.

The Chilean population has been growing at patterns comparable to more developed countries. Between 1970 and year 2001, it grew by an average 2.6% per year - one of the lowest growth rates in South America. Although its regional pattern of distribution is very similar to that of other LA countries as nearly 40% of the population lives in the Metropolitan Region where the capital city Santiago is located.

1.2 The Forestry Sector - some basic facts

20.6 per cent (15.6 million hectares) of Chile's territory excluding Antarctica is covered by forests (Table 0.1). Of this area, 6 million hectares are native production forests (all in private ownership), 7.5 million hectares are protected forests (5.3 million hectares owned by the State and 2.2 million hectares by private owners) and 2.1 million hectares of plantations (all in private ownership).

Table 0.1. Total forest area by regions (hectares)

Regional Distribution	Native Forest Productive & Protected **13.443.316**	Plantations **2.118.836**	Total Forests **15.562.152**	**100,00**
I	7.682	28.502	36.184	0,23
II		674	674	0,00
III		1.891	1.891	0,01
IV	1.377	61.682	63.059	0,41
V	94.008	64.892	158.900	1,02
RM	93.345	13.214	106.559	0,68
VI	117.798	97.825	215.623	1,39
VII	369.708	403.652	773.360	4,97
VIII	785.766	882.178	1.667.944	10,72
IX	907.521	351.475	1.258.996	8,09
X	3.610.314	187.514	3.797.828	24,40
XI	4.830.743	25.289	4.856.032	31,20
XII	2.625.054	47	2.625.101	16,87

Source: Instituto Forestal INFOR. Estadísticas Forestales 2000.

As it can be seen in Table 0.1, the largest native forest area, is found from Region X South. With the exception of this last Region the rest is almost inaccessible due to the broken land and steep terrain, therefore there are not large operations that there are taking place.

Plantations on the other hand are distributed throughout the country. The industrial plantations comprising Radiata pine, Eucalyptus, Douglas Fir and Poplar are found between Regions V and X. Other plantations in the North are mostly Atriplex, Black wood and Prosopis used for cattle raising. South of Region X there are slow growing native species plantations. Radiata pine is the most widely planted species in industrial plantations (Table 0.2).

Table 0.2. Area of plantations occupied by different species (2001)

Species	Area (ha)
Radiata pine	1,570,058
Eucalyptus	381,390
Atriplex	57,209
Prosopis chilensis	23,307
Douglas fir	14,832
Poplar	4,238
Schinuss molle	3,505
Other species	64,298
TOTAL	2,118,836

Table 0.3 shows the total commercial forest area of Chile. Native forest is the largest area of commercial forests, although it only contributes 6% of the industrial logs supplied to the industry. This

is due to the fact that alternative Radiata pine products at cheaper prices can be found as an alternative to high cost native wood products.

Table 0.3. Commercial forests in Chile (2001)

Forest Type	Area Ha	%
Native Forest	**13,443,316**	**85.91**
Adult	5,978,200	38.20
Second Growth Forest	3,582,408	22.89
Adult/Second Growth	865,446	5.53
Krummholz	3,017,262	19.28
Plantations	**2,118,836**	**13.54**
Mixed Forest	**85,742**	**0.55**
TOTAL	**15,647,894**	**100.00**
Native Forest	**13,443,316**	85.91
Commercial	5,978,200	38.20
Non-Commercial	7,465,116	22.89
Plantations	**2,118,836**	13.54
TOTAL	**15,647,894**	**100.00**

LEGAL AND POLICY CONTEXT FOR FORESTRY

There are two laws that govern the most important aspects of forestry activity. These are the updated Forestry Law of 1931 and the Forestry Development Law (D.L. 701) of 1974 and its subsequent modifications, regulations and resolutions.

Forestry Law of 1931

The Forestry Law Nº 4,363, passed on June 30, 1931 deals basically with environmental aspects of forest operations. Article 1 and 2 define forest lands. Article 3 could be understood as the first attempt to promote plantation forestry in Chile as it dictates: "The existing artificial forests, or those to be planted on declared forest lands, will be tax exempted for a period of 30 years." This Article is still in force in respect of plantations established before 1974.

Article 5 is the most important from an environmental standpoint, it is still enforced and it dictates that no trees can be cut in a range of 400 meters from stream or river banks or less than 200 meters from their source. There are a further 16 articles which have been modified or expanded by subsequent Decree Laws or Laws.

Forestry Development Law D.L. 701:

Decree Law No. 701 governs natural and planted forest use in Chile. The law and subsequent amendments to it require that all forest management be carried out in a coherent fashion, and empowers the National Forestry Corporation (Corporación Nacional Forestal, CONAF) to create management norms for specific forest types to ensure sound professional management. Forest management is only allowed after a management plan has been reviewed and approved by CONAF.

This law is the most important regulatory act concerning the use of the country's forestry resources. The main aspects of D.L. 701 are the following:

- The classification of lands preferentially suitable for forestry is the base upon which the whole structure of the incentive is built. It is requested by the owner, accompanied by a technical study of the land and its consequent re-classification proposal, and submitted to CONAF.
- Another very important element is the concept of the Forest Management Plan embedded in the Decree Law. If the application of classification of the land as preferentially suitable for forestry is approved the owner must present a management plan for the properties to the Corporation prepared by a forestry engineer or a specialized agronomist. The management plan must address the execution of all afforestation tasks within a period not greater than five years, and reforestation within a period of three years from the date of felling.

Other forestry laws

Besides the Forestry Law and D.L.701 there are several other Acts for regulating forest sector related activities. These include acts for the protection and control of logging, the protection of flora and fauna of endangered species, and the prevention and control of forest fires. An extract of this legislation is available to the public from the National Forestry Corporation (CONAF www.conaf.cl).

Currently, a Commission directed by the Undersecretary for Agriculture is preparing a report of a coherent native hardwood policy. This law project has been in the Chamber of Representatives for 12 years and is still under discussion, as it has been withdrawn by CONAF several times and reinstalled thereafter. Clear policies regarding the management, use, logging and substitution of native hardwood forests will be determined on the basis of this Law and ground rules for additional forestry logging and development will be established.

Environmental laws

Another important statute is Law No. 19,300, which sets forth a system of environmental impact assessment. This law applies to major industrial scale projects in all sectors and does not set forth specific guidelines for forest management. The basic law was passed in 1994, but implementing regulations pertaining to environmental impact assessments were not promulgated until 1997. CONAMA, the National Environment Commission (Comisión Nacional de Medio Ambiente), is responsible for evaluating individual impact assessments. Very recently a major planned OSB operation was halted, which resulted in large areas of native commercial forest being left without a possible development.

Protected areas, water, wildlife

Chile has a strong commitment to sustainable development. For instance, Chile is a signatory of the Convention on Biological Diversity, which requires nations to integrate conservation and the sustainable use of biodiversity. The conservation measures that underpin projects and the forest management activities that occur must comply fully with Chile's obligations under the Convention on Biological Diversity.

Protected wildlife areas are ecologically interesting zones which together make up the State Protected Wildlife Areas System (SNASPE) owned by the government and administered by the National Forestry Service (CONAF).

SNASPE is divided into three categories: National Parks, National Reserves and National Monuments, occupying an area of 14.1 million hectares. National Parks comprise 62.0 per cent of the total, National Reserves 37.9%, and Natural Monuments only 0.1 per cent.

KEY INCENTIVES FOR PRIVATE PLANTATIONS

An owner who applies establish plantations under DL 701 has the following benefits:

- Access to planting and management subsidies if the land is classified as preferentially suitable for forestry and the owner meets the conditions to be a small property owner.
- Exemption from land tax applied to agricultural lands until 2 years after the first rotation.
- Exemptions from computations for inheritance assignations and donations tax.

- Profits derived from the use of forests are subject additional income tax benefits.

When CONAF extends planting subsidies, the owner has the following obligations:

- To submit a technical study of the land and its consequent classification proposal.
- Within one year of the date of the certificate approving the classification as preferentially suitable for forestry of the property, the owner must present a management plan for the properties to CONAF. The management plan shall contemplate the execution of all afforestation activities within a period not greater than 5 years, and a reforestation period of three years from the date of felling. CONAF has 120 days to raise objections to the management plans. If this is not done they are assumed to be approved. Once classified as preferentially suitable for forestry, the tax benefits automatically apply.
- Any felling or logging operation that takes place in lands preferentially suited for forestry may be done only after approval of the management plan by CONAF. Contravention of this obligation will make the proprietor or person who carries out the unauthorized felling or logging operation liable to a fine which equals double the commercial value of the products as determined by CONAF and are subject to confiscation if found with the transgressor. If the products have been sold the transgressor will be fined three times their commercial value. CONAF has the right to order immediate stoppage of work and may invoke the aid of the police in accordance with the law.
- All felling or logging operations of forest shall oblige the owner of the respective lands to reforest or recover an equal area, at least to that felled or logged under the conditions of the plan approved by the corporation. This obligation may be met in land other than that where the felling or exploitation took place, only when such a plan is approved by CONAF. Plantations thus made will be considered as reforestation for all legal purposes.
- Non-compliance with these obligations within a period of three years after felling will be subject to the fines of 10 U.T.M. to 30 U.T.M. ("Unidad Tributaria Mensual") per hectare which is an amount that is adjusted with inflation. The value of the fine as of July 1, 2002 ranges from US$415 to US$1,248 per hectare.

The forestry classification may be annulled but only in exceptional cases. If accepted, the owner must pay into fiscal funds all amounts which he may not have paid by virtue of the tax exemptions or subsidies granted under decree law or other dispositions or regulations, plus adjustments and legal interest determined by the Internal Revenue service in accordance with the tax law.

Non-compliance with reforestation is generally fined at 30 U.T.M. At current values, the fine is more than double the cost of reforestation. Since the value of the fine is inflation adjusted, and planting costs are expected to rise with inflation, the fine is projected to continue to exceed the costs of replanting in the future. The land use alternatives in the region, in terms of profitability, are expected to decline due to soil quality and competition from imports.

The obligations for reforestation remain with the land owners. The fines are enforceable and of significant amounts.

Table 0.4. National Parks and Forest Reserves by Regions (Hectares)

Region	National Parks **8.718.260**	National Reserves **5.387.433**	Natural Monuments **17.880**	Total SNASPE **14.123.573**
I	312.627	309.781	11.298	633.706
II	268.671	76.570	31	345.272
II – III	43.754	-	-	43.754
III	104.790	-	-	104.790
III – IV	-	859	-	859
IV	9.959	4.229	128	14.316
V	24.701	19.789	5	44.495
RM	-	10.185	3.009	13.194
VI	3.709	42.752	-	46.461
VII	-	18.669	-	18.669
VIII	11.600	72.759	-	84.359
IX	147.538	149.022	172	296.732
X	491.324	112.716	2.517	606.557
XI	2.064.334	2.223.913	409	4.288.656
XI - XII	3.525.901	-	-	3.525.901
XII	1.709.352	2.346.189	311	4.055.852

Source: CONAF, 2002.

In general terms these areas are managed under the principle of multiple services and protection, aimed at the protection of vegetation and fauna, and the preservation of the natural environment typical of the country. Specific objectives are the management of flora and fauna, and to create, manage and administer protected areas within the system of national parks and similar areas.

KEY ACTORS IN THE FORESTRY SECTOR

The roles played by the public and private sectors are quite differentiated. The role of the public sector is one of control and law enforcement on the one hand, and the provision and administration of the promotion and subsidy tools with which it has been provided on the other. The private sector is responsible for production, as well as the provision of supporting services: finance, ports, transportation, marketing, legal consulting, accounting, maintenance, repair, and so on. This differentiation reflects broader separation of responsibility between private and public sector actors in all sectors of the economy. The key actors in the forestry sector are described in the following paragraphs.

Public Administration

Corporación Nacional Forestal (CONAF). The National Forestry Corporation is the Chilean Forestry Service. CONAF comes under the Ministry of Agriculture and is in charge of managing the national forestry policies. Its main objective is to contribute to the preservation, management and use of the country's forestry resources. CONAF has two main functions:

- Forestry control. It controls the application and compliance of the forest industry with the law, norms and regulations regarding forest management, logging operations and other operational issues.
- Management of the SNASPE, (*Sistema Nacional de Areas Silvestres Protegidas*) the National System of Protected Wildlife Areas, composed by the National Parks, Forest Reserves, and Natural Monuments.

Servicio Agrícola y Ganadero (SAG). Agriculture and Livestock Service: Oversees compliance with legal requirements for seeds, fertilizers, pesticides, flora and fauna and sanitary detection and control. It has particular interest in controlling the sanitary requirements of both natural imported and exported products.

Instituto de Desarrollo Agropecuario (INDAP). The Agriculture Development Institute: Provides financial assistance to small and mid-size agricultural producers and to organizations engaged in developing activities in low income rural areas.

Ministry of the Economy. In charge of promoting and looking after the development of the country's various productive and service activities. The Industrial Development Corporation (CORFO), administers sectoral development initiatives. A key role played by CORFO is that of administering several Grant Funds for research and development, which is performed by the universities, by private and public research organizations.

Comité de Inversiones Extranjeras: The Committee of Foreign Investments approves and controls the entrance of foreign capital under the terms and conditions established in Decree Law Nº 600. Its main objectives are the promotion of foreign investment opportunities, to provide legal and financial assistance to foreign investors and receive and give equal treatment to all investment applications.

Corporación de Fomento de la Producción (CORFO) The Production Development Corporation's main purpose is to promote the development of productive activities within the country by granting funds to promote private productive initiatives. As pointed out it also grants funds for research tied to development projects.

Among the private and partially publicly funded agencies that are controlled through CORFO's participation, the following are forestry related:

- *Instituto Forestal* (INFOR**).** The Forestry Institute's main role is to improve the development of the forestry sector through research and technical assistance.
- *Instituto de Investigaciones Tecnologicas* (INTEC). The Technical Research Institute's main purpose is to provide technical support to the industry and CORFO. This support involves creating, introducing, adapting or changing technological processes through the use of technical information, technology transfer and scientific testing.
- *Servicio de Cooperación Técnica* (SERCOTEC). The Technical Cooperation Service provides assistance to small and mid-sized industry. Its aim is to increase productivity in these areas.

Private Institutions

Companies, independent professionals and concerned people with ties to the forestry sector are grouped within the following organizations:

Corporación Chilena de la Madera (CORMA): The Chilean Wood and Forest Products Association gathers together producers, professionals, and institutions connected to the forestry sector. Its main purpose is to promote the development of the Chilean forestry sector and the adequate use of forest resources.

Asociación de Industriales de la Madera (ASIMAD). The Wood Re-Manufacturers Association, groups together value-added products producers such as doors, windows, furniture and furniture components, among other products.

Asociación Técnica de la Celulosa y el Papel de Chile (ATCP CHILE). The Pulp and Paper Association of Chile is a group of professionals who work in pulp and paper companies in Chile. Its

main purpose is to increase the professional and technical skills of its members by promoting technological development and scientific research.

Colegio de Ingenieros Forestales. The Forestry Engineers Association is the society of professional forestry engineers. Among its purposes are: to promote the cooperation among members; foster technology; disseminate scientific information; and contribute to community development.

Fundación Chile: This is a non-profit, private institution, created in 1976 by an agreement between the Chilean Government and ITT corporation of the United States. Its purpose is to transfer technologies that contribute to the rational use of natural resources as well as to the country's production. This is accomplished, among other activities, by creating new enterprises.

There are few NGOs in Chile; this might be one characteristic of the Chilean situation. Two leading environmental NGOs are "Defensores del Bosque Nativo" (Native Forest Defenders) and CODEFF (Flora and Fauna Defence Committee). There is a third academic NGO, CIPMA (Centro de Investigación y Planificación del Medio Ambiente). Besides these three NGOs, there is a group of professionals calling themselves Asociación Chilena de Ingenieros Forestales por el Bosque Nativo (Chilean Forestry Engineers Association for the Native Forest). These two NGOs and group of engineers are more concerned with the fate of the native forest than with plantation forestry. Notorious over these recent days has been the boycott that particularly Native Forest Defenders have started along with Forest Ethics of the US to prevent the export of Radiata pine forest products not bearing the FSC logo.

FORESTRY TENURE SYSTEMS

Since 1974 the country's forest based industry, the commercial forests and the processing industry, have been private. Early that year the Socialist government of Mr. Salvador Allende was replaced by the Military Junta headed by General Pinochet. The new government declared what was then known as the "subsidiary role of the State". This meant that the State would prevent itself of having entrepreneurship activity liberating and would promote the free enterprise initiative. Having adopted this policy, the following main events took place:

- Two of the three existing Pulp mills that were publicly owned by CORFO (Corporación de Fomento de la Producción) were privatized.
- The nearly 120,000 ha of a series of large forestry properties called "Complejo Panguipulli" located in the North of Valdivia Province, which had been expropriated by the socialist government through the Agrarian Reform and that constituted an attractive resource, were restituted.
- CONAF, the Chilean Forest Service, continued to establish plantations until 1978, but stopped until 1983. Between 1983 -1985 CONAF initiated a planting program aimed at combating unemployment.

With regard to Native Forests, all native forests outside the SNASPE are privately owned. These are basically commercial forests, but those located in steep terrain are treated as protected forest and cannot be cut, even though they are in private hands.

Plantations have been fully private since 1974. For a period of several years, CONAF transferred its stake in plantations to the private sector. In summary, out of the 15.65 million hectares of forests, 5.80 million are within the SNASPE - these are National Parks and Reserves - and the remaining 9.85 million hectares are in the hands of the private sector.

Of the total planted area, a little more than the half is owned by the 8 major forest companies operating in Chile. The rest is owned by several thousand small and medium sized owners (see Table 0.5). In Region V the majority of the owners are small to medium sized, while in the rest of the Country the forested area is owned by major forest companies.

Table 0.5. Plantation ownership by size of property

Property Range Size (ha)	No. of owners	**Area (ha)(*)**	**%**
Large Companies	8	1,097,000	52.9

Individual owners:			
Over 2,000	195	281,328	13.6
From 1,000 to less than 2,000	140	196,019	9.6
From 500 to less than 1,000	230	157,198	7.6
From 200 to less than 500	451	139,527	6.7
From 100 to less than 200	566	79,270	3.8
From 50 to less than 100	831	58,762	2.8
From 10 to less than 50	2,130	51,947	2.5
From 1 to less than 10	2,880	10,086	0.5
TOTAL	**7,431**	**2,071,137**	**100.0**

Source: Based on Nacional de Estadísticas, VI Censo Nacional Agropecuario, 1997.

Instituto Forestal, personal communication for updating.

(*) Species: Radiata pine, Eucalyptus, Poplar, Blackwood, Douglas fir, Native

When examining the numbers in Table 0.5 it is noticeable that the larger property bracket, properties of more than 1,000 hectares, account for 76% of the plantation estate. On the other hand, in terms of owners this area is owned by 343 companies and individuals or 4.6% of the total number of plantations owners in the country - a very high concentration.

ECONOMIC SIGNIFICANCE

Contribution to GDP

In 1980, the total value of forestry production amounted to US$ 774 million. By 1994, this sector was the fifth largest contributor to the GDP at US$ 2.0 billion. Its contribution to the Gross Domestic Product the same year represented 3.18 per cent of the domestic total (assets and services) or 7.0 % of the GNP assets, up from 2.4% GDP in 1975.

In 1994 the main subsectors of the forest GDP included: silviculture and wood extraction (18.6%), wood (25.3%), furniture and pulp and paper (56.1%). By 2000 these shares had changed to: silviculture and wood extraction (12.4%), wood products (35.4%), and furniture and pulp and paper products (52.2%). The rate of growth that the furniture industry has experienced in recent years is the most important in the forest industry sector, surpassing the rate of growth of the pulp and paper industry

Since 1995 the contribution of the forestry sector to total GDP has decreased, mainly as a consequence of pulp prices deterioration, although the sectoral GDP has increased by 7.4%, as a consequence of a larger total GDP growth.

The forest-based industry

The primary forestry based industry includes the processing of logs for the production of lumber, wood based panels and pulp products, while the secondary forestry based industry includes the remanufacturing of lumber for the production of furniture and remanufactures such as mouldings, cut stock, blanks and furniture and its components. The secondary paper industry involves the processing of pulp for the production of newsprint and other papers, cardboard and paper boxes. The flow of industrial Radiata pine logs is shown in Figure 0.1.

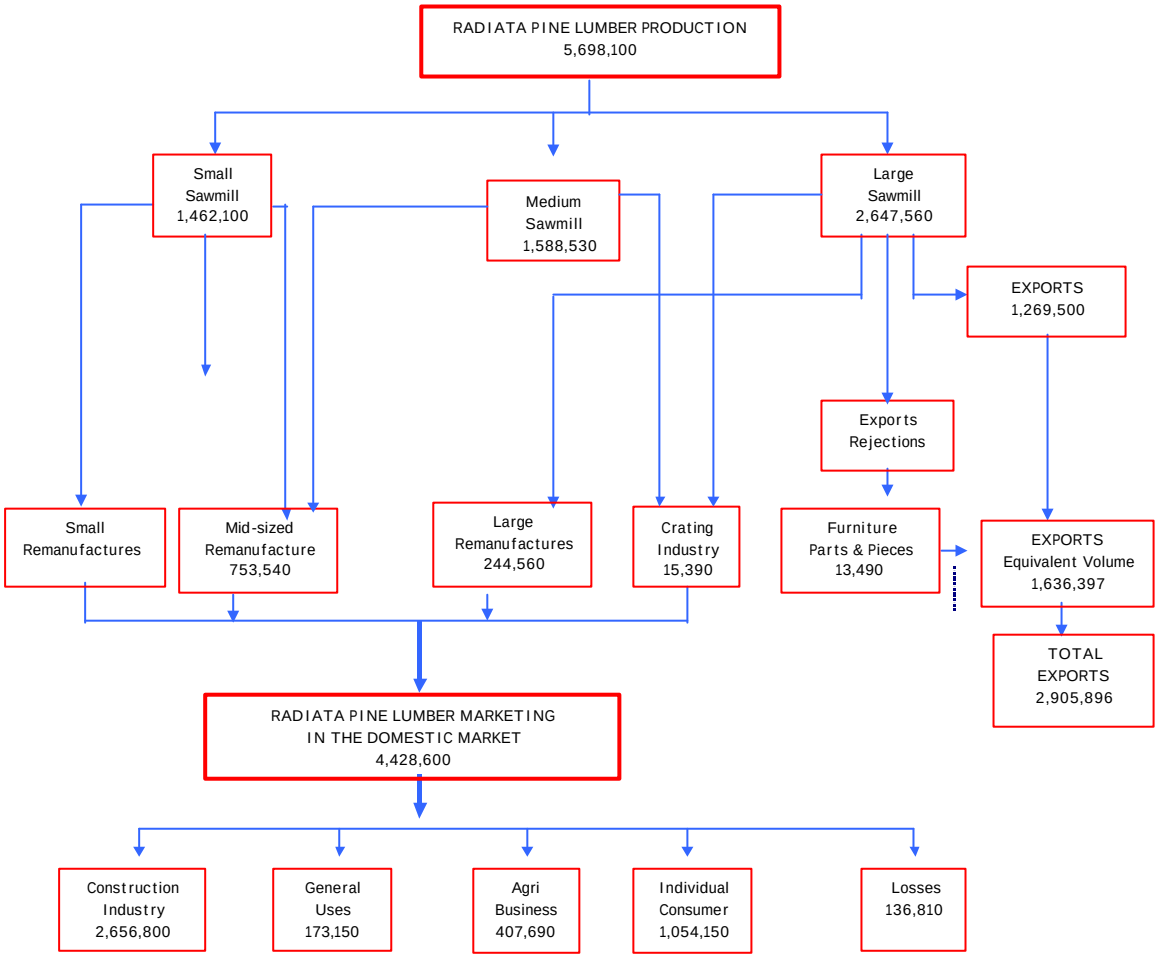
Currently, 93% of the industrial wood production comes from plantations. Within 8 years the figure is expected to increase to almost 100% as more pine and eucalyptus plantations come on stream and logging of native forests will become increasingly difficult. One very important issue is that short fibre wood chip exports to Japan produced from native species will be halted totally and replaced by the incoming large Eucalyptus plantations in Region X and the other Regions to the North.

The success of controlled afforestation with Radiata pine has provided the basis for considerable industrial growth. Over the last three decades annual growth of the Radiata pine growing stock has continued in excess of 6% and projected figures indicate that this will continue until probably year

2025. In a similar way, Eucalyptus globulus has contributed to industrial development. The results of trials with eucalyptus species (E.nitens, E. delegatensis, E.fastigata and others) show that growth is as high per hectare as for the E. globulus.

By 1994 annual planting had reached 109,900 hectares, but thereafter decreased as a consequence of high land prices and due to the fact that larger companies began finding better opportunities in Northern Argentina, Southern Brazil and Uruguay. The rate of planting is expected to recover. An additional 2.5 million hectares of privately owned land are suitable for plantations. Hence, there is no pressure to release land from protected areas for wood production.

Figure 0.1. Flow of industrial logs in the Chilean forest industry (cubic metres in year 2000)



Within the next two to five years, vast areas of planted forest are due to mature. They will provide increased supply of sawlogs, peeler logs and pulpwood; this is what has been called the “wood wall”. Most likely this new increased supply will have a lower cost and a much better uniformity, which in turn will promote additional industrial capacity..

There are important domestic and foreign investments in the forest sector. Natural, human and social resources in this area continue to attract long term projects, generally from countries with a forest tradition. These investors contribute their experience in sustainable forest management as well as in the use of modern technology.

Exports

The Chilean policy of low and uniform tariffs, reflecting its commitment to open foreign trade, has resulted in increased exports for the Chilean forestry sector. Since 1974 forest exports have undergone intense growth, in value and volume terms (see

Table 0.6). From the numbers in the table it is clear that forest products export share in total country exports has increased steadily reaching a high, almost 15% in 1995. Since 1995, export shares have remained the same as a consequence of reduced pulp prices, combined with a reduction of prices in the remanufactures.

Table 0.6. Participation of forestry exports in national total exports.

Million US$ FOB

Year	Total Exports	Forestry Exports	Share %
1970	1,111.7	41.7	3.8
1975	1,552.1	125.5	8.1
1980	4,670.7	468.1	10.0
1985	3,823.0	334.6	8.8
1990	8,580.3	855.3	10.0
1995	16,039.0	2,369.3	14.8
2000	18,158.0	2,365.2	13.0

Source: Estadísticas Forestales. INFOR. 2000

In Table 0.7 it is possible to identify the progress Chile has made in terms of diversifying its exports market, not only in terms of trade partners, but also in terms of products, particularly the incorporation of value added products stemming from the wood remanufacturing industry.

Table 0.7. Diversification of forestry exports

ITEM		1966	1980	1999
Value of Forestry exports	Mill US$	20	580	2,365
Number of Countries of exports destination	Nº	12	32	98
Areas of destination				
South America	%	75	45	18
North America		20	5	28
Europe		5	16	18
Asia		-	34	36
Number of products	Nº	40	185	462
Type of Products				
Logs	%	-	11	5
Lumber		70	51	36
Wood Based Panels		3	2	5
Pulp		27	36	37
Clear blocks		-	-	3
Finger Jointed material		-	-	1
Edge Glued Panels & Planed lumber		-	-	13

FORESTS AND THE POOR

The direct objective of the Chilean forest policy is to promote the formation of a sizable forest resource base. The aim of this resource base is to enable the expansion of export oriented industry and to contribute to the country's economic growth. Therefore the national forest policy is not aimed directly or in a first instance to poverty alleviation, or promoting the formation of small enterprises, or to subsidize employment; all these purposes will be achieved as a consequence of the natural formation of the forest capital and its industrialization and the marketing of the forest products in the world markets.

In the last three decades, forestry and related industries have not made a significant direct contribution to alleviating unemployment and poverty in the areas where most of the plantations have been established. Although forest companies and forests industries have not made an important contribution to direct employment, their activity has lead to explosive indirect employment, not only for forest labourers but also in related industry activities such as transport, logging operations and equipment maintenance. These new employment opportunities are awarded at substantial higher salaries than before. The regions where this has occurred are not any longer the poorest or lagging behind, and now they are comparable to other industrial regions specially the mining regions in the North.

Neither CONAF nor the Ministry of Agriculture include explicit concerns about poverty in their policies and activities. This may be due to the fact that Chile is mostly an urban economy; 86 % of the population live in cities and most of the rural population live in agricultural lands and only a small proportion in forest areas. In Chile, urban poverty is a far bigger issue than rural poverty.

1.3 A brief history of state owned plantations

THE ORIGINS OF FOREST PLANTATIONS IN CHILE

It was around 1865 that the first foreign exotic ornamental trees of the gender Eucalyptus were introduced in Chile. The predominant species is Eucalyptus globules, which was mostly planted in rows along the side of the paddocks in the agricultural regions of Central Chile. Twenty years later, in 1885, a German descendant Mr. Arturo Junge, the owner of a park in the Caracol Hill in Concepción started planting several North American conifers, among them Douglas fir. A year later, Mr. Junge, enthusiastic about Douglas fir, ordered new seeds, but the Vilmorin Seed House made a mistake and sent Radiata pine seeds. Mr. Junge realized that this species grew much faster than Douglas fir, so he ordered more seeds. The species was extensively planted in the Caracol Hill as an ornamental plant.

Later in 1906 a German forester Mr. Konrad Peters was looking for a source of pit props for the coal mining operation of Lota, South of Concepción. They were using Douglas fir, but, realizing that Radiata pine grew much faster, Mr. Peters decided to plant Radiata pine in their holdings. During 1907 and 1912 he planted 400 ha of Radiata pine. This plantation should be considered as the first really industrial plantation in Chile. After 1915 several land owners of the central valley began planting Radiata pine and other species, among them Poplar.

The Lota Mining Company expanded its planting program and was followed by other entrepreneurs. By 1930 Radiata pine represented 0.5% of the industrial raw material used by the forest industry. Most wood still came from native forests. This development was paralleled by over cutting of native forests for wood extraction and agricultural land; in the period 1920 to 1930 more than 2.5 million hectares of native forests were cleared. This came to the attention of the Government, which passed the "Forestry Law of 1931". Besides protecting native forests, the Law encouraged afforestation by exempting forest land owners from land taxes and inheritance taxes. It also established incentives and prizes for each planted hectare. This brought about increased Radiata pine lumber production and the planting of large areas of degraded and eroded soil. Around 1925 Contesse (1985) estimated that between 5 and 6 thousand hectares of Radiata pine were already planted. By 1929 the Lota Mining Company had 7,300 hectares of planted forest both of Radiata pine and Eucalyptus.

Until the mid 1920s the country was dominated by rightist more liberal governments. After this period, the country shifted towards the left and a series of socialist Governments. During the government of Mr. Aguirre Cerda in 1931, CORFO (the Sate owned Development Agency) was created. In 1940 CORFO initiated a vast private plantation program supported by subsidised loans (Lara & Veblen 1993). The annual rate of plantation establishment gradually grew between 1929 and 1949 from 1602 to 49,257 hectares, when it peaked. All planting was done privately. Radiata pine was by far the dominant species accounting for over 90% of all plantations. The period between 1947 and 1964 was characterized by a reduction in the annual rate of planting from 49,257 to only 13,176 hectares. This fall is attributed to the very low interest of private investors, due mainly to the perception of political instability and the progress of the Land Reform process.

Notwithstanding the decline in planting, several private investors started sawmills. CMPC, as pointed out, established a pulp mill, Cholguan a fibreboard mill, and a market for logs was developed. Thousands of small farmers started planting in the hope they could later sell their timber to these industries.

STATE-OWNED PLANTATIONS

Plantations in Chile started as a fully private initiative. It was many years after, only in 1970, nearly 85 years after the first plantations were established, that the State got involved in plantation forestry. In the late 1960s, the government made its first venture into forestry plantations. Between 1970 and 1985, the state's estate grew from 6,940 to 365,729 hectares

Plantation privatization

In 1973, the collapse of the socialist government and its replacement by the rightist Junta provoked a radical change in the way the economy was managed. As stated in Chapter 1 one of the first declarations made by the Junta was that the Government would have a subsidiary role, and that it was the private sector's responsibility to liberate its creativity and drive.

In 1974 that the Government passed Decree Law 701, a cornerstone in Chile's recent plantation policy, rooted in its emphasis on private sector planting. The basic requirements and benefits of this law are as follows:

Prerequisites:	Land ownership
	Approved forest management plan
	Land declared as of "preferred forestry aptitude".
Benefits:	A 75% subsidy for afforestation costs, based on a cost table published by CONAF six months ahead of the planting season
	A variable subsidy, depending in the type of management applied, plus a subsidy to cover administration costs.
	exemption from land tax,
	50% reduction on integrated income taxes for individuals and corporations.
Commitments:	It is imperative not to change the land status from "preferred forestry status" to any other status unless it is replaced by an identical area elsewhere.
	-Reforestation is mandatory a year after harvest. Heavy fines and possible land confiscation are the threats if not properly met.

By 1979 CONAF controlled 32% of the total area planted in Chile, which marked the peak of the State owned or partially owned plantations. From 1979 to 1982 plantation rates fell abruptly. The fall was due to a severe drought that lasted for almost three years until 1982.

The period from 1983 to 1985, was marked by a serious economic recession, which held up privatization. Unemployment was one of the more serious issues, therefore the government through the municipalities launched a new plantations program to provide employment opportunities for

several thousand. These persons were hired during the planting season, and then transferred to other jobs.

Another law that was instrumental in promoting forestry sector development was Decree Law Nº 600, of March 1977, known as the Foreign Investment Statute. This law promoted foreign investment, by means of which several multinational companies, either invested in fully controlled projects or through joint ventures with local investors or already established companies, furthermore expanded the planted area and planting rate.

Following the recession, CONAF stopped its participation in planting and transferred this responsibility to the private sector. In addition, CONAF sold, negotiated or transferred the "Convenios" to private entities. Some of them were sold to the land owners with whom CONAF had established the agreement exercising the preference of buying from CONAF its part in those plantations. Other Convenios were acquired by large companies who through this process consolidated their forest holdings.

From 1986, afforestation and reforestation grew steadily and peaked in 1992 when it reached 130,429 hectares. Thereafter plantations rates fell (see Table 0.8).

Table 0.8. Historical planted area 1970 – 2000 by the state and private sectors

Year	State	Private	Total
1965			18,660
1966			40,618
1967			37,070
1968			32,328
1969			35,908
1970	6,940	16,506	23,446
1971	16,659	11,387	28,046
1972	24,772	6,270	31,042
1973	27,403	2,910	30,313
1974	35,196	21,027	56,223
1975	44,096	38,463	82,479
1976	54,170	53,635	107,805
1977	44,673	48,499	93,172
1978	24,885	52,486	77,371
1979	477	51,749	52,226
1980	85	72,079	72,164
1981	29	92,753	92,781
1982	41	6,854	68,586
1983	21,811	54,458	76,280
1984	40,302	53,300	93,602
1985	24,190	72,084	96,277
1986		66,197	66,197
1987		65,441	65,441
1988		72,508	72,508
1989		86,703	86,703
1990		94,130	94,130
1991		117,442	117,442
1992		130,429	130,429
1993		124,704	124,704
1994		109,885	109,885
1995		99,858	99,858

1996		78,592	78,592
1997		79,484	79,484
1998		86,579	86,579
1999		108,269	108,269
2000		102,350	102,350
TOTAL	**365,729**	**2,077,031**	**2,668,968**

The rate of planting during the period 1991 to 1994 was an annual average of 120,000 hectares, so that the fall in the rate of planting was worrisome. Three main causes can be identified:

- The price of land rose to levels that were high compared to alternative lands in neighbouring countries such as Uruguay and Argentina.
- As available properties became smaller smaller, transaction costs for each property went up, making land acquisition more onerous.
- Land productivity was realized to be higher in Uruguay and Argentina, so that large companies and even smaller investors began establishing plantations there rather than at home.

Conversion of native forests to plantations.

By far the largest proportion of new plantations have been developed on degraded forest land or barren land. Only 0.4% of the total planted area was native forest most of which is second growth. D.L. 701 subsidies do not apply to previously forested areas which were a deterrent to conversion. Many millions of hectares of degraded agricultural land and extremely degraded forest land are still available to industry for afforestation.

1.4 Evolving demands and changing roles

CONCERNS ABOUT PLANTATION FORESTRY

Concern has been expressed about the development of monoculture plantation forestry for a number of reasons. Monocultures are prone to disease attack; some pests and diseases have been identified in Chile, but the industry is making efforts to counter these. There is some concern about reduced biodiversity in such plantations. Efforts have been made by the industry to improve the silvicultural management of plantations in order to retain a rich undergrowth and thus, to provide habitats for flora and fauna. Environmental groups would like to see an increased use of native species in plantations and more diversity of exotic species, although the financial and economic benefits of this have not yet been proven.

Harvesting of forests and the construction of roads to remove the raw material is hazardous for the hydrology and water quality downstream. All harvesting activities in native forest stands and plantations are controlled by the government. Management plans are prepared for each forest holding; notice has to be given of intended cutting and the principles under which the forest management plan was designed. The plantations of the large companies are regulated and easy to monitor, because normally they are large concentrations of continuous tracts of forest, and therefore with large public visibility. Harvesting operations are designed by the forest engineer hired by the owner to prepare the management plan.

Illegal cutting of native forest stands by local people and small companies continues in spite of the regulations to the extent that they may be cutting a large proportion of more than 12 million cubic meters by year, mostly for firewood.

Harvesting operations in plantations are carried out on the basis of sound management; a combination of oxen, skidders, cable yarders and bunchers are used, causing very little erosion. Since the land is owned by private companies, there is sufficient incentive to maintain the quality and fertility of the land in order to maintain the quantity and quality of the future wood supply.

WHAT PEOPLE WANT FROM PLANTATIONS

Plantations have been a hugely important source of raw material for the forest products industry. Radiata pine has been by far the most important, but during the last decade Eucalyptus has become the main source of short fibre for the pulp industry and, for pulp logs exports, represents more than 95% of the industrial volume.

But timber is only one use of plantations. They are also valued for their non-timber forest products and environmental services. Probably one of the most well recognized contributions of plantations, and particularly of Radiata pine, has been that of recuperating eroded soils and controlling runoff water on steep terrain. Arguably, it could lead to the enhancement of some scenic values, as Radiata and Eucalyptus have been planted on bare slopes or relatively steep slopes with high visual exposure, that now shows trees. Although, it should be pointed out that a group of environmentalists "Native Forest Defenders" claim that plantations are not forests and that Radiata pine forests are "green desert".

Plantations have also contributed to the protection of natural forests (highly valued for biodiversity as well as a range of other environmental services) by offering a substitute source of raw material.

CHANGING ROLES

Public concern and demands for forest goods and services are expressed through the very small number of NGOs existing in Chile. These concerns and demands are placed to a very large extent around the native forests. Plantations are generally visualized as "production forests" and as such are not expected to render environmental services demanded by the public.

As pointed out earlier, the state has turned the production activities of forestry over to the private sector but it has kept for itself the regulation and control of these activities and at the same time the provision of "forestry services" through the SNASPE, and particularly through very well managed National Parks. The public seems to be pleased with what CONAF is doing in these areas. If it is considered that 14.1 million hectares, out of 75.7 million hectares of the continental territory are under the management of the state through CONAF as part of the SNASPE, it means that 18.6% of the territory is devoted to the supply of forestry related services, among the highest of the world.

Changing perceptions of the role of the state

Prior to 1960 farms were too large to be handled by one family; most often *colonos* (settlers) became administrators who hired labour, much of it resident, to work their farms. Major changes were introduced after 1960, beginning in the latter part of Jorge Alessandri's presidency.

In 1960, as increased output and improved living conditions of agricultural workers became the central objectives of land reform, the *huerto*, which was equivalent to a house and a garden plot, was introduced and granted to the resident labourers who had often been bypassed previously. The Caja was changed in 1962 to the Agrarian Reform Corporation (CORA) and given limited power to expropriate private property . Voluntary land reform was introduced by the Catholic Church on its holdings, which were meagre because expulsion of the Jesuits in 1767, confiscation of church land by Freire in 1824, and persistent anticlericalism held church power in check. This reform led to extraordinary income and consumption for the new owners and generally increased the labour-absorption capacity of land. The momentum of land reform entered a period of controlled acceleration during the 1964 - 70 rule of the Christian Democrats. A new land use form, the *asentamiento*, involving transitory cooperative ownership of an expropriated estate until final transfer of the land to its workers, was introduced.

During President Frei's (1964 – 1970) first-year pursuit of "Revolution in Freedom," more *latifundios* were expropriated than in the previous twenty years, the minimum agricultural wage was given parity with the minimum industrial wage, the family allowance to farmers was doubled, and 44,000 small landowners received supervised agricultural credit, compared to only 12,000 the year before.

Direct redistribution of land reached a crescendo with the election of Salvador Allende, whose goal was complete and irreversible eradication of the large private estates and the mode of life of *latifundismo*. From assuming office until April 25, 1972, the Popular Unity coalition movement

expropriated 2,678 farms covering 4.25 million hectares. In 1971 the Marxist Coalition introduced two new forms of land exploitation, the Centres of Production (Centros de Producción) and the Centres of Agrarian Reform (CERA).

The production centres, a total of 18 with 141,000 hectares established in 1971, were strictly state enterprises. They were introduced either because the expropriated farms were true agricultural businesses with modem technology-breeding farms, model dairies, or ranches of fine cattle, or because the farmers "in response to their high social conscience and in the national interest" requested it.

Although the CERA were not explicitly state owned they were heavily modelled along the lines of the Soviet bloc communes. They aimed at maximum production, establishment of the Internal Investment and Communal Development Fund, incorporation of all men and women above age 16 into the labour force, and elimination of unemployment. These giant corporations, created by reallocating and concentrating the hitherto dispersed workers, were served by polyclinics, schools, social security, cultural and entertainment projects, and capital goods. The corporations hoped to release and then harness Chile's abundant land riches by establishing a multifaceted labour- capital-land-output relationship through maximum, large-scale education, welfare, capital investment, and concentration of farmers.

The above model failed. In the years after 1973, Chile experienced a “Counter Agrarian Reform”, land was reallocated to those that had the technical skills, the will to work the land and access to capital. The post-September 1973 military junta adopted a positive price policy for agriculture.

It should be noted that 1970 was marked by the coming into power of the late socialist President Allende. During the previous years the country had experienced a progressive policy of Agrarian Reform and a big push towards leftists policies. This motivated Mr. Allende’s government to create the Corporación de Reforestación (COREF) (Reforestation Corporation). This corporation, fully state funded and administered, was responsible for starting a wide afforestation program on Reformed Lands; this in land that had been expropriated to the former owners and that now belonged to Agrarian Reform Cooperatives. Later in 1972 the COREF was transformed into the Corporación Nacional Forestal (CONAF – Chile’s Forestry Service) with a wider mandate to afforest and reforest on a national scale.

Along with this organizational effort on the forest side, the government provided an extra push to two somewhat backward areas - Arauco and Constitución - by building two large pulp mills, one in the Arauco area and the other in the Maule area, more precisely in the small city of Constitución. These two plants were fully owned by CORFO, the State Development Agency. The raw material from the existing plantations plus that coming from the recently established plantations through the COREF, would be the source of raw material for these new mills, and in the process it would deal with unemployment and under-employment in the depressed agricultural areas, induced partly by over-farming and over-grazing over the past century and to an extent by the consequences of the agrarian reform.

At the same time the government sought to expand the plantation estate through what were known as Convenios de Reforestación (Reforestation Agreements). By means of these agreements a reformed property (a property that was subject to expropriation under the Agrarian Reform and later awarded to a peasant or a new owner) the new owner would sign a contract with CONAF under which the owner would provide the land and CONAF the resources for planting. After planting the owner would be responsible for the care of the plantation and the owner and CONAF would split the benefits at the time of harvest. Thus there were two state owned plantation programmes: one started by COREF on land purchased or leased from private owners with the plantation being wholly owned by the state; and the Convenios, in which CONAF held rights to the income/profits.

Future role of the state and the private sector

As all plantations are already fully privately owned and operated there are no changes envisaged. The government’s role as overseer and regulator does not limit tenure or use rights of forestry properties, except by way of the laws discussed earlier in this paper. Therefore the State cannot force private

owners to alter their forest management plans to supply or provide products and services "demanded" by the state or through it. As pointed out earlier plantations are considered to by specialized in the production of timber products.

It is unlikely there will be a step back to "nationalizing" forest land or privately owned plantations. This is a constitutional agreement, and unless there were be a total about turn in the political and constitutional order, which is not probable, plantations will remain privately owned. It is possible the State could detect a need for the establishment of new national parks or an addition to SNASPE in which case there is a constitutional procedure to expropriate private land and/or resources.

1.5 Reconciling public policy objectives and private sector investment

PRIVATISATION AND THE STATED GOVERNMENT GOALS

Business operations in Chile are developed in a climate of free enterprise and free trade. Simplified bureaucratic procedures are in force. The labour force is regarded as competent. Current trends include innovation in export market products, the application of new technology to industrial processes, free competition in local industries, development of joint private sector ventures, foreign participation in technologically oriented industries, and expanding service-oriented industries.

The government's economic and fiscal policy intends to achieve the overall growth of the economy, using some flexibility for development plans in predetermined sectors. One of the main thrusts of the government's macroeconomics program is to maintain the highest possible economic growth rate, low inflation rates and realistic foreign exchange rates.

Emphasis is also placed on promoting private sector involvement in social expenditure to improve education, housing and health services. Capital expenditure to free resources to cover social needs are leveraged through concessions. Ports and highways have been privatised, water catchments and distribution, electric generation, and distribution as well. Social and pension funds are administered by private companies. Education has been privatised through the Municipalities. In the case of health care there is a three fold system, part of it fully private, part of it privatised through the Municipalities and a few public hospitals.

A CONTINUING ROLE FOR THE GOVERNMENT

The Corporación Nacional Forestal CONAF, the Chilean Forest Service issued a document[1] laying out the role of government with regard to its forest policy. The main institutional objectives are:

- Contribute to the growth and sustainable use of the forest resources
  - ⇨ Develop tools for promoting the establishment of new plantations
  - ⇨ Management of the already exiting forests
  - ⇨ Promote forest research
- Conserve the representative natural ecosystems of the biological diversity of Chile.
- Contribute preferably to improve the quality of life for rural population through forestry actions
  - ⇨ Cooperate in the commercial management of the environmental and economic values of properties with degraded soils or affected by desertification processes.
  - ⇨ Promote the introduction of species that would enable the achievement of value added products, therefore greatly influencing resource capitalization.
  - ⇨ Promote equal opportunities for rural women
- Protect the forest ecosystems from dangerous pests

[1] CONAF. Gerencia de Desarrollo y Fomento Forestal. Gestión Período 1997 – 1997. Santiago, May 2000. 104 pages.

- ⇨ Protect the forest resource from pests, through the development of environmental, economic and socially acceptable tools.
- ⇨ Integral management of watersheds, strengthening the interrelation between soil, water and vegetation.
- ⇨ Promote integral resource management.

The government's policy has been that of actively seeking foreign investment to provide the needed capital and technology for economic development. Recognizing the importance of foreign investments for the future growth of the economy, Chile withdrew in 1985 from ANCOM (the Andean Common Market) in order to be free from ANCOM's restrictions regarding foreign investment. Thus, government policy towards foreign investment is liberal and open. Practically all forms of business activity are permitted for foreign investors.

The government has issued special statutes, in particular Decree Law Nº 600, modified by Decree Law Nº 1,748 of March 1977 (known as the Foreign Investment Statute), in order to promote foreign investment. Regional investment incentives are available, granting special benefits to certain regions of the country. In addition, fundamental activities to the country's development, such as small mining enterprises, transport and forestry are subject to special incentives. Capital and technology are sought for the development of new sources of copper, nitrates, iron, coal, and petroleum as well as for manufacturing, forestry, agriculture, and fisheries.

There are no specific restrictions for foreign investors in the forest sector in Chile. Likewise there are no percentage restrictions on foreign holdings nor on foreign ownership of buildings and land. Also, there are no restrictions on foreign ownership of local enterprises and joint ventures.

PRIVATISATION OF LANDS

Broadly speaking privatisation of land and forests has not been an issue in Chile for the past 30 years. Prior to that, and particularly at the beginning of the 60's, the Agrarian Reform was a social demand that was not resolved until Mr. Frei came to government (1964). During the Allende government (1970-1973), agrarian reform was deepened to include more agricultural land and expanded to include forests as well. At that time a law was passed to prevent plantation expropriation, but for native forests that was not the case. An symbolic expropriation took place in 1971. Nearly 160,000 hectares of forest in the Panguipulli area, in the Province of Valdivia that was controlled and managed by the state. The establishment of the Complejo Maderero Panguipulli, (Wood Panguipulli Complex) did not lead to increased production or productivity improvements; its establishment mostly resolved social tensions and demands.

During the first 25 years of the Military Junta, laws were passed to turn back the expropriated land to their former owners or to investors willing to acquire land. This process was termed the "Counter Reform". By means of the counter reform, to some extent the agrarian reform proposals were met, the "land was sold or transferred to those that worked it" not to the landlords. The process was reversed. Those benefited with land during the agrarian reform process were basically uneducated peasants and workers, who lacked capital and technology. There was an institution that was designed to provide technical and financial assistance to them (INDAP), but the needs exceeded the possibilities. This fact, tied to the progressive migration from the rural areas to urban opportunities, brought about by economic growth and development, attracted most of these new land owners, who at the end sold their lands or rights to it to investors, and established in the cities.

UNITARY GOVERNMENT

With regard to local level participation, it should be pointed out that Chile has a unitary government system. The country is organized in the following manner:

At the Central level	Regional level	Provincial level	County or Municipal level
President of the Republic elected by direct voting Assisted by Ministers	Intendent appointed by the President Regional Secretaries Appointed by the Intendent	Governor appointed by the President	Mayor and Municipal council elected by direct voting

The most serious matters and large investment decisions are made by the central government, the President and it ministers. At the regional level there is a limited budget which is fully decided upon by the Intendent and his supporting body. At the local level, the budget is made up by revenues from local sources as: plates of cars, permits, land and property taxes, and to a lesser amount a portion of what is known as the municipal common fund made up by the richest municipalities to assist the poor ones.

Under the above arrangements, local government has limited powers in relation to forestry. Broad policy actions are made from the top down more than from the bottom up. Laws are passed through discussions in the Chamber of Representatives (Cámara de Diputados) by representatives of local communities of the whole country, therefore the outcome is either by consensus or voting.

EXPECTATIONS AND GOVERNMENT POLICY

Chile was a traditional democracy. It was abruptly lost in 1973 as a consequence of not having been able to reconcile two very opposed and different visions. One leading to a socialist form of government, the other an occidental democracy. During 27 years the country was ruled by General Pinochet under the form of a dictatorship. The country experienced unprecedented changes. The economy was fully privatised. One major change was to establish the Central Bank (Federal Reserve) as a fully independent organization, such that the monetary policy is not in the hands of the government. The country withdrew from the Andean Pact, to open the economy to foreign investment without limits or quotas. The external trade was fully opened to the world and a policy of even and low tariffs was enforced.

Chile regained democracy in the late 90's. Since then, opponents to the Military Junta and Pinochet himself have governed the country. The first post-Pinochet government was Aylwin's centre Christian Democrats, followed by Mr. Eduardo Frei from the same party. From 1999 on the country has been governed by the socialist Mr. Ricardo Lagos. With such a wide range of opponents it could be anticipated that there would be a total change in the way the country would be ruled. Although has not been that way, there has been wide acceptance and agreement on the basic government policy from right hand side to leftist politicians. Conflicts are resolved through the constitutional arrangements and there is a stable and disciplined management of the economy and the social demands.

As for plantations policy. The basic DL 701 has remained as the cornerstone of the incentive policy for encouraging plantations. A major change was made at the end of Mr. Frei´s government (199), in the sense of opening the DL 701 with more incentives for the small forest land owners, or those located in remote areas or in areas subject to erosion threats.

With regard to native forest. The native law has been under discussion, now for nearly twelve years in the chamber of representatives. It is not clear when that law will be finally passed. There is some

concern about conversion of native forest when establishing plantations, though the law does not allow it.

OPTIONS FOR ACHIEVING INCREASED SUSTAINABILITY

Environmental Framework Law.

A main legal statue is Law No. 19,300, which sets out a system of environmental evaluation. This law applies to major industrial scale projects in all sectors, and does not set forth specific guidelines for forest management. The basic law was passed in 1994, but implementing regulations pertaining to environmental impact assessments was promulgated in 1994. CONAMA, the National Environment Commission (Comisión Nacional de Medio Ambiente), is responsible for evaluating individual impact assessments.

The government is committed to generate guidelines for dealing with the major environmental issues that cause concern among the population. Three of the topics refer to renewable natural heritage: water, biodiversity and the renewable natural resources, forest and fishing.

This environmental policy seeks the sustainability of the development process. Although it recognizes the importance of management of the environmental heritage for this purpose, the objective of promoting its protection and the sustainable use of the natural resources. The main public management efforts so far have focused on dealing with environmental pollution problems and their impact on the health of the population. Because of this, with regard to the environmental management of natural heritage resources, the mining sector is the one that has incorporated environmental management and decontamination policies at an early stage.

One substantive step in the design and implementation of Chile's Environmental Policy was the enacting of the Framework Environmental Law (Law N° 19,300) in 1994, which equipped the country with a legislation and an institutional framework regarding the environment.

OBJECTIVES OF THE ENVIRONMENTAL FRAMEWORK LAW

The stated public policy involved the following objectives in order to achieve increased sustainable private sector participation and at the same time securing public interest.

This general purpose is to promote the sustainable use of the renewable natural patrimony, managing it use, development and protection so that its access can be guaranteed to present and future generations of Chileans, and protecting its vital capacity.

Based on this general purpose, three specific goals are proposed in order to achieve sustainability of the natural patrimony, by means of acting upon the state of the natural patrimony, developing management mechanisms and providing the required conditions.

Objective 1: Improve the Condition of the Renewable Natural Heritage

Actions: Recover degraded areas and resources

Prevent deterioration of the natural heritage

Protect the natural heritage

Develop and investigate the natural heritage

Fulfil international commitments

Objective 2: Apply and Develop Management Instruments

Actions: Strengthen and co-ordinate the present public management system regarding natural heritage

Improve the institutional legal framework

Generate, disseminate and integrate information for management

Improve instruments for sustainability and develop new ones

Promote public-private co-operation

Objective 3: Create the Necessary Conditions for Sustainable Use of the Natural Heritage

Actions: Promote the participation and involvement of the population in management

Promote environmental education and a culture of caring for the natural heritage

Create opportunities for indigenous, fishing and rural communities

CONAMA, the Chilean EPA, has all the legal instruments and norms to enforce the Framework Environmental Law and therefore meet the above objectives.

Options for regulation in forestry

LEGAL PROCEDURES

The legal procedures in Chile, that monitor afforestation activities, are dictated by Decree Law 701. There is a very important and key activity in this regard. In order to claim benefits under the DL 701, the owner must declare its land as preferentially suitable for forestry, this must be approved by the Chilean Forest Service CONAF. If the land to be declared is in Use Class VI or above, it is unquestionably forest land, but if the land to be afforested is a marginal agricultural land, that piece of land must be inspected and technically assessed; if approved the land will be reclassified as preferentially suitable for forestry.

AFFORESTATION WITHOUT THE SUBSIDY

Plantations or afforestation without subsidy is treated as any other crop. No special requirements are posed on them, nor is an Environmental Impact Assessment required.

Contrary to what is required in the case of subsidy, in this case there is no obligation for reforestation. In general terms large companies will afforest without subsidy if the gains by site productivity compensate the forgone subsidy, this is particularly the case of Eucalyptus plantations in the best sites, close to the mills in short rotations.

For the average small and medium sized forest owner, planting with the subsidy, particularly in the case of longer rotations is very attractive, and therefore they will either plant in forest lands or will seek the reclassification of marginal agricultural lands.

CONTRACTUAL PROCEDURES

The law also applies to a change of ownership. New owners are required to observe the laws governing property preferentially suited for forestry. Their harvest plans must be approved by CONAF and new owners face stiff fines for not complying with reforestation responsibilities under law DL701.

1.6 Lessons from Chile's experience

THE ROLE OF THE STATE

The State seeks to attain a balance between the rights of persons and the society and the obligations they must have with regard to sustainability of the natural heritage. In its role as guarantor of the common good, the State must ensure and promote the responsible management of ecosystems and natural resources, the maintenance of supply of goods and services, and the generation of economic and social opportunities, with a long-range view. in this sense the following policies have been identified:

FOREST RESOURCES

The government's policy requires extraction and capture of renewable natural resources to respect their regeneration capacity and ensure the vitality and stability of the ecosystems on which they depends. Environmental liabilities must be recovered, re-establishing the renewal capacity of over-exploited resources and the health of damaged ecosystems. Efficient use of the natural heritage is

promoted, with an approach that integrates its characteristics and potentialities. In logging operations, economic efficiency is sought for the purpose of achieving an optimum social use and a sustainable economy, minimizing the adverse impacts on the environment.

The main challenge is the recovery of the quality of degraded soils in order to maintain their efficiency as a productive, social and ecological matrix. Sustainable use of soils must guarantee their productive capacity and the vitality of the ecosystems to which they belong. Because of this, activities that harm the resource must be restricted. Sustainable management of soils must be integrated with management of the forests, the water, the biodiversity and the territory, in consideration of the interactions among the various components of the natural heritage.

IMPROVEMENT OF THE NATIONAL SYSTEM OF STATE-OWNED WILDERNESS AREAS

The National System of State-owned Wilderness Areas (SNASPE) constitutes a solid base for conservation of the national biodiversity which should evolve toward an integrated terrestrial-marine public-private system. However, it presents some weaknesses that must be dealt with first. A first task is to complete the system, establishing its marine component, to which end a project is being promoted with the support of international funding. Similarly, the legal framework to facilitate the participation of private persons in the tasks of conservation of the biodiversity must be established. Another important task involves the incorporation of further units into the terrestrial SNASPE in order to increase its representativeness.

These are the areas of concern for the State. Plantations in general terms develop in a free environment, as they are largely established in flat land or moderate slopes, away from steep terrain, or where native forest grow, they are not subject to the restrictions imposed on native forests.

Although according to the law, conversion or substitution are not prohibited in Chile, and could be used, companies and small owners do not covert or substitute native forest by plantations.

According to the law, two very important limits to logging are imposed on the private sector. One is the prohibition of carrying out activities within given limits close to rivers, streams or lakes. The other one is the establishment of protection areas within private forests in steep terrain, limiting thereby property rights. This is being discussed in the context of the new Native Forest Law, as it is a responsibility of the state in keeping protection areas, therefore it is argued that the state should expropriate properties containing these lands at fair market values, compensating owners.

FOREST CERTIFICATION

There are two initiatives to develop forest certification standards in Chile. An FSC working group is developing standards for native forests and plantations under the name of Iniciativa de Certificación Forestal Independiente ICEFI (Independent Initiative in Forest Certification) for which the Generic FCS Standards are the basis.

A group of Chilean private institutions have developed the CertforChile Standard. This Standard has already been benchmarked with the FSC Generic Standard and has performed as well as that one. Both Standards address almost the same issues, the only big difference is the recognition of the GMO issue. FSC does not allow GM trees in certified forests. The CertforChile Standard enforces a precautionary principle; in general terms the Standard recognizes that the large scale application of new technologies, species or varieties will be recognized only if a prior impact assessment has shown that social, environmental and economic impacts are acceptable. The nine principles of the CertforChile standard are set out in Box 1.

The large and small forestry companies in Chile have supported the idea of developing a National Standard to be mutually recognized by other Certification initiatives, including FSC and particularly the PEFC.

FSC has certified the following area:

Native Forests	5,000 ha or 0.08 %
Plantations	247,000 ha or 12.00%

Attitudes towards certification have become more mature. Today, forest owners accept and are willing to undergo performance-based certification. Customers, particularly wood chip customers in Japan are pressing for some kind of certification. All the largest companies are already certified ISO 14,000. It should be noted, however, that in general terms FSC has succeeded in pushing its logo in forests of foreign owned companies rather than Chilean based companies. This must be pointed out, as in general companies and government favour a national based certification system mutually recognized under an international agreement as is the case of the PEFCC.

Government in general terms has a positive attitude towards certification. Although it should be pointed out that campaigns such as that of FSC through Forest Ethics, although not publicly admitted, whereby this group calls for boycotting Chilean exports of Radiata pine unless they bear the FSC logo has brought up resistance from the public, the companies and the government. The Government sees certification as a means of securing markets; capital formation through export gains in a major goal.

The Government until now has not taken any formal steps in implementing a control system involving the Montreal Process. According to what a CONAF official reported, they are currently preparing a format for applying the Montreal Process criteria and indicators in monitoring and controlling management standards in plantations. It will be operative maybe in a year time.

None of these two initiatives is still operational. Although CertforChile, during its development process carried out Pilot Trials. These trials proved that in preparation or having most companies undergone ISO 14,000 Certification, their actual forest management standards are very high.

1.7 Conclusions and ways forward

RESOURCE BACKUP

The forestry sector in Chile has always have some predominance. During the first half of the 20th Century forestry was particularly important for Regions IX, X and XI where the first large sawmills and plywood mills were installed. During the decades from 1930 to 1960 selective cutting and wildfires led to a rapid depletion of native forests. It was shortly after the severe 1960 earthquake in the South of Chile that provoked a large demand, in a very short period, of large amounts of lumber for reconstruction purposes, that the centre of gravity of the forestry based resources shifted towards Radiata pine plantations that were fully privately developed and owned.

The fifteen years that elapsed between the 1950's until 1965 were a parenthesis. From 1965 on a growing concern about forest industrialization was expressed by the administration of the time, that supported large incentive programs to promote industrialization of the plantations. A benchmark in the forestry history of Chile was 1974 when the DL 701 was passed. Thereafter, the planted area began growing at exceptional rates, all in the hands of private owners, new industries began their operations or new installations were created, forest products were diversified, forest exports expanded phenomenally, since then more attention has been paid to this sector.

Forest resources in Chile are two-fold: on one hand the native forest, with a high diversity of species, some of them such as the Alerce that can take 2,000 years to grow, or the nine species of Nothofagus (beech) that might take more than a hundred years to achieve maturity. In general terms Chile's native forest species are older, grow less rapidly and can be replaced less easily than some plantation species.

On the other the plantations in Chile are characterized by two species: the long fibre Radiata pine and the short fibre Eucalyptus. Radiata pine grows in 22 to 25 years rotations for pulpwood and solid products purposes while Eucalyptus grows in the average of 10 to 12 years rotations as pulpwood. Within the last century the nature and composition of Chile's forest capital underwent a revolutionary transformation. The introduction of Radiata pine about a hundred years ago and the expansion of the Eucalyptus base since 1990, have permitted the establishment of rapidly growing plantations.

INDUSTRIALIZATION

Since 1960 a rapid expansion of the plantation based industrial roundwood has been channelled to the industry. It grew from 23% in 1962 up to 78% in 1975 and to 96% in 2000. During the last decade more than eighty per cent of timber cut came from Radiata pine plantations. Furthermore, the introduction of Radiata pine to Chile permitted the establishment and expansion of long fibre pulp and much of the paper industries which are dependent on Radiata pine, but also the export oriented short fibre pulp manufactured from Eucalyptus has grown enormously.

The technological transfer of the forest species such as Radiata pine first and then Eucalyptus has led to the long term survival of the forestry sector by permitting accelerated growth of the plantation segment of Chile's forest capital stock. Both species have led to the creation of numerous new industries and these new industries, in turn, have created additional demand for timber from Radiata pine and Eucalyptus plantations, with two major consequences:

- a sharp increase in the rate of forest capital accumulation due to the rapid growth of plantations and
- the increased supply of fibre for which global industrial demand has increased almost continuously and phenomenally.

This technology transfer promoted the "industrialization" of Chile's forests and a rapid growth of the nation's forestry-based industry. Chile's story of success in pulp and paper begun in 1965 and further expanded in 1972 with the establishment of the Arauco and Constitución mills, which were followed in the 80's by at least three additional pulp mills and the expansion of others. This was paralleled by the installation of several very modern and large sawmills and lately by a veneer mill. In the early 90's related remanufacturing industries were established completing this story of success of privately owned plantations providing a large amount of raw forest material.

The forestry sector had extensive but uneven production linkages with forestry based industry, construction, agriculture, banking and transportation. A permanent forest sector and forest product export boom requires a comprehensive forestry-facilitating transport revolution that improves quality of service, reduces costs, incorporates distant regions into the economic mainstream and combines government support with private initiative.

The dynamic growth of modern, capital intensive pulp, paper, sawmills and wood based panels has also promoted employment. Direct employment may not have increased in direct relation to output, particularly in the modern pulp and paper and sawmilling sectors, but the forestry sector is still characterized by production pluralism with many very large, medium sized and small manufacturing mills generating most of the employment. Indirect employment has more than tripled direct employment with a very high 1998 record of about 124 thousand employees, down to the current 117 thousand. Of this employment 12% is in related services, 54% in the industry and 34% in logging and silvicultural operations.

ECONOMIC IMPACTS

The distribution of income linkages of forestry growth have been both important and limited. New sources of labour and other income were created in the south. Forestry added regional balance to the notoriously regionally unbalanced economic fabric of Chile by itself, however, forestry and related industries could not and did not create labour scarcity in regions VII, VIII, IX or X. Forestry development contributed and strengthened the pluralistic and heterogeneous income distribution pattern both between and within income shares. Both in the past and up to the present, well compensated skilled labour, managers, professionals coexisted with blue collar workers of the sawmills earning lower wages, the numerous low income self-employed foresters and the many seasonal and frequently very poor workers engaged in timber extraction and small saw-mills. This wage pluralism and the parallel "capital compensation pluralism are related to different degrees of capital intensity, education and so forth.

The transfer of technology embodied in Radiata pine plantations greatly strengthened the forestry sector's capital formation linkages with the rest of Chile's economy: it speeded up the rate of

accumulation of the total forest capital stock; it facilitated establishment and expansion of industries that feed on plantation forest capital being depleted, such as pulp, paper, veneers and so forth; it generated demand for previously arid or uncultivated land that was suitable for afforestation; it generated demand for machinery and equipment to be used in extraction and transformation of timber and in providing ancillary services - much of this machinery and equipment was imported.

The overall forest capital depletion facilitated capital formation in housing which for decades was Chile's most important investment component. Exploitation of Chile's native and plantation forest capital permitted import substitution and export promotion in forestry based industries and the transfer of technological capital related to this sector from abroad to Chile.

The high rate of native forest depletion due to fire and insects prompted technological transfer of: fire protection and control services to Chile from Germany and Canada, and all the administrations have undertaken major efforts to maintain and improve the quantity and quality of forest capital since 1973. The need to increase productivity has led to subcontracting, specialization, mechanization and capital intensity. Strong competition among suppliers and an artificially low foreign exchange rate have kept capital goods prices low, and have led to a higher degree of mechanization than would have been achieved had the foreign exchange rate not been so over valued.

Box 1. The 9 Principles of the CertforChile standard

In order to provide a better understanding of the key issues related to what in Chile is considered proper forest management, a set of highlights criteria are presented along with the respective principles.

Principle 1. The use of forest resources must be planned and managed in order to provide a sustained flow of products and services in successive rotations. Management must be in accordance with a long term comprehensive management plan for the Forest Management Unit (FMU can belong to a single owner or to a group) appropriate to the scale of the operations. The management plan must be prepared before operations are started.

- Criterion 1.1 Forest managers are formally committed to sustainable forest management and can demonstrate their intention to continue with forestry activities in the FMU for at least one more rotation.
- Criterion 1.2 There is a forest management plan appropriate to the scale of operations, which is implemented. The plan clearly specifies the objectives of forest management.
- Criterion 1.6 The large scale application of new technologies, species or varieties is adopted under a precautionary principle. These are only adopted if a prior impact assessment has shown that social, environmental and economic impacts are acceptable.

Principle 2: The use of forest resources must be planned and managed in such a way that the environmental value of native ecosystems contained in the FMU are protected and that negative impacts on biodiversity are minimized.

- Criterion 2.1 Plantations will not be established in areas that contain forests or other native vegetation types of high conservation value or in commercially productive native forests.
- Criterion 2.2 The planning system of the FMU takes into account the existence , environmental value and management needs of different types of native vegetation.
- Criterion 2.3 Areas with high conservation value native vegetation are managed so as to maintain the biodiversity they provide.

Principle 3: Forest resources should be managed so as to maintain their health, vitality and productivity, by protecting them from fires and other damaging agents.

- Criterion 3.2 The control of pathogens and other damaging agents is carried out according to the principles of integrated pest management. Activities are carried out so as to

minimize negative environmental impacts. The entire forest resource is protected from damage by animals.

Criterion 3.4 The control of plantation weeds should be carried out so as to maximize the growth of trees while minimizing the use of herbicides.

Principle 4: Forest resources are managed so as to promote soil conservation and to minimize adverse impacts on the quantity and quality of water resources, taking particular account of the needs of downstream communities.

Criterion 4.1 There is a classification of soil types according to their fragility or level of erosion and of water bodies and rivers appropriate to the scale and intensity of operations.

Criterion 4.3 Roads are planned, built and maintained so as to minimise erosion and the carriage of sediments into watercourse.

Criterion 4.5 The planning of forest management is done so as to avoid the contamination of water as well as the reduction of water flow in areas with water shortage a where rivers supply downstream communities.

Principle 5: Forest managers must respect the traditional and customary uses and rights of local communities, maintaining good neighbour relations with them and supporting the development of local capacities which contribute to the improvement of their quality of life.

Criterion 5.1 Forest managers have knowledge of the impact of their activities on local communities.

Criterion 5.2 Forest managers make contributions towards improving the quality of life of surrounding communities.

Principle 6: Forest managers will take into account declared agreements, documented commitments and respect the legally established rights and the traditional knowledge of indigenous peoples to use and manage their lands and resources

Criterion 6.1 Forest managers are aware of the presence of indigenous peoples in the area of their management activities. They know the rights of these peoples and respect them.

Criterion 6.3 Indigenous communities are fairly compensated for any use of their traditional knowledge about forest management and the specific use of indigenous plant species by forest managers.

Principle 7: Forest managers will respect the rights of the forest workers, compensating them fairly and equitably, safeguarding their health and safety at work.

Criterion 7.1 Forest managers ensure that forest workers are trained so that they can carry out their work in a productive manner and that they also have opportunities for development.

Criterion 7.2 Forest managers respect the rights of workers to the benefits of organising themselves and of collective bargaining.

Criterion 7.5 Forest managers provide field workers adequate transport, accommodation, rest and food.

Principle 8: Forest managers respect the laws of Chile and international agreements and legally biding treaties and will take into consideration any other agreements and treaties, to which Chile is a signatory.

Criterion 8.1 Forest managers know and respect national legislation applicable to their activities.

Criterion 8.2 Forest managers know and respect legally binding international treaties to which Chile is a signatory.

Principle 9: Regular monitoring of the forest resources, the management system and the responsible companies and owners of the FMU, will be conducted with the purpose of evaluating the progress in achieving the stated principles

Criterion 9.1	There are procedures for regular evaluation of the condition of the forest resources and of the significant environmental social and economic impacts of forestry operations. Monitoring procedures are consistent, replicable over time and allow for comparison of the evaluation of the results of change.
Criterion 9.3	There is a procedure to trace and account for the quantity of wood coming from certified forests (the FMU itself or purchased from other certified forests) that is sold to processing plants, from its origin in the forest to its point of sale (A procedure known as chain of custody).