PÖYRY

Final Report

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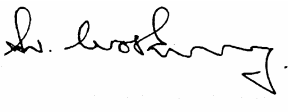
Sino-Forest Corporation
Valuation of China Forest Crop Assets
As at 31 December 2008

PREFACE

This report is issued by Pöyry Forest Industry Pte Ltd to Sino-Forest Corporation for its own use. No responsibility is accepted for any other use.

The report contains the opinion of Pöyry as to the **Value of Sino-Forest's Plantation Forest Crop Assets as at 31 December 2008**. Nothing in the report is, or should be relied upon, as a promise by Pöyry as to the future growth, yields, costs or returns of the forests. Actual results may be different from the opinion contained in this report, as anticipated events may not occur as expected and the variation may be significant. Pöyry has no responsibility to update this report for events and circumstances occurring after the date of this report.



Andy Fyfe
PRESIDENT

Steve Croskery
SENIOR CONSULTANT

Contact details:

2 Battery Road
#21-01 Maybank Tower
Singapore 049907
Tel. +65 6733 3331
Fax +65 6734 6198
E-mail: andy.fyfe@poyry.com

Pöyry Forest Industry Pte Ltd

CERTIFICATION

Pöyry certify to the following statements to the best of our knowledge and belief:

- The statements of fact contained in this report are true and correct.
- The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are our personal, impartial, and unbiased professional analyses, opinions, and conclusions.
- Pöyry has no present or prospective interest in the subject property, and no personal interest or bias with respect to the parties involved.
- Pöyry's engagement in this assignment was not contingent upon developing or reporting predetermined results.
- Pöyry's compensation for completing this assignment is not contingent upon:
  1. The development or reporting of a predetermined value or direction in value that favours the cause of the client
  2. The amount of the value opinion
  3. The attainment of a stipulated result, or
  4. The occurrence of a subsequent event directly related to the intended use of this appraisal.
- The report has been prepared by staff consultants, retained consultants and office support personnel of Pöyry.

Andy Fyfe
PRESIDENT

Pöyry Forest Industry

ASSUMPTIONS AND LIMITING CONDITIONS

This report was prepared at the request of and for the exclusive use of the client, Sino-Forest Corporation. This report may not be used for any purpose other than the purpose for which it was prepared. Its use is restricted to consideration of its entire contents. This valuation represents an update of Pöyry's 31 December 2007 forest valuation that was presented in Report 54A10006: *Valuation of China Forest Assets as at 31 December 2007*.

Data describing the area of forest owned, by species, age and location were provided by Sino-Forest.

Pöyry has not viewed any of the contracts relating to forest land use rights or cutting rights or forest asset purchases. Legal matters are beyond the scope of this report and the valuation is prepared on the assumption that titles to the forest assets are according to the data provided by Sino-Forest. Maps, diagrams and pictures presented in this report are intended merely to assist the reader.

Inspections of Sino-Forest areas were made as part of this valuation. These were at specific locations selected by Pöyry and in the main species comprising the Sino-Forest estate, i.e. Chinese fir, eucalypts and pines. The inspections were carried out in Guangdong, Guangxi and Hunan provinces during the period 30 October to 11 December 2008.

This appraisal assumes that the forests visited by Pöyry in the field inspection represent the full range of conditions that exist for the species seen. The forest inspection process comprised driving to and walking through and around selected forest areas, and an inventory of about 100 plots in which trees were measured.

For species not assessed as part of this year's valuation, Pöyry has applied yield estimates that it has previously derived. This applies particularly to broadleaf forest in Yunnan which was the focus of last year's field inspection.

Any existing liens and encumbrances have been disregarded, and the forest resource has been appraised as though free and clear under responsible ownership and competent management.

Unless otherwise stated in this report, the existence of hazardous materials or other adverse environmental conditions, which may or may not be present on the property, were neither called to the attention of Pöyry, nor did the consultants become aware of such during the inspection.

Pöyry recognizes the possibility that any valuation can eventually become the subject of audit or court testimony. If such audit or testimony becomes necessary as a result of this valuation, it will be a new assignment subject to fees then in effect. Pöyry has no responsibility to update this report for events and circumstances occurring after the date of this report.

Any liability on the part of Pöyry is limited to the amount of fee actually collected for work conducted by Pöyry. Nothing in the report is, or should be relied upon, as a promise by Pöyry as to the future growth, yields, costs or returns of the forests. Actual results may be different from the opinion contained in this report, as anticipated events may not occur as expected and the variation may be significant.

SUMMARY

Sino-Forest Corporation (Sino-Forest) is a forest management and trading company that owns and operates about 335 000 hectares (ha) of commercial forest.

The forest estate is composed mainly of Chinese fir, eucalypts, Masson pine, broadleaf species, and a variety of other species. Most of the forest is situated in the Guangxi, Hunan, and Guangdong provinces of southern China.

Since 2003, Pöyry has conducted annual market valuations for Sino-Forest. Pöyry has been engaged by Sino-Forest to estimate the market value of the tree crops in these forests, as at 31 December 2008, which is the subject of this report.

Unlike most forest owners and managers, Sino-Forest actively trades in forests. Each year the Company both sells and buys forests, and accordingly the composition of the forest estate changes much more than for a business that is simply managing and harvesting a more static resource.

Over the past year the area of the estate has increased by 23 000 ha, or 7% over the 2007 area. Pöyry's comparison of the areas as at December 2007 and 2008, by species, province and planting year, indicates however that a maximum of 52% of Sino-Forest's estate, as at 31 December 2008 could have been within the estate just one year earlier. Further, as at December 2008 the area weighted average age of the forest was 15.3 years compared with 12.2 years at December 2007. Sino-Forest's estate could be described as 'dynamic'.

For valuation purposes, such a dynamic forest estate requires careful review of the key components influencing wood flows and cash flows. As part of this year's valuation, Pöyry has conducted an inventory of the main species in Guangxi, Hunan and Guangdong provinces. In addition, Pöyry has sought to verify Sino-Forest's representation of the net stocked area of forest. These two factors (yield and stocked area) are the main physical features of the forest that influence wood flow, cash flow and forest value.

Pöyry has also reviewed the key financial factors influencing forest value, including log prices, forestry and harvesting costs, and the appropriate discount rate to apply to the cash flows expected to arise from the forest estate.

Pöyry has estimated the market value of Sino-Forest's tree crop assets, as at 31 December 2008, to be USD1 644.6 million.

This is the net present value of the cash flows expected to arise from the management and harvest of the existing tree crops over their current rotation. A discount rate of 11.5% has been applied to these pre-tax cash flows. This is the same discount rate as applied last year. This market value does not include costs associated with the regeneration of the existing forest, nor revenues from their harvesting and sale.

Table S-1 shows the sensitivity of the tree crop value to changes in the discount rate.

Table S-1:
Tree Crop Value Sensitivity to Discount Rate

Basis of Cash Flow	Real Discount Rate Applied to Pre-tax Cash Flows		
	10.5%	11.5%	12.5%
	Net Present Value (USD million)		
Single current rotation of existing forest (335,087 ha)	1 701.713	**1 644.602**	1 591.318

The market value of Sino-Forest's tree crop assets as at December 2008 has increased by USD399 million, or 30% from Pöyry's valuation as at December 2007. The following table lists the key factors that have produced this change in value and their respective amounts of value contribution.

Table S-2:
Key Components Producing the Change in Tree Crop Value 2007-2008

	Forest Value	Single Factor Value Change	Value Change
Item	USD (millions)	USD (millions)	%
Market Value as at 31-Dec 2007	**1 245.284**		
As at 31-Dec 2008			
Change in Forest Area by species and age	1 330.754	85.47	7
Change in Yield Tables - volume	1 440.996	110.242	8
Change in Yield Tables - grade	1 663.237	222.241	15
Change in Log Prices	1 597.466	- 65.771	-4
Change in Logging Costs	1 486.688	- 110.778	-7
Change in Harvest Tax *(corrected application)*	1 551.191	64.503	4
Change in Cartage Costs	1 577.821	26.63	2
Change in Land Rental Cost	1 558.720	- 19.101	-1
Change in Harvesting Strategy	1 543.194	- 15.526	-1
Change in FX	1 644.602	101.408	7
Total		**399.318**	**30**
Market Value as at 31-Dec 2008	**1 644.602**		

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GLOSSARY

Abbreviation	Meaning
AAC	Annual allowable cut
AMG	At-mill-gate
CAPM	Capital asset pricing model
CPI	Consumer Price Index
DCF	Discounted cash flow
ha	Hectare
IDR	Implied discount rate
km	Kilometre
m^3	Cubic metre
m^3/s	Cubic metre per second
MAI	Mean annual increment
RMB	Renminbi
TRV	Total recoverable volume
TSV	Total standing volume
USD	United States dollars
WACC	Weighted average cost of capital

1 INTRODUCTION

Sino-Forest Corporation (**Sino-Forest**) owns and operates approximately 335 000 hectares (ha) of forest in China. There are two main business models operated by Sino-Forest. The first is the establishment, management and harvest of new forests. The second is the acquisition, management and harvest or stumpage sale of existing tree crops and forests. A stumpage sale is the sale of trees while they are still standing in the forest. Here, the future harvesting of the forest is the responsibility of the eventual purchaser. Stumpage sales may be limited to existing forest cutting rights or may also include the sale of the future rights to use the land. This aspect of Sino-Forest's business could be described as forest management and trading.

Pöyry Forest Industry Ltd (**Pöyry**) has been requested by Sino-Forest to prepare a valuation of its forest crop assets in China, as at 31 December 2008. Pöyry has previously conducted forest valuations for Sino-Forest in 2000, 2001, and 2003 to 2007 inclusive.

This valuation presents an update of Pöyry's 31 December 2007 forest valuation that was presented in Report 54A10006.

2 PURPOSE AND SCOPE

2.1 Purpose of the Valuation Update

The purpose of the valuation is to estimate the market value of the forests for asset reporting purposes. A useful definition of "market value" is:

> *"the most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming that the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:*
>
> - *The buyer and seller are typically motivated.*
> - *Both parties are well informed or well advised, and acting in what they consider their own best interests.*
> - *A reasonable time is allowed for exposure in the open market.*
> - *The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale"*[1].

The market value of the tree crop assets is estimated as at **31 December 2008**.

The term "Market Value" is usually interchangeable with "Fair Value" as defined in International Accounting Standard 41 (IAS 41). IAS 41 prescribes the accounting treatment, financial statement presentation, and disclosures related to agricultural activity.

In IAS 41, "Fair Value" is defined as "*the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction*".

2.2 Scope of the Valuation Update

As a valuation update, the exercise has specifically addressed the following:

- Changes to the area of tree crops, by location, species and age, between 31 December 2007 and 31 December 2008.
- Acknowledgement of recent inventory data and their impact on yield estimates.
- Acknowledgement of changes in forestry and harvest related costs.
- Acknowledgement of the impact of the global economic recession on demand for logs and reduced log prices in the near term.

[1] Uniform Standards of Professional Appraisal Practice, The Appraisal Institute (www.appraisalinstitute.org).

- Acknowledgement of expectations for generally higher longer term log prices.
- The relative maturity and age-class profile of the Sino-Forest estate, and the potential to harvest a large volume of wood in the near term.

3 VALUATION METHODOLOGY

It is recommended practice when appraising real property to consider three main approaches:

- The *comparable sales* method (i.e. referencing the results of market transactions of other properties similar to the subject property).
- The *income* method (i.e. assessing the present value of the anticipated future net earnings stream).
- The *costs* method (i.e. acknowledging what it would cost to recreate the asset in its current condition).

It then rests with the appraiser's professional judgement to assess what weighting should be applied to the results from the respective methods.

The assessment of forest investments generally requires the examination of cash flows over a long time period. This leads to the application of discounted cash flow analysis techniques (DCF) as an indispensable part of the appraisal process. Each of the three main approaches may come to be applied within a DCF framework. Thus;

- The *cost* method may be applied with wholly young stands and especially those where relying on a discounting approach alone produces values unlikely to be supported by the market. In valuing the young stands reference is made to their costs of establishment. In order to recognise the forest owner's entitlement to a return on investment, a compounding approach may be applied, requiring the selection of a suitable compounding rate. Compounding is the inverse of discounting and there is a need to select an appropriate rate.
- The *income* method employs a conventional discounting approach. In referencing wider evidence of investors' expectations of a return on capital, one common basis for the discount rate is the Weighted Average Cost of Capital (WACC). The cost of equity may be examined within the Capital Asset Pricing Model (CAPM).
- The *comparable sales* approach may also employ a DCF framework. This is particularly necessary because such sales evidence as does exist is rarely immediately comparable on a convenient unit basis (e.g. $/hectare or $/$m^3$). In order to effect adjustments it is necessary to consider relative forest maturity, and this leads back to DCF analysis. Ultimately the one parameter that can be distilled from sales and then extrapolated to a subject forest is the Implied Discount Rate (IDR). This is obtained from other contemporary transactions by relating constructed cash flows for the sold forests to their respective transaction values.

It is Pöyry's opinion that the parties to any real or hypothetical transaction involving Sino-Forest's forest assets would not attribute weight to the cost method of valuation. This method has not therefore been further addressed in this valuation.

Both the comparable sales and income approaches have been considered. Their application has shared the same forest estate model which provides the means of projecting future anticipated cash flows[2]. The distinction between the approaches has been maintained in the basis for selecting the discount rates.

The scope of the market valuation is confined to the projected cash flows arising from the existing tree crop. Previous expenditure on the forest is treated as "sunk" and is therefore excluded from the derivation of value. Perpetual wood-flows are modelled, but their financial contributions are not included in the derived market value.

A full description of Valuation Methodology is provided in Appendix 1.

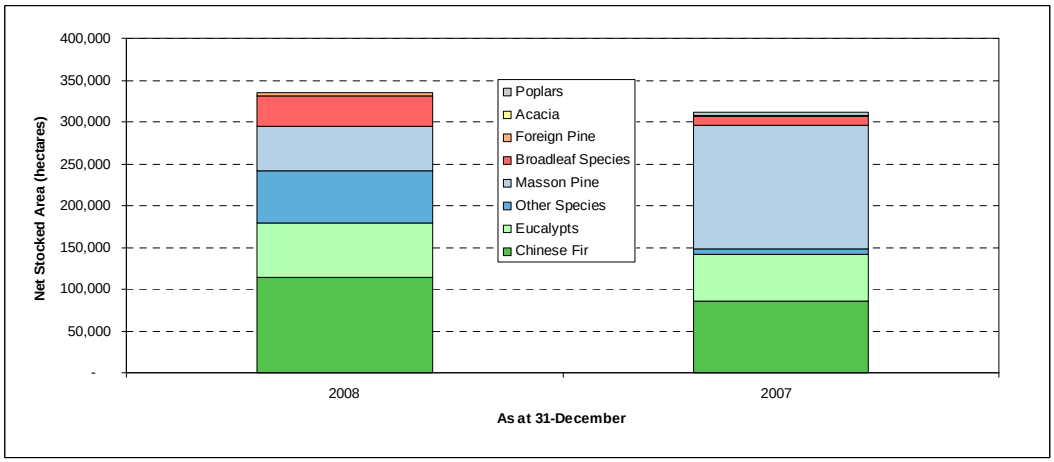
[2] It is debatable whether the *income* and *comparable sales* approaches should share exactly the same basis for cash flow projection. It could be argued that the WACC employed in the *income* approach inherently assumes that the cash flows have been "de-risked" to a greater extent than commonly applies in the derivation of IDRs.

4 FOREST DESCRIPTION

Since Pöyry's December 2007 valuation, the area of forest operated by Sino-Forest's has increased from approximately 312 000 ha to over 335 000 ha. Guangxi, Hunan and Guangdong are still the three largest provinces in terms of Sino-Forest's holdings. The area of forest owned in Yunnan has quadrupled from around 10 000 ha to almost 40 000 ha over the past year. See Figure 4-1.

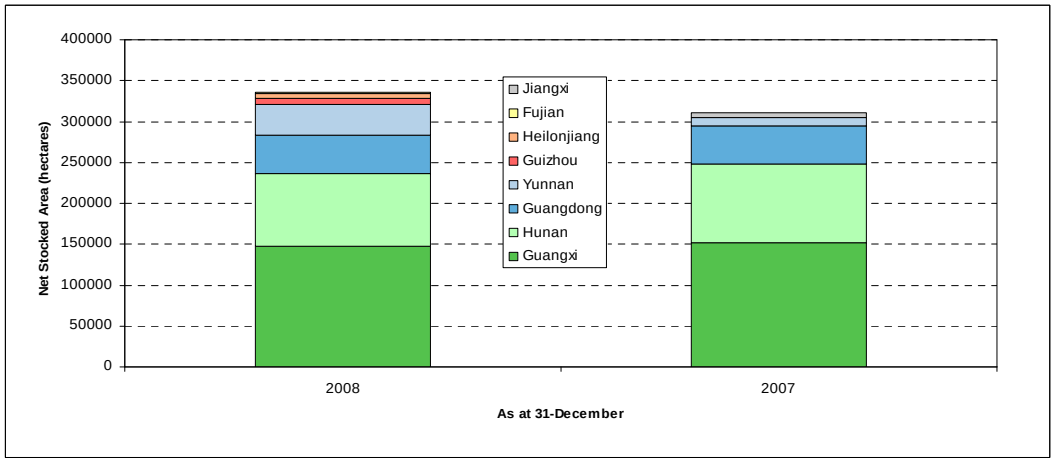
The species and age composition of the forest estate has changed over the past year. Large areas of pines have been sold, and large areas of broadleaf, Chinese fir and other mixed species have been acquired. The area weighted average age of the Sino-Forest estate, as at 31 December 2008 is 15.3 years. This compares with an area weighted average age of 12.2 years, as at 31 December 2007. Considering that the typical age of harvest of Chinese fir, pines and broadleaf forests in southern China is in the range 18 to 30 years, the Sino-Forest estate could be described as relatively mature. See Figure 4-1.

Figure 4-1:
Sino-Forest Area of Forest Owned by Species - December 2008 and 2007



Eucalypts (mainly *E.grandis * urophylla*), Other Species (a variety of species including intimate mixtures such as pine and hardwoods), Broadleaf species (mostly second growth hardwood forest in Yunnan), Foreign pine (mainly slash pine i.e. *Pinus elliottii*)

Figure 4-2:
Sino-Forest Area of Forest Owned by Province - December 2008 and 2007



When applied to plantation forest resources, the term “Forest Description” is a technical term. It includes all aspects of the forest’s current physical condition. It also includes projections of the forests future growth performance. Further, it includes financial parameters; specifically the costs involved in growing and harvesting the forest and estimates of the prices for the products that will arise.

The following sections describe the forest resource in terms of the stocked area, the nature of the land and terrain, the species planted, and Pöyry’s estimates of future growth and yield. This comprises the ‘physical forest description’.

Subsequent sections outline the ‘financial forest description’ which details all forestry and harvesting costs. It also includes Pöyry’s analysis of anticipated log prices, both current and projected.

The physical and financial forest descriptions are combined in a forest estate model. This allows for the modelling of the forest in terms of the physical wood flows as well as the financial cash flows.

Sino-Forest provided Pöyry with detailed data describing the area of forest crops owned by species, planting year and location. It also specified which forests were planted by Sino-Forest and which were purchased. Based on this data, as at 31 December 2008 Sino-Forest owns 335 087 ha of forest crops.

A summary of these data is presented in the following map, and charts.

Map 4-1:
Location of Sino-Forest’s China Forest Assets

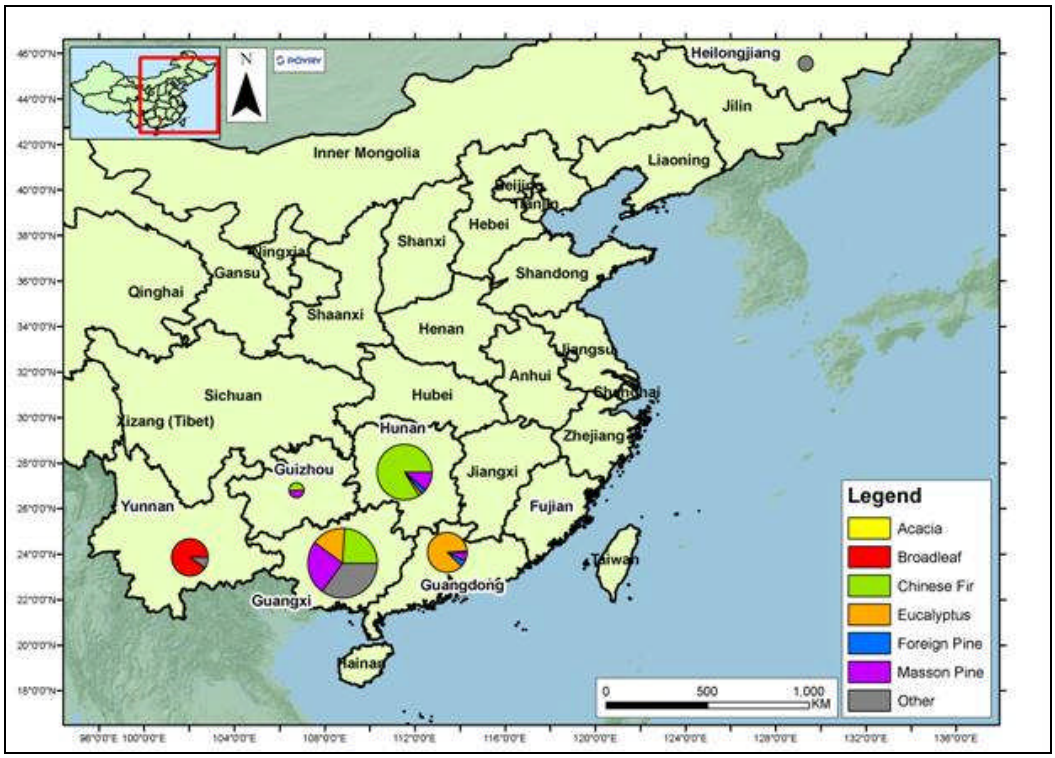


Figure 4-3:
Area of Forest by Species and Age as at 31 December 2008

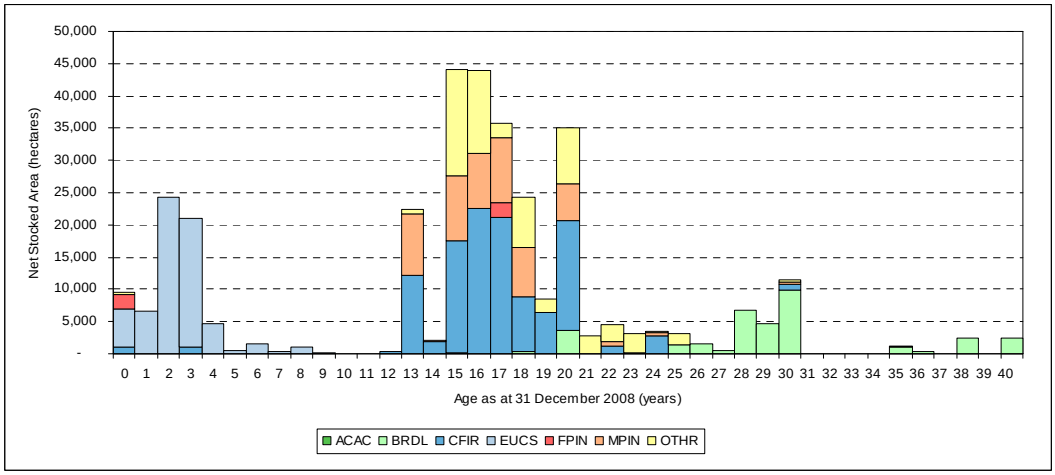
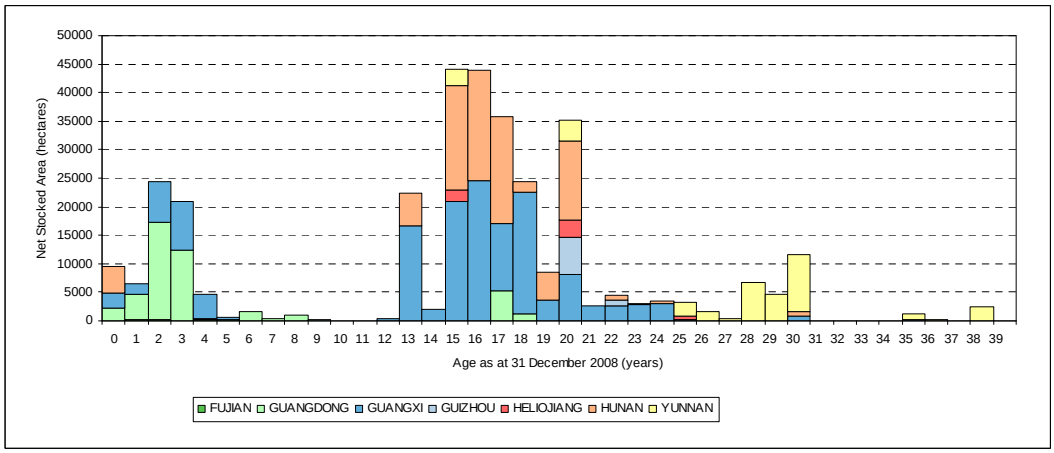


Figure 4-4:
Area of Forest by Province and Age as at 31 December 2008



4.1 Field Inspections

As part of the 2009 valuation Pöyry undertook a field inspection exercise. The main purpose of the inspection is to compare the forest description provided by the client with the actual conditions on the ground.

Pöyry's normal approach to forest inspection is to visit different parts of the forest estate over successive valuations and thereby confirm the full forest description over a period of time.

This is more challenging in the case of Sino-Forest who not only manages and harvests forests, but also actively trades areas of forest owned. As a result, the composition of Sino-Forest's estate can change quite significantly from one year to the next. Pöyry's comparisons of the stocked area by species, province and planting year, as at 31 December 2007 and 2008, indicates that a maximum of 52% of Sino-Forest's estate, as at 31 December 2008, could have been within the Sino-Forest estate just one year earlier.

As the Sino-Forest resource changes significantly year by year, there is a greater need for more detailed annual forest inspections and forest description reviews.

The field inspection for the 2008 valuation was split into two parts, one for the planted forests, and one for the purchased forests (see Appendices 2 and 3). The purchased forests are made up mainly of Chinese fir, pines, 'Other Species' (often a mixture of various broadleaf species and Masson pine), and broadleaf forests.

Together, Guangxi and Hunan contain about 224 500 ha or about 79% of the purchased forest area of 284 400 ha. Forty-nine percent is in Guangxi and 30% in Hunan. These two provinces contain 95% of the Chinese fir, 85% of the 'Other Species', and 84% of the Masson pine.

Eucalypts make up about 47 100 ha or 93% of the total planted forest area of around 50 700 ha. Together the provinces of Guangxi and Guangdong contain 46 300 ha or 98% of total eucalypt resources, with 81% in Guangdong, and 17% in Guangxi.

Accordingly, this year the field inspections were carried out in purchased forests in Guangxi and Hunan, and in planted forests in Guangdong and Guangxi.

The work undertaken during the field inspections comprised:

- Establishing plots and measuring trees
- Recording GPS locations and associated land form and vegetation type
- Traversing compartment boundaries to obtain a digital track of the planted perimeter
- Interviews with Forest Bureaus and local forestry, harvesting and cartage contractors
- Interviews with staff at wood processing facilities and log buyers.

Section 4.3 deals with the work undertaken to verify the stocked area of forest.

4.2 Land and Tree Crops

The following table provides some provincial statistics on area, forest cover and terrain for the seven provinces in which Sino-Forest owns forests.

Table 4-1:
General Information on Area Cover and Terrain Statistics for Sino-Forest Provinces

Provincial	Total Land Area (ha * 1000)	Assigned as Land for Forestry by State (ha * 1000)	Forest Area (ha * 1000)	Mountain %	Hill %	Flat %
Heilongjiang	45 460	20 265	17 975	18	40	42
Yunnan	38 264	24 248	15 600	84	10	6
Guangxi	23 630	13 662	9 838	62	18	20
Hunan	21 180	11 714	8 608	51	26	23
Guangdong	17 800	10 480	8 270	32	29	39
Guizhou	17 647	7 618	4 205	31	62	7
Fujian	12 140	9 080	7 650	35	50	15

Note: these are provincial level statistics, not applying specifically to Sino-Forest's forest or land

Mountain land is typically >35 degrees in slope, and flat land <15 degrees. Most commercial forest is on hill and mountain land. The nature of the forest terrain in the various provinces has been used in combination with actual local data to estimate logging costs (see Section 6.2).

The main species within the Sino-Forest estate are Chinese fir, *Eucalyptus grandis* x *urophylla*, and Masson pine which make up nearly 70% of the area. Other species (a variety of species including mixtures of pine and hardwoods), make up about 20% of the stocked area.

The following table provides some general information on the three main single species.

Table 4-2:
General Information on Main Species in Sino-Forest Estate

Species	Botanical Name	Native to	General Stem Form	Normal Rotation Range	Average Rotation	MAI*(of TSV**)
					Years	m^3/ha/Y
Chinese Fir	*Cunninghamia lanceolata*	China	Excellent	18-30	22	12
Eucalypts	*E.grandis etc.*	Australia	Very good	4-7	5	20
Masson Pine	*Pinus massoniana*	China	Poor	15-25	20	8
Chinese Fir	*Cunninghamia lanceolata*	Highly regarded as a construction and furniture material. Attracts high prices.				
Eucalypts	*E.grandis etc.*	Fast growing source of hardwood fibre for pulp and re-constituted boards (MDF etc). Some sawn and veneer. Low to medium prices.				
Masson Pine	*Pinus massoniana*	A versatile species used for construction, pit props, veneer, pulp wood and resin. Medium to high prices.				

* MAI = Mean annual increment
**TSV = Total standing volume

4.3 Forest Area

Two key components of the physical forest description are the net stocked area of forest and the harvest yield or volume of logs per unit area. The product of these factors, area (in ha) and yield (in cubic metres per hectare) are the main features of the forest that determine the wood flow. Accordingly it is important for the forest valuer to independently assess both the area of the forest and the likely yield.

This section presents the results of Pöyry's verification of Sino-Forest's stocked area of forest. Details of this work are provided in Appendix 4.

As described above, Pöyry used the data, provided by Sino-Forest on the location, the species and age of the estate to plan its field inspection for 2008. Within the selected provinces of Guangdong, Guangxi and Hunan, counties were selected with regard to the species and age-classes that they contained. In addition, consideration was given to the proximity of the counties, one to another in terms of facilitating transport and logistics to maximise the time spent assessing forest areas and tree crops.

On request from Pöyry, Sino-Forest provided a set of what has are termed 'cluster-maps'. Each cluster-map showed compartment (forest management unit)

boundaries and stocked areas for a number (cluster) of compartments. They also showed geographic co-ordinates that allowed registration of these maps for use in a GIS. Several such cluster-maps were provided for each of the counties selected for Pöyry's field work.

Pöyry used maps representing 150 compartments for its area verification. The verification was performed largely by mapping the stocked area as visible from satellite imagery, and comparing this with the compartment boundaries and stocked areas provided by Sino-Forest in the cluster-maps. This work was supplemented with some traverses of compartment boundaries by Pöyry consultants who carried hand-held GPS units. From the tracks recorded by the GPS, digital maps were made and compared in terms of shape and area with the maps provided by Sino-Forest.

While on an individual compartment basis the area difference in percentage terms was sometimes substantial (both greater and smaller), over the 1 639 ha compared, the total difference was 4 ha or 0.25%. Accordingly, no area adjustments have been made to Sino-Forest's area representation of the forest crop assets owned as at 31 December 2008.

The following table summarises the net stocked area by species or species group as at 31-December 2008.

Table 4-3:
Net Stocked Area of Forest by Species as at 31 December 2008

2008 Area by Species (ha)		
Acacia	87	0%
Broadleaf Species	35 370	11%
Chinese fir	114 550	34%
Eucalypts	65 106	19%
Foreign pine	4 432	1%
Masson pine	53 267	16%
Other species	62 275	19%
Grand Total	**335 087**	**100%**

For the purposes of forest modelling, Pöyry has considered each of these species or species groups as a croptype and used an average yield table for each to represent expected growth and yield (see Section 4.4).

4.4 Forest Yield

Yield tables indicate the expected recoverable volume per unit area of trees at a range of stand ages. Where more than one grade of log is produced at harvest, the yield table differentiates the recoverable volume, by log grade, or log type.

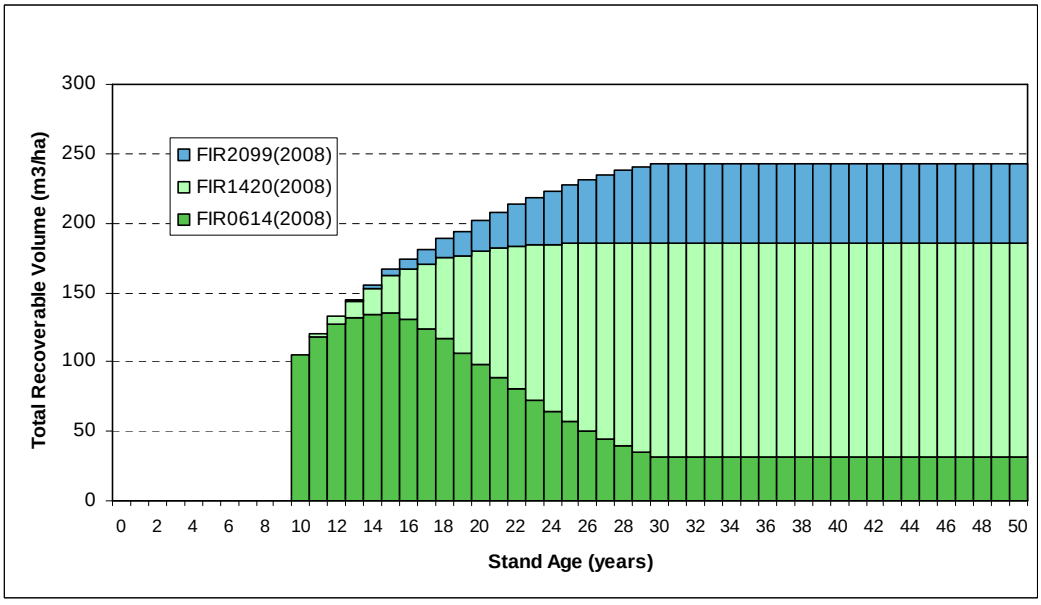
During Pöyry's field inspection of 2008, a total of 99 plots were established and measured. Sixty-two were in 'purchased plantations' over a number of species, mostly Chinese fir and slash pine, and 37 were in 'planted forest', all in eucalypts.

The results of the inventory have been used to refine Pöyry's estimates of yield in the Sino-Forest estate.

The approach to plot location, establishment and measurement is described in Appendices 2 and 3. Summary statistics from the plots are provided in Appendix 5.

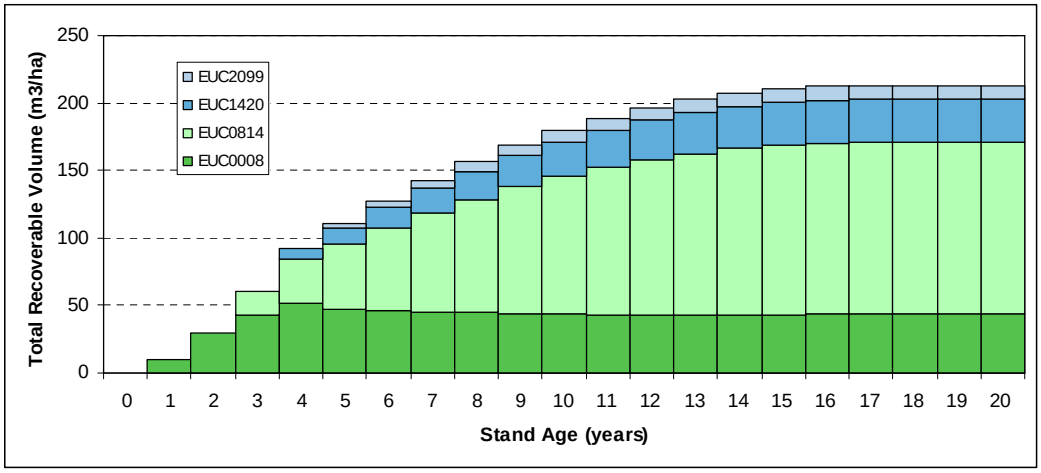
The yield tables used in the 2008 Sino-Forest valuation are shown in graphical form in the following figures:

Figure 4-5:
Yield Table Applied to All Chinese Fir Crops – 2008 Valuation



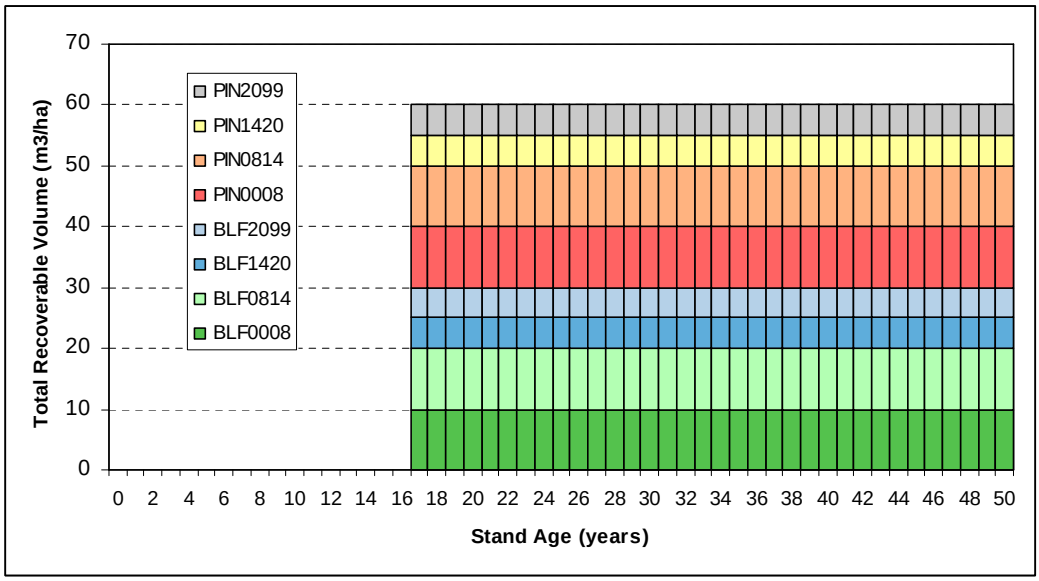
The yield table for Chinese fir has been modified (expected yield increased) since the 2007 valuation. This is explained in Appendix 5.

Figure 4-6:
Yield Table Applied to All Eucalypt Crops – 2008 Valuation



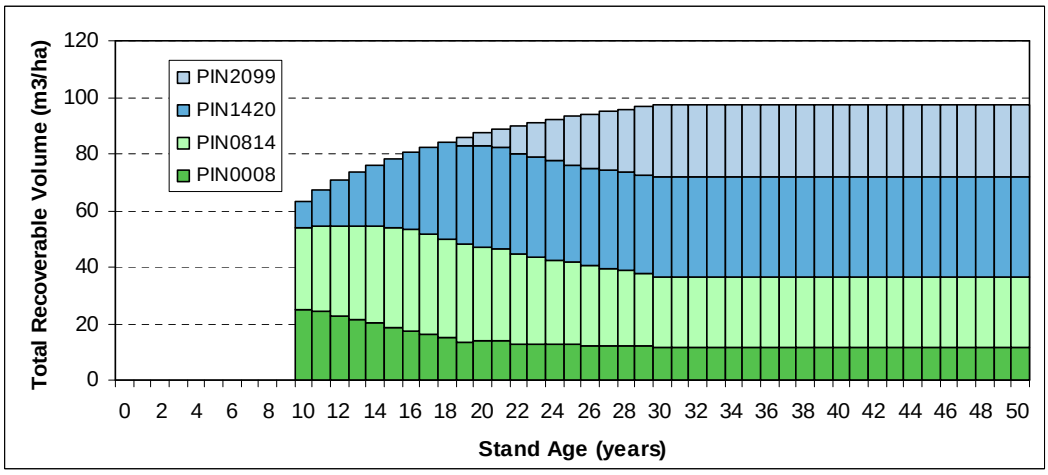
The yield table for eucalypts has been modified (expected yield increased) since the 2007 valuation. This is explained in Appendix 5.

Figure 4-7:
Yield Table Applied to 'Other Species' Crops – 2008 Valuation



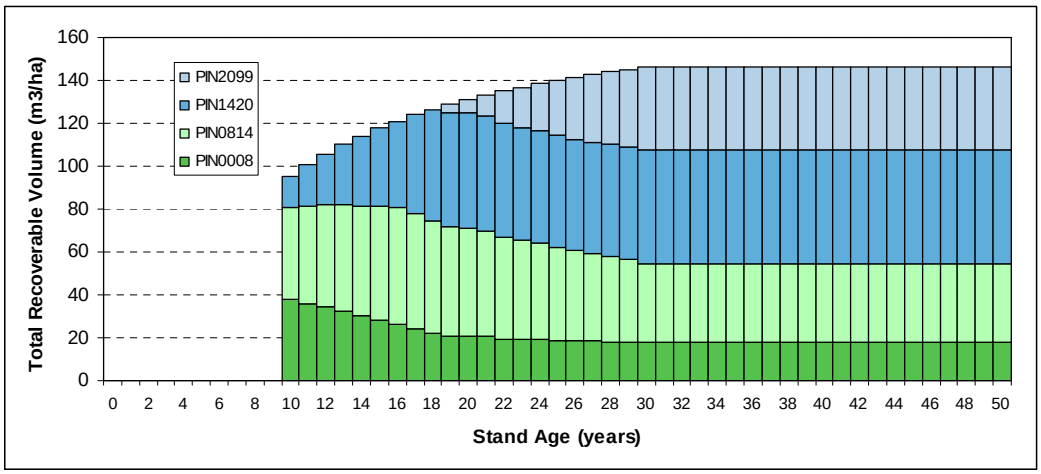
The yield table for 'other species' has been modified (expected yield decreased) since the 2007 valuation. This is explained in Appendix 5.

Figure 4-8:
Yield Table Applied to Masson Pine Crops – 2008 Valuation



The yield table for Masson pine has been modified (expected yield decreased) since the 2007 valuation. This is explained in Appendix 5.

Figure 4-9:
Yield Table Applied to Foreign Pine Crops – 2008 Valuation



The yield table for foreign pine has been modified (expected yield increased slightly) since the 2007 valuation. This is explained in Appendix 5.

Figure 4-10:
Yield Table Applied to Broadleaf Crops – 2008 Valuation

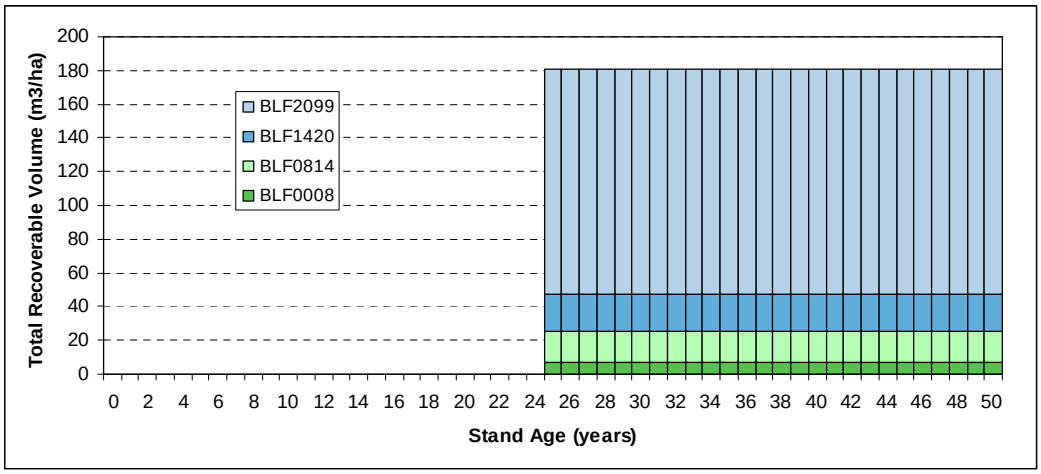


Figure 4-10 presents the same yield table as applied to the Yunnan broadleaf croptype in the 2007 valuation. It is based on an inventory of that croptype carried out in 2007 and described in the 2007 valuation report. Sino-Forest has increased its holding of broadleaf crops in Yunnan during 2008, with this province containing nearly 99% of its broadleaf resource.

There were only 87 ha of acacia species in the Sino-Forest estate as at 31 December 2008. This species accounts for less than 0.03% of the total area of forest. Its yield is represented as a constant 63 m³/ha of pulp grade log from age 6 years. This is the same as the yield table applied in the 2007 valuation, except that the 6 m³/ha of bark product has been ignored in the 2008 valuation.

5 RISKS TO FOREST ASSETS

In addition to risks relating to the cash flow assumptions there are other risks associated with establishing a biological resource. In the Sino-Forest plantations the key identifiable risks include:

- Fire
- Snow/Frost
- Pest and Disease
- Storms and Typhoons

5.1 Fire

Fire has not been a major threat in South China plantation forests in the past. However, with the increase in eucalypt plantation area there is a correspondingly greater fire risk. This risk can be mitigated by the implementation of fire prevention techniques such as the construction of firebreaks inside plantations, the development of human resources trained in fire fighting and supported by physical infrastructure such as portable fire fighting equipment. Given that the resource is geographically fragmented and comprises discrete forest blocks that are generally less than 500 ha in size, the opportunity for a singular catastrophic event is remote.

It is evident from Pöyry's previous field inspections of Sino-Forest's estate that in some regions farmers have used burning as a land preparation tool in the past. Sino-Forest has previously used fire to prepare land for planting but is moving away from this practice. Their aim is to reduce the loss of soil fertility that occurs when organic matter is volatilised and lost to the atmosphere.

Recently established and young stands are at greatest risk to fire damage as they are more likely to suffer crown damage that compromises their growth. In older stands close to harvest age, the impact of fire may be less significant as much of the timber may be salvaged and marketed with little discount.

Sino-Forest has advised Pöyry that it holds fire insurance cover, but Pöyry has not viewed the policies.

5.2 Frost & Snow Damage

The risk of frost damage can be reduced by careful attention to site selection. Frost prone sites should be avoided and planting should be scheduled to coincide with favourable weather conditions.

Snow damage in southern provinces of China is expected to be a rare occurrence. However, an example of the extreme climate variations that are possible occurred in January 2008 when snowfalls in southern regions of China occurred, resulting in some forest damage across a number of southern provinces.

5.3 Typhoons

The coastal areas of Southern China suffer a number of typhoons each season during July to September. The forest damage is generally localised and confined to young age-classes, but every 20 years or so a typhoon is likely to cause significant damage. The area that is most affected is within 200 km from the coast. The risk of typhoons for Sino-Forest's plantations is generally limited to some areas in Guangxi. This risk is reduced by the high stocking rates and short rotations of the eucalyptus plantations.

The stands inspected in 2008 in Guangdong, Guangxi and Hunan showed no notable damage from typhoon activity.

5.4 Pests and Disease

As the area of single species plantations increases so does the potential risk of pest and disease problems. To date there appears to have been no serious pest or disease outbreaks in either Sino-Forest's plantations or any others. Bacterial wilt caused by *Ralstonia solanacearum*, has caused some mortality in eucalypt nurseries and in the field in another owners forests in Guangxi Province. A gall wasp *Leptocybe invasa* has also caused leaf malformation in these same forests.

Bacterial wilt causes wilting, leaf drop, reduced growth and sometimes tree mortality. Seriously infected areas are treated by felling stems, sometimes removing the vegetative material, and replacing the soil in the planting holes. Attack by the gall wasp may be height related as trees over 2 metres in height appear to be less susceptible. The wasp injects its eggs into leaf tissue, which disrupts normal flows and physiology of the leaf, often resulting in the formation of galls. Although not a lot is known about the impact of the gall wasp, it is likely that photosynthesis and normal growth is affected.

Leaf eating caterpillars are controlled by the application of pesticide if levels of infestation are such that 30% of the crown is affected. Poplar plantations are currently inoculated against these problem pests and disease as a routine part of plantation establishment and maintenance. Local Forest Bureaus maintain disease control stations and provide forecasts on pathogen levels and the need for control. In keeping with good forest practices, Sino-Forest plants trees produced from a number of different clones; this reduces the risk of a weakness in any one clone being propagated throughout the plantations and provides genetic diversity. The clones that have been planted to date have been assessed for resistance against disease.

6 COSTS

Forestry operations are those operations associated with the establishment and maintenance of the forest crop up until the time of harvest. Harvesting costs are covered in Section 6.2.

6.1 Direct Costs of Forestry Operations

The following table summarises the direct costs of forestry operations by main species. For eucalypts costs are shown for planted and coppiced rotations (see also Section 9.2 that discusses the assumed regeneration strategy).

Table 6-1:
Forest Operations Direct Costs (December 2008)

Year in Rotation	1	2	3	4 +
	RMB per Ha			
Chinese Fir, Pine species, Other Species, Broadleaf Species				
All Land Preparation and All Year 0 Establishment Related Costs	6575	0	0	0
Crop Maintenance & Tending - fertiliser, weeding, singling, thinning	0	1200	900	0
Crop Protection Costs - security, fire prevention, forest health & pest control etc.	0	30	30	30
Eucalypt Species - Planted				
All Land Preparation and All Year 0 Establishment Related Costs	4725	0	0	0
Crop Maintenance & Tending - fertiliser, weeding, singling, thinning	0	2100	750	0
Crop Protection Costs - security, fire prevention, forest health & pest control etc.	0	105	105	105
Eucalypt Species - Coppiced				
All Land Preparation and All Year 0 Establishment Related Costs including Yr 1 singling	2325	0	0	0
Crop Maintenance & Tending - fertiliser, weeding, singling, thinning	0	1350	750	0
Crop Protection Costs - security, fire prevention, forest health & pest control etc.	0	105	105	105

The costs assumed to apply to the various tree crops in the Sino-Forest estate, as summarised in Table 6-1, were derived from a combination of Pöyry's in-house database and specific data obtained from interviews with Forest Bureaus as part of the field inspections.

Land preparation includes all costs of planning (design), site preparation and tree crop establishment, including clearing the land of debris to facilitate planting and tree growth, hole digging, planting of seedlings (or cuttings), setting base fertiliser, refilling holes and any other operations necessary. These operations and costs occur in year 1 of the rotation, and before the trees are one year old.

Crop maintenance and tending are post year 1 or post-establishment operations, typically occurring in years 2 and 3 of the rotation. They are ancillary to initial establishment and are essential to the effective establishment, development and vigorous growth of the tree crop. These operations and costs include the purchase and application of fertilisers, weeding and singling.

Crop protection costs are those costs incurred to protect the tree crops from theft (illegal harvesting and theft of logs from the forest) and fire damage, including

education and public relations, training in fire suppression, and fire risk monitoring. Other than for eucalypts, Pöyry has applied a standard cost of RMB2/mu/year, or RMB30/ha/year. In the case of eucalypts, there is the additional cost of forest health monitoring and pest control. Eucalypts have been found to be more susceptible pests and disease, such as bacterial wilt and wasp attack and require more intense health monitoring and remedial operations.

The costs applied are broad and generic but sufficient for the purposes of the valuation. Overall, the direct forest operations costs applied in this year's valuation, as applied to nominal rotation lengths of 6 years for eucalypts and 20 years for all other species, are 14% greater for planted eucalypts, 28% greater for coppiced eucalypts, and 40% greater for all other species.

These costs have only a small impact on the market valuation which is confined to the cash flow arising only from the current crop. The highest forest operations costs are associated with land preparation and establishment and these operations are already complete insofar as the current crop is concerned. Some crop maintenance and tending costs are incurred in association with the current crop over the next two years, and the relatively small costs of crop protection are incurred until harvest. The small impact of direct forest operations costs on the market value of the forest crops is shown in Section 13, Sensitivity Analyses.

6.2 Direct Costs of Harvesting and Cartage

Direct harvesting and cartage costs are all of the direct costs incurred between the standing tree and processing of the logs to the point of sale. In China, most harvesting operations are labour-intensive. Trees are felled by axe, cut to length in the forest and then carried to the roadside by hand. The main cost elements are:

- Tracking and road making for harvesting.
- Tree felling.
- Delimbing the fallen tree.
- Cutting the stem to log lengths in the forest (a typical length is 2 m length to facilitate hand carriage to the road. Chinese fir stems are left longer, reflecting their lighter weight and preferred use as roof rafters).
- Carriage to a truckable roadside (commonly by hand or a combination of carrying by hand and some in-forest cartage on trolleys or motor driven tractors.
- Storage of logs.
- Debarking.
- Truck loading.
- Cartage of logs to the mill or other point of sale.

As with the forestry operations, Pöyry obtained information on current harvesting and cartage costs during the field inspection process.

Evidence suggests that during 2008, logging costs in southern China have increased markedly. Based on the information obtained from field inspections and data and information from other recent projects Pöyry constructed the following generalised cost table for harvesting in the seven Provinces containing Sino-Forest's current estate.

Table 6-2:
Logging Costs by Province and Species (December 2008)

Province	Species	RMB/m^3		Province	Species	RMB/m^3
Fujian	Eucalypts	55				
Guangdong	Acacia	60		Guizhou	Chinese fir	105
Guangdong	Broadleaf	125		Guizhou	Foreign (slash) Pine	140
Guangdong	Chinese fir	95		Guizhou	Masson Pine	140
Guangdong	Eucalypts	60		Heilongjiang	Other Species	115
Guangdong	Foreign (slash) Pine	125		Hunan	Broadleaf	125
Guangdong	Masson Pine	125		Hunan	Chinese fir	95
Guangdong	Other Species	125		Hunan	Eucalypts	55
Guangxi	Chinese fir	95		Hunan	Foreign (slash) Pine	125
Guangxi	Eucalypts	60		Hunan	Masson Pine	125
Guangxi	Foreign (slash) Pine	125		Hunan	Other Species	125
Guangxi	Masson Pine	125		Yunnan	Broadleaf	140
Guangxi	Other Species	125		Yunnan	Other Species	140

In Guangxi and Hunan, the two provinces containing the majority of the Sino-Forest estate, both the nature of the terrain and logging costs are quite similar. Logging costs for these provinces are estimated to be approximately RMB125/m^3 for all species except Chinese fir and eucalypts. The cost for Chinese fir is lower at about RMB95/m^3. This is due largely to this species being lighter in weight and easier to fell, delimb and carry.

The harvesting cost for eucalypts in Guangxi and Guangdong is RMB60/m^3. This lower level of cost is partly due to the higher density (metres/ha) of roads within this part of the estate which reduces the carrying distance to the truckable road edge**.** It is also due to the eucalypt plantation land being less steep and much easier to work on.

Only 6 400 ha, or 14% of Sino-Forest's area in Guangdong is of species other than eucalypts. Here Pöyry has applied the same logging cost by species as in Guangxi and Hunan.

In Guizhou and Yunnan, Pöyry has applied a 10% higher logging cost for the same species as in Guangxi, Hunan and Guangdong because the land is typically steeper. In the very small area of eucalypt forest in Fujian (<0.2% of the Sino-Forest estate), Pöyry has applied a cost slightly lower than in Guangdong and Guangxi (RMB55 rather than RMB60/m^3) because the forest terrain in Fujian is slightly easier than the other provinces.

In Heilongjiang, Pöyry has applied a logging cost of RMB115/m^3 to the 5 500 ha (<2% of the total Sino-Forest estate). Although the area is remote, the terrain of the forest is reportedly easier than the hilly and mountainous forest areas of the southern provinces. A simple 10% cost reduction was applied to the RMB125/m^3 applied in Guangxi, Hunan and Guangdong.

When the unit costs presented in Table 6-2 are weighted by Sino-Forest's area of forest by province and species as at 31 December 2008, the result is an average logging cost of RMB102/m^3. Taking the logging costs applied in the 2007

valuation and weighting them by the 2008 area (by province and species) generates an average cost of RMB67/m^3. Applied logging costs have increased overall by about 50%.

Among the potential effects of the global economic crisis in China is the likelihood of considerably more male labourers remaining in the rural villages in 2009. This could provide an increased supply of labourers for forestry work. In Pöyry's opinion, this may dampen the logging cost increases that might otherwise be expected. Accordingly, in the cash flow model, Pöyry has reduced the overall cost of logging from the new costs (see Table 6-2) by 15% in 2009, 10% in 2010, and 5% in 2011.

6.2.1 Cartage Costs

Historical cartage cost data from Pöyry's in-house database were adjusted to real costs as at 2008, based on China's published CPI, and plotted against cartage distance. The resulting cost curve (Figure 6-1) was benchmarked against five data points collected during the 2008 field inspection.

The associated cost equation

$$\text{Cartage cost: RMB/m}^3\text{/km} = 9.240 * \text{one-way cartage distance (km)}^{-0.548}$$

was then applied to assumed average cartage distances for the various provinces and, in the case of Guangdong, separately for eucalypt species.

Figure 6-1:
Unit Cartage Cost on Cartage Distance (December 2008)

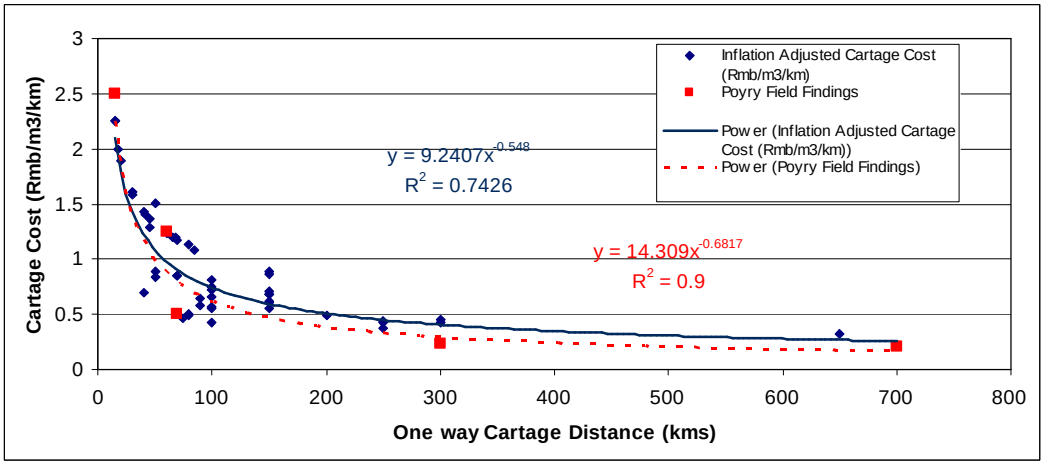


Table 6-3 summarises the assumed average cartage distance from the forest to the point of sale, and the cartage costs applied in the forest estate model. The point of sale in every case is assumed to be at-mill-gate. The price point assumed in the derivation of log prices (see following section), is also at-mill-gate.

Table 6-3:
Assumed Average Cartage Distance and Cartage Cost for Logs (December 2008)

Province	Average Cartage Distance (km)	Cartage Cost (RMB/m^3)
FUJIAN	100	74
GUANGDONG	80	67
GUANGDONG (eucalypts)	60	59
GUANGXI	150	89
GUIZHOU	150	89
HEILONGJIANG	150	89
HUNAN	150	89
YUNNAN	150	89

In Pöyry's opinion, these are reasonable estimates of the average cartage distances (and costs) likely to apply to the cartage of logs from Sino-Forest's forest areas to market. As concentrated forest areas become due for harvest, wood processors are likely to establish processing plants near these resources. Sino-Forest itself is one organisation that is planning to establish plants to utilise such forest produce and reduce log cartage costs. Pöyry is also aware of other prospective participants in wood processing who are considering the same tactic.

6.3 Forestry Overheads and Indirect Costs

In addition to direct costs, all businesses incur indirect costs. These costs are sometimes called overheads. Indirects or overheads are all those costs that are not direct labour or materials or are not easily associated with particular units of production.

In the general management of the forest, units of production are usually areas (hectares) of forest that are treated in a specific way or undergo particular treatment operations. In the harvesting phase, they refer to the volume of logs that are harvested (cubic metres).

Forestry businesses overheads are usually divided into those associated with the general management of the forest estate and related forestry operations, and those more closely connected to harvesting activity.

Forestry overheads and indirect costs comprise two parts. These are the forest business management and administration cost of running the forestry business, and indirect costs associated with forestry operations.

6.3.1 Forest Business Management and Administration Overhead Cost

These are the total spend of the forest management business excluding all direct forestry operations costs, the cost of land rentals, and costs associated with harvesting and marketing activity. This provision is intended to cover the costs of:

- All staff remuneration (corporate, management, administrative etc)
- Offices rental, power, telecommunications, and other expenses
- Vehicle running
- Information technology and software licenses etc
- Training
- Research and development

- External professional services e.g. legal, audit, other consultancies
- Public relations and communications
- Insurance
- Repairs, maintenance and depreciation of assets
- Memberships, levies and subscriptions.

Pöyry has a considerable amount of experience in assessing forestry overhead costs in forest businesses around the world. As in last year's valuation, Pöyry has not obtained particular overhead costs for Sino-Forest's business but has applied a wider and generic estimate of the costs of running a forest business of a similar size. This is based on the typical costs of running a large forest estate in China and is quite similar to the costs applying in New Zealand and Australia.

This cost is related to the area of forest, though there are not always economies of scale. Pöyry has applied an annual overhead cost of **RMB300/ha.** This is the same as applied in the 2007 forest valuation.

6.3.2 Indirect Costs Associated with Forestry Operations

Forestry operations are typically accompanied by supervision and quality control costs. As a provision for this, Pöyry has incorporated an 'on-cost' of **10% of the direct cost** into the forest model. This is the same as applied in the 2007 forest valuation.

6.4 Harvesting and Marketing Overheads and Indirect Costs

Harvesting and marketing overheads and indirect cost also comprise two parts. These are all of the harvest related costs that are not otherwise included in the direct costs, called harvesting and marketing overheads, and, the significant indirect cost of harvesting taxes and fees. Harvesting taxes and fees are treated as an indirect because they are external impositions rather than direct costs.

6.4.1 Harvesting and Marketing Overheads

For a forestry business that is carrying out its own harvesting and marketing, there are associated overhead costs incurred. These cover the costs of:

- Harvest planning and engineering (roads and landing)
- Pre-harvest inventory
- Supervision of the harvesting operation to ensure value recovery
- Marketing, administrative and accounting costs associated with sales
- Other costs of sale such as log volume / weight measurement, scaling etc.

Pöyry has also undertaken a considerable amount of work in assessing harvesting and marketing overhead costs in forest businesses around the world. For a large business, with an annual log production over one million cubic metres, these costs are typically in the range of USD2-7/m^3, or about RMB15-50/m^3. The range usually relates to the extent to which the company uses its logs internally or sells to other parties, and the degree to which they manage their own harvesting and marketing activity internally, as opposed to contracting out that function.

Historically Sino-Forest has generated its main revenue from the sale of stumpage (standing trees), and often associated land use rights that it has held. Increasingly however, Sino-Forest has sold 'stumpage' (the right to harvest the trees) and not the land use rights, and then undertaken the reforestation after the buyer of stumpage has harvested the tree crop. Sino-Forest has indicated to Pöyry that it intends to move into harvesting its own trees, and will progressively increase processing of the logs produced as well.

As with previous valuations, Pöyry has applied a 'Log Traders Margin' effectively as a proxy for harvesting and marketing overheads. This is applied at the rate of **5% of the gross log sales price**. Over the current rotation, that averages about RMB35/m³. In Pöyry's opinion, this is a reasonable representation of the likely current harvesting and marketing unit overhead cost that would apply in China to a forestry business the size of Sino-Forest. In Pöyry's experience, there are no obvious or significant economies of scale. The level of this cost could however be lower where the business was controlling the harvesting operation and selling a high proportion of its production internally.

6.4.2 Harvest Taxes and Fees

Harvest Tax

According to the State Forestry Administration Harvest Regulations (published in 1988 and still current), generally a harvest tax of between 15% and 26% (Northern China) or 15 and 20% (Southern China) of the 'First Sales Price' should be charged by the local Forestry Bureau as the 'Forest Establishment Fund'. Importantly, the 'First Sales Price' means the log price at the forest gate or roadside and not at-mill-gate. The latter could mean a higher tax imposition just because of higher log cartage costs. Each province is able to set its particular rate within the specified range.

Sixty percent of this forest Establishment Fund (harvest tax) will be returned by the local Forest Bureau to the forest owner as the forest regeneration fee, after effective re-establishment, and so 40% of the Forest Establishment Fund is the real or net harvest tax.

Accordingly, the effective harvesting tax for harvest operations with regeneration is 6-8% in the southern part China.

Pöyry has applied a harvest tax at the mid-point of **7% applied to (Gross Sales Revenue at mill less Cartage Costs).**

In addition, there are other fees payable to Forest Bureaus in relation to harvesting. These are:

Harvest Inventory & Survey Fee

A Harvest Inventory & Survey fee is charged by the third party/organization that holds the Forest Inventory & Survey Qualification issued by forest authority. This

charge applies to the total standing volume (TSV) and ranges from RMB3/m^3 to RMB10/m^3 of the inventory total standing volume.

Pöyry has applied the mid-point of RMB6.5/m^3 and assumed an average recovery rate of 75% applied to the tree crops of the Sino-Forest estate for this purpose. Accordingly, the Harvest Inventory and Survey fee payable to Forest Bureaus or other qualified third parties is RMB8.7/m^3 of recovered log volume.

Wood Inspection & Quarantine Fee and Wood Transportation Fee

A Wood Inspection & Quarantine Fee and a Transportation Fee are charged by the local forest bureau according to the log volumes. These equate to about RMB1/m^3.

In total other fees payable at harvest are about RMB9.7/m^3.

Pöyry has applied a cost of RMB10/m^3 for other fees.

The harvesting tax and fees applied in this year's valuation are about 25% less than those applied last year on a per cubic metre basis. This is mainly due to the correction of the tax being applied at the 'first sales price', i.e. at forest gate or roadside and not at-mill-gate.

7 LAND RENTALS (COST OF LAND USE)

Sino-Forest pays for the land it uses for forestry purposes. These payments are in the form of annual rentals. Land rentals in China, as in other parts of the world, vary widely with the quality of the land and its uses. Some specialist forestry crops such as poplars and bio-fuel species can face rentals of more than RMB1 800/ha/year. Forestry crops typically face much lower land rentals.

During Pöyry's field investigations, information was obtained on land rentals for eucalypts. These ranged from RMB15/mu/year to RMB90/mu/year, with an average of RMB25/mu/year (RMB375/ha/year). Other information obtained by Pöyry in early 2009 indicates a range of RMB13 - 29/mu/year (RMB195 - 435/ha/year), with an average of RMB325/ha/year being paid for eucalypt forest land in southern China. This equates to a mid-point of RMB350/ha/year from these two sources, for eucalypts.

Pöyry's database and other information sought on land rentals for other species indicate a range of RMB13-21/mu/year.

On the basis of about 20% of the Sino-Forest estate being in eucalypts, then an area weighted average rental rate of RMB270/ha/year has been calculated.

The company indicates a range of current rentals of RMB10 - 20/mu/year, or RMB150 - 300/ha/year, or a mid-point of RMB225/ha/year.

Pöyry has applied a mid-point of the range of RMB225 - 270/ha/year, or **RMB250/ha/year** to all land in the cash flow and valuation model. This is nearly 70% greater than the annual land rental cost applied in last year's valuation.

8 LOG MARKETS AND LOG PRICES

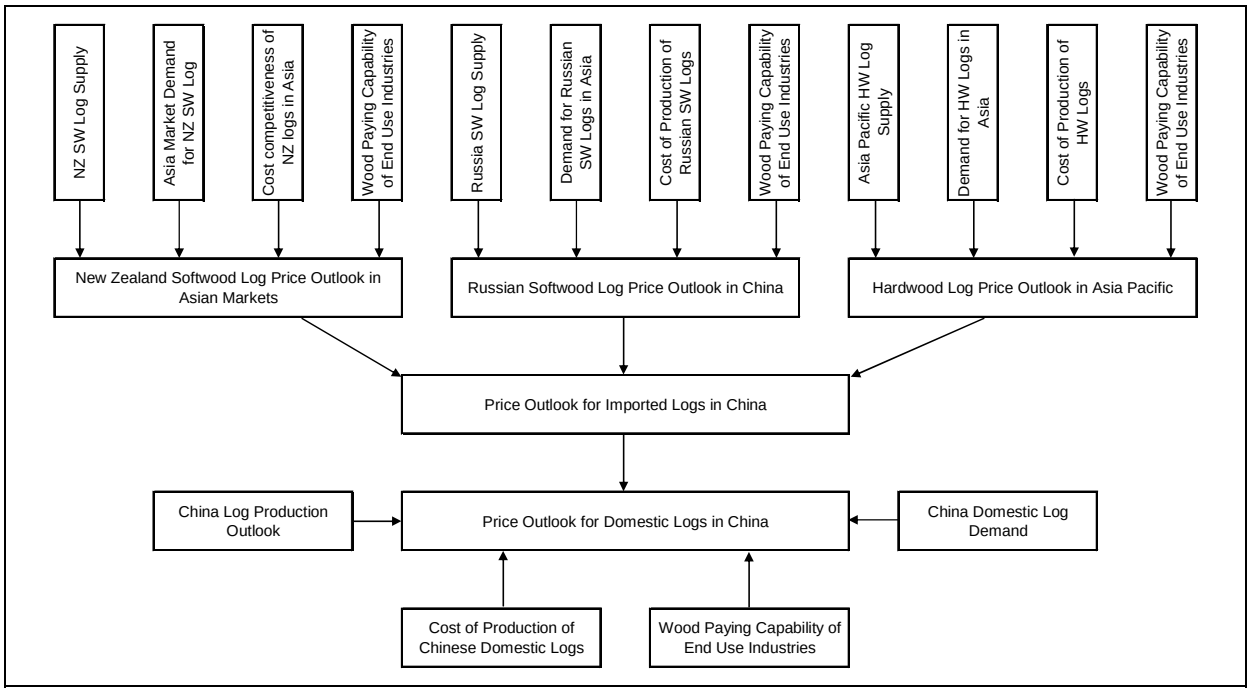
Log market analysis, insofar as determining appropriate current and probable future log prices, constitutes an important part of the valuation process.

A wide range of factors influence prices and these include the wood demand and supply balance, exchange rates, pulp prices, financial positions of buyers and sellers, and production costs.

In forecasting China's domestic log prices, Pöyry analyses all the factors that affect log demand and supply, production costs and competitive forces. In carrying out China domestic log price forecasting, an informed judgement on the Asia-Pacific region's hardwood and softwood log price outlook is formed. This is based on supplying and consuming countries' production and demand outlooks, and cost competitiveness. Any other factors that can potentially have an impact on the supply and demand outlook are also considered. Domestic log supply and demand outlooks, and cost developments and industry competitiveness are also analysed.

Table 8-1 illustrates the multitude of factors influencing key log prices in the Asia Pacific region which then ultimately affect domestic log price trends in China.

Table 8-1:
China Log Price Forecast Methodology



8.1 Log Price Outlook

Presented in Table 8-2 is an overview of the factors which will influence log prices during the next five years. The log price forecast has been based on the expected outlook of the various factors presented below.

China's log demand growth is expected to stagnate during 2009, as a result of the global and Chinese economic slow down. Growth is expected to resume by 2010. a with strong increase during 2010-2015, resulting in upward pressure on log prices.

Although China's domestic roundwood removals will increase relative to previous years, this increase will not be sufficient to meet growing sawlog demand.

While importing of industrial roundwood logs will rise to meet domestic demand, this increase is expected to be modest during this decade. Regulations on harvest levels amongst the South East Asian suppliers will suppress the amount of tropical logs available in the next five years. In addition, various measures and regulations that will be implemented to support sustainable forestry in the tropical forest supplying countries will lead to higher production costs in Southeast Asian countries.

Proposed Russian log export tariffs are expected to affect the log supply dynamics in Asia. Furthermore, Russian imported logs production costs are expected to increase as logging locations shift to more distant forests. This will drive up the prices of imported sawlogs which will put upward pressure on domestic sawlog prices.

Table 8-2:
China Log Prices Outlook

Factors	Outlook	Influence on Log Prices	+/-
Domestic Supply	China fibre supply is likely to increase over the next five years as the harvesting quota regulations allow increasing flexibility under the current 5 year plan and will be increased for subsequent 5 year plans as available volume from plantation forest increases. Domestic supply will continue to be insufficient to meet domestic demand.	Domestic supply shortage will continue to create upward pressure on log prices.	+
Domestic Demand	China's wood fibre demand from pulpmills is likely stagnate in 2009, but to increase in the following years with large mill development plans. Positive growth in construction and furniture industries will increase fibre demand.	Solid lumber and pulpwood demand will support firm saw and pulplog prices.	+
Cost of Production	Transport costs are likely to increase in the medium term as fuel prices in China are expected to rise.	Increases in the cost of production are likely to influence log prices to rise marginally.	+
Imported Chip Prices	Strong growth of hardwood chip supplies from Australia, with slowing growth of wood chip demand in Southeast Asia as pulpmill expansion projects are delayed.	Potential for downwards movement of CIF prices for hardwood chip as Australia supplies increasing volumes of chip into the market	-
Imported Log Prices	Russian log prices are expected to increase decline somewhat in 2009, as the expected tax has been delayed, and while Chinese demand will be weak. When the export tariff is implemented (early 2010), imported log costs will increase.	Easing in prices during 2009, but by 2010 increased imported Russian log prices will cause domestic log prices to increase as well.	- +
	Hardwood log prices are expected to rise in the next five years as tropical hardwood supply is declining. More strict controls on illegal logging are expected during this time.	The price of imported hardwood logs will increase, causing overall log prices in China to rise over the next five years.	+
Wood Paying Capability of Wood Processing Industries	Competition in the wood processing industries will limit wood paying capability of consuming industries.	Due to strong competition in the wood processing industries, the consuming industries' profitability/margins will decline, which will set downward pressure on log prices.	-
	Some technological developments in engineered and reconstituted wood products will allow less volume of wood materials to produce end products.	Technological developments will limit significant real price growth for solid wood lumber products.	-

Based on a detailed analysis of the various factors outlined above, it is Pöyry's view that domestic sawlog prices (in real terms) in China will soften in 2009, but have the potential to see a significant increase during 2010 and 2011, as the impact of the Russian log export tax filters through the industry. Pöyry expects real prices of large dimensioned sawlogs to decline in 2009 by some 3 to 5% from prices applying in mid-2008, followed by an increase of potentially 11.5% in 2010 and 6.5% during 2011. Following this strong increase, prices are expected to remain stable. A similar trend is expected for medium sized logs, with a 3 to 5% decline in

2009 from 2008, followed by slightly lower growth rates of 8.5% in 2010 and 4% in 2011.

However, the price for pulpwood is expected to be under significantly more downward pressure, and it is unlikely that any real price increases will eventuate, as import competition builds. Although regional variations are likely to occur, depending on demands from local mills, as a general trend pulpwood prices are expected to decline by 2% in 2009 from 2008. Some small positive growth is anticipated by 2012 and stable prices after 2012.

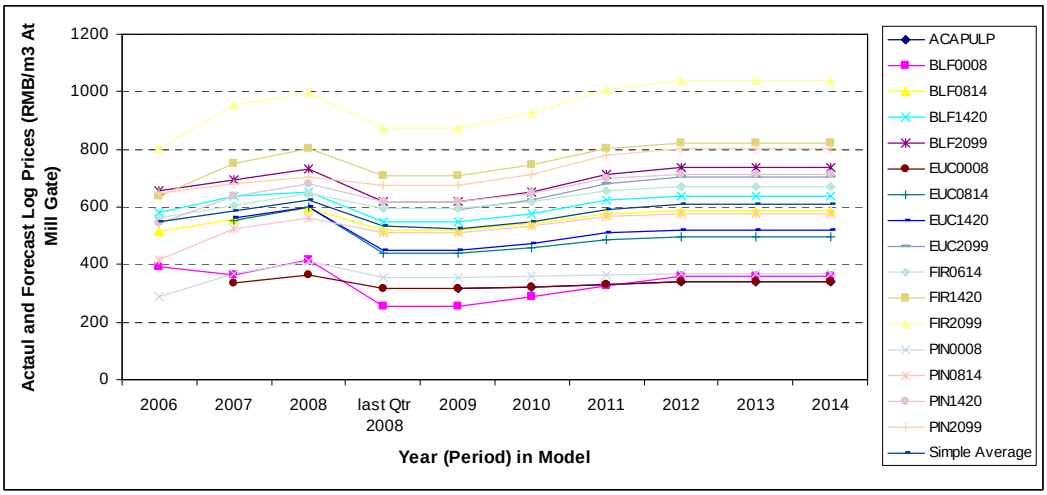
Pulpwood demand is expected to increase in the next five years as a number of large mill development plans are implemented, and this will put upward pressure on pulplog prices. However, generally stagnant global pulplog and chip prices will offset the opportunity for domestic pulplog price increases in the future.

As part of this valuation, log price information was gathered for the range of species currently owned by Sino-Forest. The sources of this information were interviews with log buyers and wood using industries in Guangdong and Guangxi, on-line log price information, and Pöyry's own China log price database. As part of a separate project in 2008, data and information on log prices in Hunan were obtained.

Considering log prices between mid 2006 up until August 2008, it appears that there has been an increase of about 6.5% per year over two years (in nominal terms). Adjusting for inflation (based on CPI), this translates to a real price increase rate of about 3.7% per year. Log prices applying in the last three months of 2008 were lower however, falling broadly to levels similar to those in 2006.

The following graph shows how log prices have trended since 2006 and the prices that Pöyry has applied in the valuation model. Period 1 in the model is the six-month period from 1 Jan 2009 to 31 Jun 2009. This is shown as 2009. Period 2 is the 12 month period from 1 Jul 2009 to 30 Jun 2010, shown as 2010, etc.

Figure 8-1:
Recent Log Price Development and Prices Applied in Valuation



The historic prices are based on actual data. The prices applying for 2009, the first period in the model, are assumed to be the same as the actual reduced prices that have been seen in the market in the last quarter of 2008.

Based on the analysis described above, Pöyry has formed an opinion on the log price outlook. This is the basis of the prices applying in the future. This sees large sawlog grades increasing in price from Jan 2009 to July 2011 by about 18%, medium sized logs increasing by 13% to 16%, and small (pulp) logs by 6%. This effectively sees most pulplog grades returning to their 2007 log price over two and a half years, and other logs (the range of sawlog size grades) increasing in price over their 2007 levels by an average of 6%.

The log prices used in the model are shown in Table 8-3 below. Comparative prices that were applied in the 2007 valuation model are also shown (turquoise). On a simple overall average basis, the start prices applied in this year's valuation are about 15% less than for the same period in last year's valuation. Average long-run prices are about 5% lower than applied in last year's valuation.

Table 8-3:
Current and Future Log Prices Applied in Valuation Model (December 2008)

	Period 1 in 2008 Valuation Model 6 months Jan-Jun 2009	Year 2009 in 2007 Valuation Model	Period 2 in 2008 Valuation Model Jul 2009-Jun 2010	Period 3 in 2008 Valuation Model Jul 2010-Jun 2011	Period 4 & onwards in 2008 Valuation Model Jul 2011-Jun 2012	2012+ in 2007 Valuation
Species and Log Grade (*log lengths are 2 metres and sed range in cm as specified)*	**All in RMB per Cubic Metre (At Mill Gate)**					
ACAPULP	320	352	320	330	340	363
BLF0008	260	352	290	330	360	363
BLF0814	520	517	540	580	590	544
BLF1420	550	621	580	620	640	653
BLF2099	620	724	650	710	740	762
EUC0008	320	352	320	330	340	363
EUC0814	440	517	460	480	490	544
EUC1420	450	621	470	510	520	653
EUC2099	590	724	620	680	700	762
FIR0614 *(sed = 6-14cms)*	590	621	620	660	670	653
FIR1420	710	827	750	800	820	870
FIR2099 *(sed = > 20 cms)*	880	1014	930	1010	1040	1066
PIN0008 *(sed 8cms & below)*	350	408	360	360	370	420
PIN0814	510	621	530	560	580	653
PIN1420	620	724	650	700	720	762
PIN2099	680	827	710	780	800	870
Simple Average	**526**	**614**	**550**	**590**	**608**	**644**

Key factors that will support the expected log price development in China during the next five years, as discussed above, are as follows:

- Softening in prices in 2009, as demand weakens and the anticipated Russian export tax is not implemented.
- By 2010, increasing domestic log demand at the back of expanding China's wood end-use industries such as construction and furniture.
- Post 2009, a decline in Russian log imports into China due to Russia's log export tax will increase log supply constraints in China.
- Declining hardwood log availability will boost demand for softwoods and hardwood plantation wood.
- China's wood processing industries are expected to continue expanding, supported by the rapidly growing economy and increasing investments.
- Expanding global demand for wood products means that China's wood products exports will continue to expand, and this will support log demand in China.

Although China's log supply is expected to increase during the next few years, demand growth will exceed supply, and higher volumes of imported wood will be required to meet domestic demand.

9 WOOD FLOW AND ALLOCATION MODEL

The physical and financial descriptions of the forest, outlined above, are brought together in the form of input to the Forest Estate Model from which wood flows and cash flows are generated. The Forest Estate Model employs a linear programming formulation which allows constraints to be specified and applied to the management and harvest of the forest estate. These constraints include the specification of:

- Minimum and maximum harvest ages by species
- Replanting assumptions in terms of croptypes and expected future crop yields
- Levels of harvest volume (or area), in total or by defined parts of the forest estate, by species and location and period, and, where appropriate
- The minimum and maximum volumes of particular log grades that can go to certain destinations

With every constraint added to or incorporated in the model, and the tighter or more demanding any particular constraint, the lower the value of the forest will be. This is simply because the 'optimal solution' is more constrained, and in turn lower.

Constraints applied to the modelling of potential wood flow from the Sino-Forest estate are as follows:

9.1 Minimum and Maximum Rotation Ages

The following table shows the minimum and maximum rotation ages allowed, by species in the Forest Estate Model. A common approach is to allow a wide range of ages in the early period of the model, and then confine the range to one considered about the normal range for economic rotations of the various species. This allows reasonable flexibility to the model insofar as harvesting the various crops in the estate to meet the requirements of the other constraints.

Table 9-1:
Clearfell Age Constraints by Species and Period in Model

Species	Model Periods	Min Clearfell Age (years)	Max Clearfell Age (years)
Acacia	1 to 10	6	60
Acacia	11 to 60	6	10
Broadleaf Species	1 to 10	25	99
Broadleaf Species	11 to 60	25	99
Chinese fir	1 to 10	15	60
Chinese fir	11 to 60	15	30
Eucalypts	1 to 10	5	60
Eucalypts	11 to 60	5	10
Foreign pine	1 to 10	10	60
Foreign pine	11 to 60	10	30
Masson pine	1 to 10	10	60
Masson pine	11 to 60	10	30
Other Species	1 to 10	6	60
Other Species	11 to 60	6	30

Period 1 to 10 is from Jan-2009 to Jun 2018; period 11 to 60 is from Jul 2018 to Jun 2068.

Almost 99% of the broadleaf forest is in Yunnan. Some 90% of that forest is mature i.e. currently 25 years of age or more, and theoretically ready for felling. The wide range allowed for the harvesting of this species is to allow retention of forest and permit its harvest over a long period according to other harvesting specifications listed below.

9.2 Regeneration Assumptions

The following table specifies the regeneration assumptions for each species including the TRV (m^3/ha) at a nominal harvest age for the successive rotations. TRV is expected to increase with rotation as genetics and tree improvement improve the genetic stock established, and also as a result of improved forest management and silviculture.

Table 9-2:
Regeneration by Species and Rotation – as applied in Forest Estate Model

Species	Current Crop	1st Replant to	Next Replant to	Next Replant to	Next Replant to	Next Replant to
Eucalypts		COP1-EUCS	REP1-EUCS	COP2-EUCS	REP2-EUCS	REP2-EUCS
TRV (m³/ha) @ age 6	*127*	*127*	*134*	*134*	*140*	*140*
% Increase in TRV by Rotation		*0%*	*5%*	*0%*	*4%*	*0%*
Chinese Fir		REP1-CFIR	REP2-CFIR	REP2-CFIR		
TRV (m³/ha) @ age 20	*202*	*222*	*244*	*244*		
% Increase in TRV by Rotation		*9%*	*9%*	*0%*		
Masson Pine		REP1-FPIN	REP2-FPIN	REP2-FPIN		
TRV (m³/ha) @ age 20	*87*	*144*	*159*	*159*		
% Increase in TRV by Rotation		*40%*	*9%*	*0%*		
Foreign pine		REP1-FPIN	REP2-FPIN	REP2-FPIN		
TRV (m³/ha) @ age 20	*131*	*144*	*159*	*159*		
% Increase in TRV by Rotation		*9%*	*9%*	*0%*		
Broadleaf		REP1-BDLF	REP2-BDLF	REP2-BDLF		
TRV (m³/ha) @ age 625	*181*	*181*	*181*	*181*		
% Increase in TRV by Rotation		*0%*	*0%*	*0%*		
Other species		REP1-OTHR	REP2-OTHR	REP2-OTHR		
TRV (m³/ha) @ age 20	*60*	*60*	*60*	*60*		
% Increase in TRV by Rotation		*0%*	*0%*	*0%*		
Acacia		REP1-ACAC	REP2-ACAC	REP2-ACAC		
TRV (m³/ha) @ age 6	*63*	*66*	*69*	*69*		
% Increase in TRV by Rotation		*5%*	*4%*	*0%*		

The level of improvement in terms of TRV at the nominal rotation age is greater for those species grown on longer rotations, recognising the greater time for research and development to produce incremental gains and an assumed associated greater level of improvement. For example, it is likely that the level of improvement between generations will be greater for Chinese fir during a rotation of 20 years than for eucalypts over a 12 year replanting horizon (planted crops are regenerated for one rotation by coppicing). Coppice rotations of eucalypts (COP1 and COP2) are likely to produce similar volumes per hectare as their planted parent crops. Subsequent rotations of both broadleaf and ‘other species’ crops are assumed to be naturally regenerated and likely to produce similar yields to the current crops.

9.3 Harvesting Constraints

The following table summarises the direct harvesting constraints applied in the model.

Table 9-3:
Harvesting Constraints Applied in Forest Estate Model

Constraint	Start Period	End Period	TIME applies to	GROUP Applies to	SIGN	QUANTITY	UNIT
1	1	1	Period	All Plunits	=	3 000 000	m³
2	1	1	Period	Yunnan Broadleaf	<	100 000	m³
3	1	59	Total	Yunnan Broadleaf	>	34 869	ha
4	1	3	Period	GUANGDONG	<	1 800 000	m³
5	1	3	Period	FUJIAN	<	1 800 000	m³
6	1	3	Period	GUANGXI	<	3 000 000	m³
7	1	3	Period	HUNAN	<	2 000 000	m³
8	1	3	Period	YUNNAN	<	840 000	m³
9	1	3	Period	GUIZHOU	<	550 000	m³
10	1	3	Period	HEILIONGJIANG	<	220 000	m³

- Constraint 1 restricts the harvest in Period 1, a half year period from 1 Jul 2009 to 31 Dec 2009, to a total of 3 000 000 m³. It was known from preliminary modelling that about 6 000 000 m³ could be cut for several full year periods in the early period of the model. Accordingly, for the first period of six months, the harvest was specifically set at half of this.
- Constraint 2 similarly restricts the harvest of broadleaf species in Yunnan province to 100 000 m³. It had previously been calculated that the annual sustainable harvest was in the order of 240 000 m³ per year.
- Constraint 3 is to ensure that over the planning period of the model (60 years) all of the original Yunnan broadleaf forest area will be harvested, at least once.
- Constraints 4 to 10 limit the annual harvest in periods 1, 2 and 3, to certain volumes. These volumes are 25% of the specific provinces Annual Allowable Cut (AAC) that is set to apply during the central government's current 11th Five-Year Plan. This plan runs from 2006 to 2010. This is intended to ensure during this early part of the model and wood flow, that Sino-Forest's share of the provincial AAC in any one year is (a) not greater than the AAC, and (b) no more than a reasonable share for any one forestry organisation. In fact, over these three periods of the model, the maximum percentage of any province's AAC modelled as cut by Sino-Forest is 24%. The average is 14%.

9.4 Destinations and Allocation

The model assumptions for the allowed destinations for various species and grades of logs are the same as in the 2007 valuation report. In each province two mill types are specified, one called 'Province-Sawmill (Generic)', and the other 'Province-Pulpmill (Generic)'. Very small and small sized logs are allowed to flow to the pulpmills, and medium and large sized logs to the sawmills, all at the log prices defined for the particular grade of log as specified in Table 8-3. No upper or

lower limit of supply to any mill is specified, and cartage costs are purposely set so that the harvest by province will flow to destinations only within that province.

The modelling software does permit precise specification of where wood, by species and grade, can and might flow. This can be achieved by specifying upper and lower volume limits by destination, and by varying the delivered log price and /or specifying the actual cartage cost by origin and destination. This level of sophistication has not been applied in the Sino-Forest model. Typically in China there is a deficit in supply of logs. In addition, where there is an increase in the level of log supply, that is sustained, then commonly the wood processing investment that eventuates will see the average cartage distance and costs kept to a low level. The average cartage distances by province, as specified in Table 6-3, are considered realistic in terms of modelling likely average cartage cost and net stumpage for this valuation.

9.5 Smoothing Constraints

A large number of specific constraints were applied to control the wood flow. These ensured that:

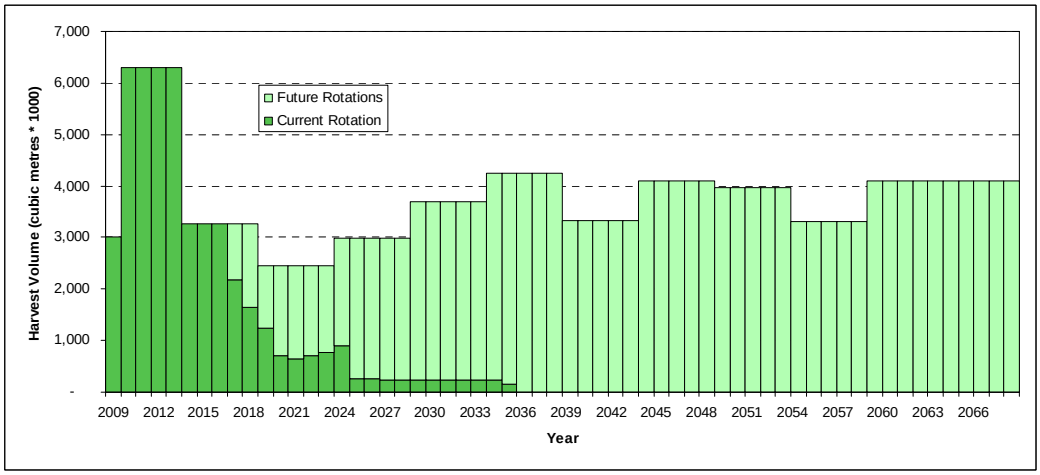
- From period 2 to 59, the annual harvest from the Yunnan broadleaf was non-declining in volume terms.
- Within each lustrum (five-year period) the total harvest volume in each year did not change.
- Between periods 5 and 6, the total annual volume harvested could not increase or decrease by more than 50%, and that between subsequent lustra, e.g. periods 10 to 11, 15 to 16, 20 to 21, and so on, the change in volume could not be more than 25%.
- Within each lustrum there were limitations on the extent to which the annual harvest within each of the three major provinces (Hunan, Guangxi and Hunan) could change. This is to avoid there being high levels of harvest in a particular province for one or a few years, and then very little or none for one or more years, i.e. some smoothing of the annual harvest, by province.
- Within and between each lustrum there were limitations on the extent to which the annual harvest could vary by species so as to give some smoothing of the harvest by species, and avoid the situation where some species might be harvested in large volumes in some years and not in others.

Both the harvesting and the smoothing constraints seek to ensure a sensible and practicable harvest of the forest in a manner that would allow reasonable management of harvesting resources and avoid any undesirable impact on the log market.

9.6 Wood Flow

The following graphs show the results of the wood flow modelling.

Figure 9-1:
Wood Flow by Rotation



Note, the estimate of the market value of the forest is based on the wood flow and cash flow of the current rotation only.

Figure 9-2:
Wood Flow by Species

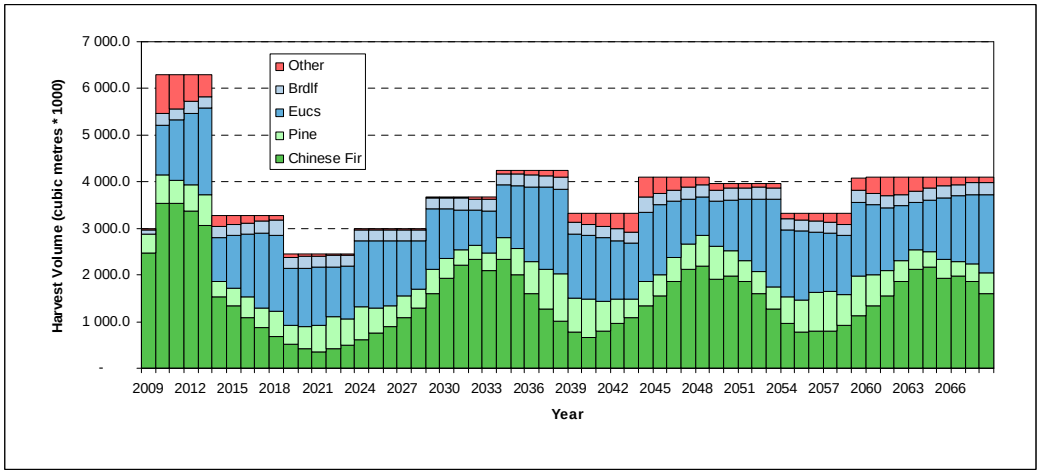


Figure 9-3:
Wood Flow by Origin

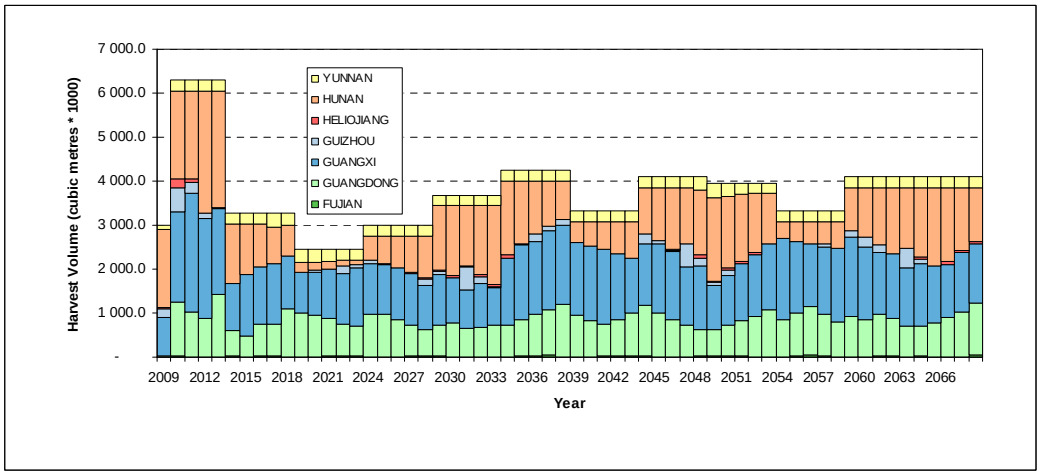
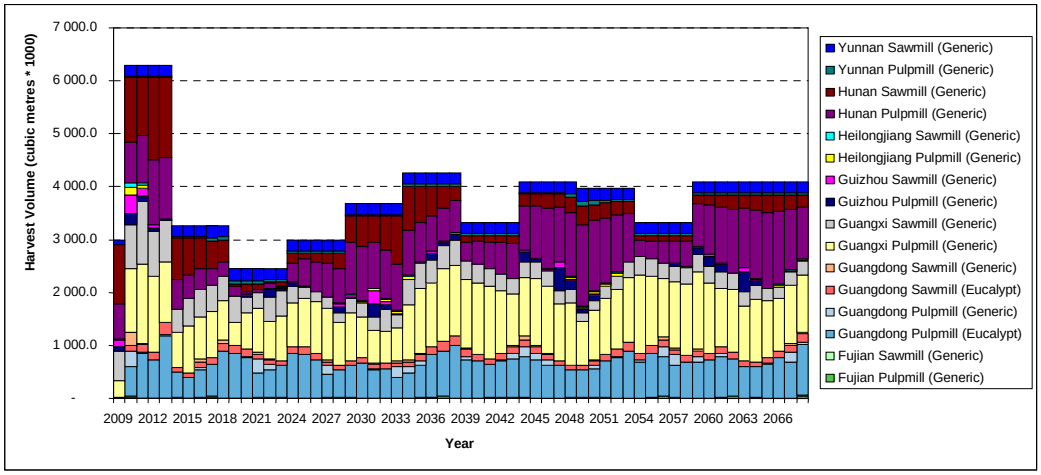


Figure 9-4:
Wood Flow by Destination



Because Sino-Forest's forest resource is relatively mature, with the capacity to produce a large harvest volume in the early periods, a higher early harvest has been modelled than previously. This then reduces to a harvest rate that is constant in terms of the annual volume within each five-year period and restricted in the level of change between lustra. This embodies some level of smoothing of the harvest by species and by province. In Pöyry's opinion, this is a sensible harvesting strategy that a rational forest owner of the Sino-Forest estate might follow. This managed wood flow supports practical harvesting and marketing.

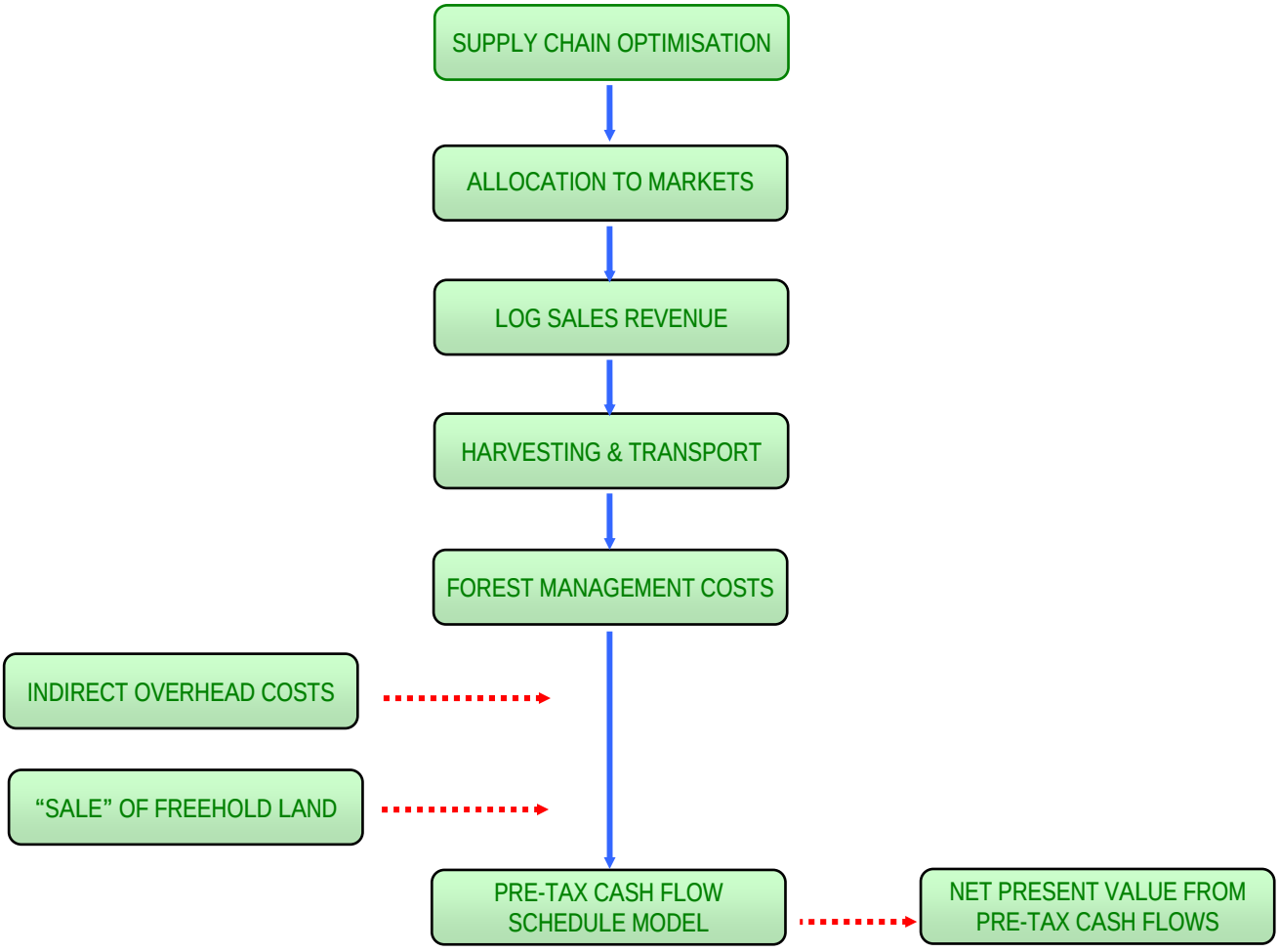
10 DISCOUNTED CASH FLOW VALUATION

10.1 Overview

The diagram below illustrates the structure of the valuation model. Generation of the initial inputs (the wood flows) has been described in the previous section. These wood flows are then optimised in their delivery throughout the supply chain to the various end-use markets. Revenue is generated at each destination, the price point being delivered at mill gate (AMG). Harvesting and transport costs, annual forest management costs, indirect overhead costs and the net cost of land are deducted from this revenue to give an operating margin.

The linear programming model generates all of these costs streams, since their profile depends on the harvesting strategy and age-class structure of the forest.

Figure 10-1:
Schematic Illustration of the Forest Valuation Process



10.2 Treatment of Taxation

Astute forest investors are expected to prepare valuations on the basis of post-tax cash flows. However, in general the accessible information with which to interpret transaction evidence almost always excludes any evidence of the buyer's taxation position. Accordingly, when forest valuers have sought to derive implied discount rates, these have largely been based on pre-tax cash flows. This valuation has been based on real pre-tax cash flows to which Pöyry has applied what we consider an appropriate discount rate. This is to translate the pre-tax cash flow forecast into a net present value representative of the market value of the tree crop asset.

10.3 Scope of the Analysis

In this context, scope refers to the time span of the analysis. The forest estate modelling process can provide projections of cash flows far into the future. Providing the existing forest is replanted into productive croptypes, it would be possible to run the analysis indefinitely. Two alternatives are demonstrated in forest valuation:

- **Perpetual cash flows** - the forest is modelled as an ongoing business, where stands are replanted as they are felled. All revenue and costs associated with the sustained venture are modelled in perpetuity. In practice, the model is extended to the point where, after the discounting process, incremental cash flows are effectively immaterial. A figure in the order of sixty years is not uncommon when modelling a large plantation resource.

- **Current rotation analysis** - only the revenue and costs associated with the existing tree crop are included in the analysis.

In general, Pöyry prefers to confine the valuation analysis to the current rotation. The justification for this approach is that future rotations, which include a degree of conjecture, are excluded from the analysis. The current rotation approach is especially compelling when future rotations appear either spectacularly profitable, or especially unprofitable. In either case it could be anticipated that some modifying influence would prevail.

If subsequent rotations are unprofitable, the forest owner will look to contain costs and increase log prices. If there is no prospect of either, a rational investor will quit forest ownership.

If subsequent rotations appear super-profitable, it can be anticipated that there will be competition for the underlying land and its price will increase. When charged with a higher land price, the profitability of the tree crop, and hence its value, will decline.

The approach is consistent with wider business appraisal that generally seeks to confine the analysis to the current investment cycle, and thereby avoid unnecessary conjecture.

10.4 Timing of Cash Flows

Tree planting within the Sino-Forest estate most commonly takes place over the months, February to April. By convention, stands are generally assumed to have been fully established by 30 June. The yield estimation process has generated yields that are projected to apply on the full anniversary of planting. Thus, for example, trees planted in 1990 were aged 18 full years on 30 June 2008 and the yields corresponding to 18 years of age were assumed to be available at that date.

With large forests that are subject to continuous harvesting, it would be impractical to fell all stands just as they turn their nominated target age. Instead, in a valuation model of the type represented here, they are expected to be felled across the span of a year. Commonly applied financial modelling procedures would suggest that the assumption that revenues arise at year-beginning would seem unduly aggressive. Seemingly, a more realistic approach would be to assume that cash flows arise no sooner than mid-year.

Cash flows are assumed to arise on average at mid-period. Accordingly, with the first period being the six months from 1 January 2009 to 30 June 2009, the mid period is 31 Mar 2009. The first period's net cash flow has therefore been discounted for 3 months or 0.25 years, from 31 Mar 2009 back to the valuation date of 31 Dec 2008. Period 2 is from 1 Jul 2009 to 30 Jun 2010. The mid period is 31 Dec 2009. Accordingly, the period 2 net cash flow has been discounted for one whole year, period 3 for 2 whole years and so on.

10.5 Date of Valuation

The date of the valuation is **31 December 2008**. Pöyry uses proprietary software that allows the isolation of both the cash flows arising from the current rotation and all future rotations at any point in the valuation horizon. The cash flows contributing to the Sino-Forest market valuation (current crop) arise during the 27-year period beginning 1 January 2009 and ending 30 June 2035. In fact 95% of the market value derives from cash flows arising by 2019, and 99% by 2024.

11 DISCOUNT RATE

A valuation based on an NPV approach requires the identification of an appropriate discount rate. In selecting the rates there are two broad approaches:

- Deriving the discount rate from first principles. The most common expression of this approach turns first to the Weighted Average Cost of Capital (WACC). This recognises the costs of both debt and equity. The cost of equity may be derived using a Capital Asset Pricing Model (CAPM) method.
- A second approach is to derive implied discount rates from transaction evidence.

11.1 Discount Rate Derived from WACC/CAPM

As part of the 31 December 2008 valuation of Sino-Forest's assets, Pöyry commissioned Associate Professor Alastair Marsden of Auckland UniServices Limited to prepare a report on the cost of capital for a generic forest investment located in China. Dr Marsden's full report is at Appendix 6.

Dr Marsden's December 2008 report concluded that depending on the modelling assumptions a range of discount rates might be proposed for a forest-owning venture in China. His derived ranges of rates are shown in Table 11-1.

Table 11-1:
Estimate of Post-tax WACC by Marsden (33% corporate tax rate)

Lower bound	Average estimate	Upper bound
7.3%	**9.0%**	10.7%

The formulation of WACC employed by Dr Marsden was associated with post-tax cash flows and includes the cost of debt. Dr Marsden also converted his estimate of nominal post-tax WACC to an 'equivalent" real pre-tax WACC through a simple transformation with appropriate qualification. The resulting WACC range has a mid-point of 13.4% as shown in Table 11-2.

Table 11-2:
Estimate of Real Pre-tax WACC by Marsden (33% corporate tax rate)

Lower Bound	Average Estimate	Upper Bound
10.9%	**13.4%**	15.9%

11.2 Implications of the Global Recession for Discount Rate

Pöyry has watched with special interest the appetite for investment in forests since the global financial trauma that began in early 2007. One scenario could have seen a flight from 'alternative' assets such as timberland, questioning whether confidence and liquidity could be preserved in what is inescapably only a small corner of the investment market. A second scenario would suggest that timberland would be viewed positively as a safe haven, with long-lived resilient tangible assets.

Pöyry's observation of investor behaviour in 2008 suggests the latter sentiment has been stronger, although arguably the timberland market is also one in which inertia plays a significant role. Timberland investment managers may go to the market to raise funds some considerable time before the deal can be completed. Thus, the deals that are eventually consummated may reflect an investor commitment from many months before.

In late 2008 Pöyry commissioned Dr Marsden of Auckland University to prepare a report discussing the effects of the global credit crisis on the cost of capital for forestry investments. The full report is attached in Appendix 7. Pöyry draws attention to the disclaimer on page 2. Dr Marsden concludes in this report that "…the impact of the global credit crisis on the cost of capital for a pure forest owning entity will be limited. We understand this class of forest owners has a long-term investment time horizon (>5 years), minimal or no debt and retains flexibility on the timing of any timber harvest. The ability to contract forest operations and delay timber harvesting until demand and prices improve will reduce the sensitivity of a forest entity's cash flows to macro-economic shocks and reduce the risks of forest ownership".

11.3 Implied Discount Rates

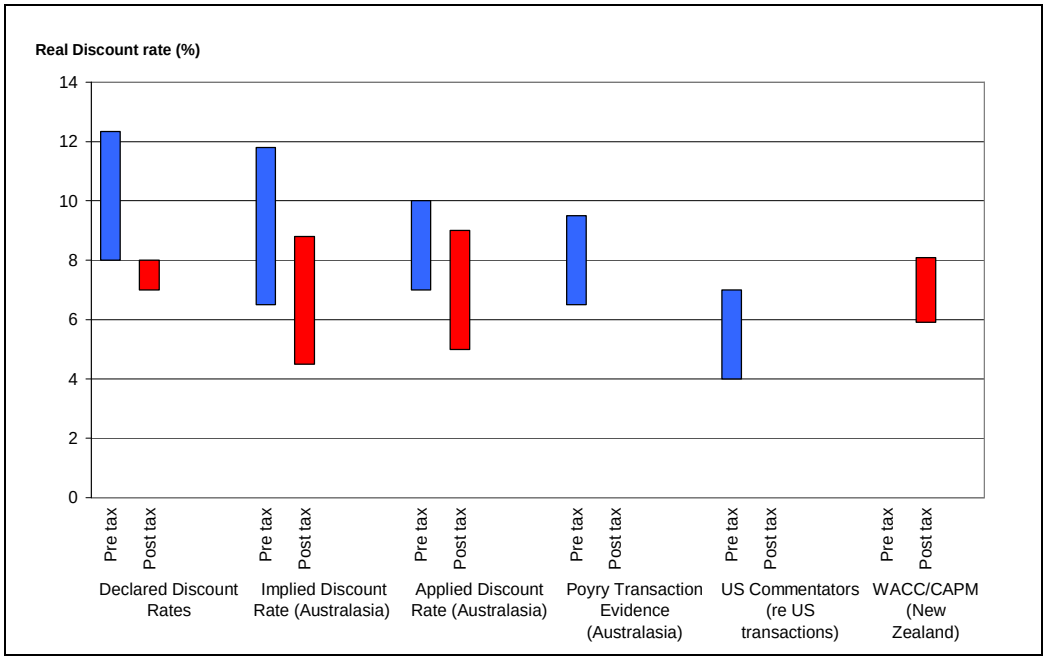
Pöyry has very little implied discount rate data for China and other than sales and purchases that Sino-Forest itself has been party to, we are not aware of any major forest transactions in China in the past year. As the commercial plantation forest industry develops and forests are transacted, empirical evidence from which to derive implied discount rates is expected to arise.

By comparison, in New Zealand analyses of implied discount rates has become a standard means for comparing transaction results and deriving discount rates to apply in forest valuation. Surveys of the discount rates employed by practitioners and their perceptions of the discount rates implied by recent transactions are also published.

In New Zealand, Pöyry consultants have charted a set of recent discount rate information. These data are from transaction evidence, WACC (weighted average cost of capital) calculations and extractions from commentary on transactions.

A summary of that data is presented in Figure 11-1.

Figure 11-1:
Comparison of Discount Evidence



The blue bars show the range of real discount rates applicable to pre-tax cash flows, and the red the range of real discount rates applicable to post-tax cash flows. A simple average of the mid-point discount rate is about 8.4% as applicable to pre-tax cash flows. Ignoring the US data that mid-point becomes about 9.2% for Australasia.

The capacity to utilise implied discount rates in this valuation is limited to considering how the forest investment in China compares with such investment in other locations.

Commercial forestry in Southern China is still developing and faces some challenges, these include:

- The reliability of forest descriptions
- The accuracy of yield prediction
- Achieving high growth rates in a consistent manner.

It is Pöyry's opinion that for many forest investors investing in plantation forestry in China would be considered a riskier proposition than investing in the industry in Australia or New Zealand, for instance.

11.4 Incorporating Risk in the Discount Rate

If forest investment in China is at present perceived to be a more risky proposition than like activity in other international counterparts, the issue then becomes how to quantify this difference. The textbook treatments of the subject make it clear that the discount rate cannot be regarded as a simple catch-all for any and all forms of perceived risk. As the discount rate may be a very blunt instrument in such a role, it is preferable instead to attempt to acknowledge risk in the development of the cash flows to which the discount rate is applied. However, despite this principle,

there is an inclination by potential purchasers to load the discount rate where they feel uneasy.

Table 11-3, below is a qualitative comparison of the key forestry risk elements in China and Australasia.

Table 11-3:
Comparison of Key Risk Elements of Forestry in China with Australia / N.Z.

Risk Item	Comments	Perception of Risk in China Compared to Australia / NZ
Liquidity risk	Likely to be fewer prospective purchasers and more restricted opportunity to exit forest investment in China.	Slightly higher
Valuation risk	Elements of the Forest Description, including recoverable yields (no reconciliation evidence available) and the area statement (largely because the Sino-Forest estate is such a dynamic one) are less certain. This is balanced somewhat by a positive future market outlook for logs with possibly some conservatism in the Pöyry log price forecast.	Higher
Political and Currency risk	Investment in China is of great interest both internally and to foreign investors. Politics, society and the currency is strong and stable. There is still however some concerns and perceived risks on the part of foreigners especially insofar as land based assets are concerned, where exit could be prolonged, complex and uncertain.	Slightly higher
Stumpage price risk	China's normal demand for wood fibre is strong and is expected to continue to grow. There is a supply deficit of logs. Log prices are high and appear quite strong and stable or increasing in real terms. Logging costs have been substantially increased in this valuation, and brought into line with current actual costs. Accordingly, there is considered to be low stumpage risk.	Lower
Growth and Yield risk	Pöyry is of the opinion that the yield tables underlying the wood flows and cash flows are reasonable. However, until there is a history of reconciliation there will be some uncertainty as to outturn in total recoverable volume and by log grade.	Higher
Land tenure risk	Prospective investors in the forest crop would likely perceive this with some uncertainty, largely due to a lack of understanding of Chinese land tenure and land use rights. Chinese land ownership is complex and is seen as an impediment to investment. As a result the Chinese Government has embarked on a programme to clarify land ownership issues over the next five years. This is likely to result in greater clarity in terms of land tenure and reduce perceived risk.	Slightly higher but likely to reduce over next few years.
Physical or biological risk	The risk of fire and forest losses in the plantation forests of southern China is considered to be lower than in Australasia. Unlike Australia and New Zealand, Southern China experiences its greatest rainfall during the summer months. The relatively small and discontinuous nature of the forests in China mean that in the event of a significant fire occurring, it is less likely that the area damaged would be extremely large. Climatic effect damage such as snow, wind, frost and heavy rainfall are not considered to be very different. China's geographic location renders it more susceptible to entry of pests and disease, although there are no reports of major forest problems or losses.	Similar

The challenge then becomes how to quantify the impact of these differences in risk elements in terms of the discount rate.

11.5 Discount Rate Applied in Valuing the Sino-Forest Resource

The range of rates suggested by the WACC/CAPM approach, at 10.9 to 15.9% is very broad. Considering the lack of major forest transactions in both Australasia and China, Pöyry is of the view that forest owners who are not under any particular pressure to sell assets are not inclined to accept highly discounted prices for forests. Accordingly, Pöyry has not used the upper extreme of the WACC estimates in the determination of a discount rate to apply to this market valuation.

Given the current application of discount rates in the range of 8.25% to 8.50% to pre-tax cash flows in New Zealand, and the comparison of risk elements in Table 11-3, in Pöyry's judgement an additional 3.0% would seem reasonable to apply to the Sino-Forest estate.

Pöyry has chosen to apply a discount rate of 11.5% to the pre-tax cash flows forecast to arise from the management and harvest of the current crops of Sino-Forest's forest estate. In selecting such a rate we have been inclined to recognise that investors in forestry in China will inherently be taking a long term view, and do have grounds for optimism on the forest industry's future there. The fundamental factors that affect forestry performance are favourable. Importantly too, the definition of market value for the forests requires that there be not just willing buyers, but also willing sellers. If the only purchase offers to be extended involved very high discount rates we would expect that forests would not be willingly sold.

A discount rate of 11.5% provides a margin of around 7.0% over Treasury Bond 'risk-free' real rates that have prevailed in western economies over the past 20 years.

12 VALUATION RESULTS

12.1 Exchange Rate

The cost and price data applied in the valuation is in Chinese Renminbi (RMB). The resulting cash flows generated from the forest estate wood flow and allocation model are also in RMB.

For reporting, Pöyry has assumed a US dollar to RMB (USD:RMB) exchange rate of 6.8542[3]. This is the published rate for 31 December 2008.

12.2 Valuation as at 31 December 2008

Pöyry has estimated the market value of the Sino-Forest tree crop assets as at 31 December 2008 to be USD1 644.602 million. This is the net present value of the pre-tax cash flows arising from the future management and harvest of the existing forest crops during their current rotation. The valuation uses an 11.5% discount rate applied to real, pre-tax cash flows.

Pöyry has also calculated the NPV of the cash flows from the forest estate assuming its regeneration after harvest and the continued use of the land for forestry. The underlying cash flow includes the costs of re-establishing and maintaining the plantation forests, and net revenues arising from their management and harvesting in perpetuity. This figure is USD1 693.213 million.

This is not an estimate of the market value. The difference between the market value and this figure, i.e. USD48.611 million is wholly prospective. It is associated with rotations of tree crops that, as at the date of the valuation, have not commenced.

12.3 Merchantable Volume

Table 12-1 outlines the merchantable standing volume of the existing Sino-Forest plantations. Merchantable standing volume excludes areas of eucalypts that are less than 2 years old and Chinese fir less than 5 years as at 31 December 2008. Thus 8 069 ha are not included.

Table 12-1:
Merchantable Standing Volume as at 31 December 2008

Type of Plantation	Tree Planting Year	Years of Age (base on 2008)	Net Stocked Area of Forest (ha)	Average Merchantable Standing Volume (m^3 per ha)	Merchantable Volume (m^3)
Plantation Under 5 Years Old	2004	4	4 707	92	434 465
	2005	3	21 015	59	1 230 676
	2006	2	24 388	30	731 651

[3] OANDA.com *The Currency Site* (http://www.oanda.com/convert/classic)

Type of Plantation	Tree Planting Year	Years of Age (base on 2008)	Net Stocked Area of Forest (ha)	Average Merchantable Standing Volume (m^3 per ha)	Merchantable Volume (m^3)
	2007	1	6 579	10	65 794
	2008	0	9 541	-	-
Plantation Over 5 Years Old	1968	40	-		-
	1969	39	-		-
	1970	38	-		-
	1971	37	-		-
	1972	36	-		-
	1973	35	177	61	10 852
	1974	34	-		-
	1975	33	-		-
	1976	32	-		-
	1977	31	-		-
	1978	30	1 599	174	277 646
	1979	29	-		-
	1980	28	-		-
	1981	27	-		-
	1982	26	-		-
	1983	25	1 857	61	113 085
	1984	24	3 540	191	676 511
	1985	23	2 943	60	176 556
	1986	22	4 506	106	475 589
	1987	21	2 728	60	163 674
	1988	20	31 422	142	4 456 447
	1989	19	8 514	161	1 370 763
	1990	18	24 307	115	2 784 281
	1991	17	35 778	142	5 078 311
	1992	16	43 963	122	5 348 962
	1993	15	44 109	103	4 560 744
	1994	14	2 046	148	303 148
	1995	13	22 418	111	2 491 149
	1996	12	429	118	50 679
	1997	11	-		-
	1998	10	-		-
	1999	9	140	103	14 343
	2000	8	1 103	156	172 457
	2001	7	309	143	44 056
	2002	6	1 540	127	196 110
	2003	5	559	111	61 799

Type of Plantation	Tree Planting Year	Years of Age (base on 2008)	Net Stocked Area of Forest (ha)	Average Merchantable Standing Volume (m^3 per ha)	Merchantable Volume (m^3)
Broadleaf Species Yunnan (Natural Forest)	1968	40	2 493	181	451 305
	1969	39			-
	1970	38	2 420	181	438 080
	1971	37			-
	1972	36	293	181	53 033
	1973	35	1 046	181	189 410
	1974	34	48	181	8 736
	1975	33			-
	1976	32			-
	1977	31			-
	1978	30	9 917	181	1 795 055
	1979	29	4 669	181	845 066
	1980	28	6 753	181	1 222 353
	1981	27	464	181	83 972
	1982	26	1 601	181	289 757
	1983	25	1 349	181	244 253
	1984	24			-
	1985	23	107	181	19 367
	1986	22			-
	1987	21			-
	1988	20	3 708	181	671 100
			335 087		**37 501 662**

Note: the total merchantable volume currently standing in the forest excludes eucalypt areas less than 2 years old and Chinese fir less than age 5 years. This total merchantable volume of 37.5 million m^3 in the forest is a notional figure. There is no expectation that it would be realised through immediate harvesting. The total volume expected to be harvested from the forest and sold as logs, over the modelled management and harvest of the existing tree crops (current rotation only), that is the model upon which the market valuation is based; is 49.4 million m^3.

13 SENSITIVITY ANALYSIS

A sensitivity analysis has been conducted that addresses the main drivers of value within the current rotation valuation model. These are:

- Discount rate and log price changes (in combination)
- Changes in the level of fixed overhead costs
- Changes in the costs of production (logging, loading and log cartage)
- Changes in the level of Land Rentals
- *Changes in the level of Forestry Costs (to show these are immaterial)*

Table 13-1:
Log Price Sensitivity

Scenario	Real Discount Rate Applied to Pre-tax Cash Flows		
	10.5%	11.5%	12.5%
	Current Rotation Value (USD million)		
5% Real Price Increase	1 852.416	1 790.270	1 732.290
No Real Price Increase (Base)	1 701.713	**1 644.602**	1 591.318
5% Real Price Decrease	1 551.010	1 498.934	1 450.345

Table 13-2:
Overhead Cost Sensitivity

Scenario	Real Discount Rate Applied to Pre-tax Cash Flows		
	10.5%	11.5%	12.5%
	Current Rotation Value (USD million)		
RMB400 fixed cost per ha/year	1 683.129	1 626.553	1 573.768
RMB300 fixed cost per ha/year	1 701.713	**1 644.602**	1 591.318
RMB200 fixed cost per ha/year	1 720.296	1 662.652	1 608.867

Table 13-3:
Harvest Cost Sensitivity

Scenario	Real Discount Rate Applied to Pre-tax Cash Flows		
	10.5%	11.5%	12.5%
	Current Rotation Value (USD million)		
10% Harvest Cost Increase	1 619.843	1 565.505	1 514.803
Base Harvest Cost	1 701.713	**1 644.602**	1 591.318
10% Harvest Cost Decrease	1 783.583	1 723.699	1 667.832

Table 13-4:
Land Rental Cost Sensitivity

Scenario	Real Discount Rate Applied to Pre-tax Cash Flows		
	10.5%	11.5%	12.5%
	Current Rotation Value (USD million)		
Cost RMB350/ha/year	1 683.075	1 626.503	1 573.724
Cost RMB250/ha/year (Base)	1 701.713	**1 644.602**	1 591.318
Cost RMB150/ha/year	1 720.351	1 662.701	1 608.911

Table 13-5:
Direct Forestry Cost Sensitivity

Scenario	Real Discount Rate Applied to Pre-tax Cash Flows		
	10.5%	11.5%	12.5%
	Current Rotation Value (USD million)		
50% Forestry Cost Increase	1 697.015	1 639.995	1 586.796
Base Forestry Cost	1 701.713	1 644.602	1 591.318
50% Forestry Cost Decrease	1 706.411	1 649.209	1 595.839

The valuation result is most sensitive to log price with a 5% reduction in log price causing a near 10% decrease in forest value, and vice versa. It is less sensitive to harvest costs, with a 10% increase in the combined cost of logging and cartage causing a 5% reduction in value, and vice versa. The valuation is largely insensitive to annual overhead costs and land rental costs, with increases of RMB100 per hectare per year in the cost of either item causing a 1% reduction in forest value. As discussed above and shown in Table 13-5, large changes in forestry direct costs have no material impact on the valuation.

14 CHANGE ANALYSIS

The following table summarises the key factors that have produced the change in the value of Sino-Forest's forest estate (tree crops), between 31 December 2007 and 31 December 2008.

Table 14-1:
Key Components Producing the Change in Tree Crop Value 2007-2008

	Forest Value	Single Factor Value Change	Value Change
Item	**USD (millions)**	**USD (millions)**	**%**
Market Value as at 31-Dec 2007	**1 245.284**		
As at 31-Dec 2008			
Change in Forest Area by species and age	1 330.754	85.47	7
Change in Yield Tables - volume	1 440.996	110.242	8
Change in Yield Tables - grade	1 663.237	222.241	15
Change in Log Prices	1 597.466	- 65.771	-4
Change in Logging Costs	1 486.688	- 110.778	-7
Change in Harvest Tax *(corrected application)*	1 551.191	64.503	4
Change in Cartage Costs	1 577.821	26.63	2
Change in Land Rental Cost	1 558.720	- 19.101	-1
Change in Harvesting Strategy	1 543.194	- 15.526	-1
Change in FX	1 644.602	101.408	7
Total		**399.318**	**30**
Market Value as at 31 Dec 2008	**1 644.602**		

The main forest related causes of the increase in forest value are the expansion in forest area and the quality and value (species and maturity) of this change, along with the revised estimates of growth and yield (both volume and grade composition) applying to the forest estate.

Reduced log prices and increases in logging costs have reduced value, but this has been somewhat compensated for by reduced cartage costs and harvest related taxes and fees.

There has been a favourable change in the exchange rate from RMB to USD.

APPENDIX 1

Valuation Methodology

1 METHODOLOGY

1.1 Outline of Valuation Methods

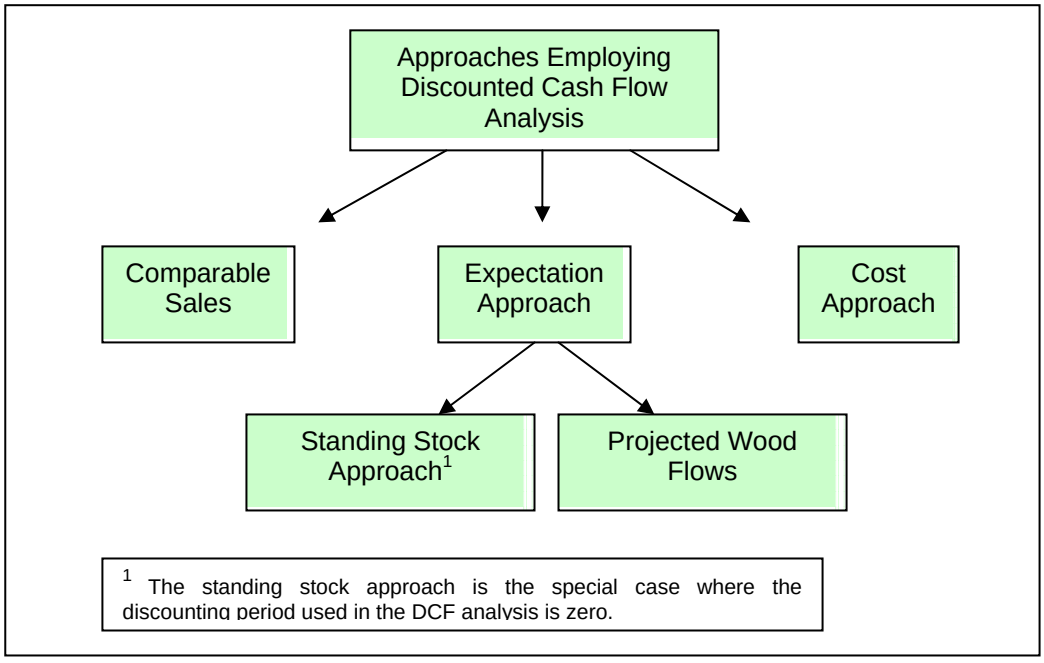
Accompanying the global expansion in planted forests has been ongoing refinement of the processes employed in forest appraisal.

Three main methods of appraisal are commonly distinguished. These are:

1. Comparable sales
2. Expectation value
3. Cost

If these methods are to be effectively utilised in forest valuation then all three of them generally require a discounted cash flow (DCF) approach[1]. A schematic representation of the relationship between the methods is shown in Figure 1-1.

Figure 1-1:
Valuation Approaches



1.2 Expectation Approach

The Expectation approach invariably involves DCF analysis. It provides the Net Present Value of the future net revenue stream and is commonly referred to as the "Income" or "NPV" approach[2]. As the terminology implies, this approach involves projecting the anticipated future net income stream, and then "discounting" this, at a suitable cost of capital, in order to acknowledge the lower economic value of delayed receipts.

[1] In this context, DCF is considered within its wider interpretation. This recognises that the timing of the receipt or outlay of funds must be considered. When applied rigorously, the *cost* approach involves compounding. This process is the inverse of discounting, and thereby falls within the scope of DCF.
[2] The list is not exhaustive. Other acronyms that may appear include PNW (Present Net Worth) and PW (Present Worth).

The Expectation approach may characteristically turn to a wide reference base when selecting the discount rate. A commonly applied practice is to derive a Weighted Average Cost of Capital (WACC). This distinguishes the distinct costs of debt and equity. The latter may be derived using the Capital Asset Pricing Model (CAPM).

1.3 Comparable Sales

In principle, the most satisfactory basis for valuing forests is to turn to the evidence provided by sales transactions.

In comparing transaction results it is necessary to consider which attributes influence the value of planted forests. Important factors may include:

- Forest maturity
- Species composition
- Site productivity
- Proximity to market
- Forest terrain (and thereby harvesting system)
- Silvicultural history
- Land value

Each of these factors may have a significant effect on forest value. Other features may also be influential. These include the standard of roading infrastructure in the forest, and the risks arising from climatic factors and pathogenic agents. Forest size may also have an influence, although there may not be a consistent trend with changing forest area.

When comparing forests and the prices paid for them, it is also necessary to consider the time at which an example sale took place. In the first instance, the timing is reflected in perceptions of current log prices and their anticipated future movement.

Given the range of factors affecting forest value, it is unlikely that forests can be found that are closely similar to the forest to be valued. This is especially the case given that forest estate transactions are not, by nature particularly frequent. Achieving a forest-to-forest match is extremely unlikely, as it would require finding forests alike in all respects, including size.

Forest appraisers commonly find that the one distillable parameter that can be most usefully extracted from transactions involving heterogeneous forest resources is the Implied Discount Rate (IDR). Derivation of the IDR involves developing a credible cash flow projection for each transacted forest, using the best information the analyst can obtain. This is then compared with the price actually paid for each resource. The discount rate at which the discounted cash flows match the purchase price is the IDR.

IDR evidence from the wider transaction base can be applied to the cashflow projections for the forest being valued.

The IDR offers a device by which differences in size, timing, markets, location, age-class, volume, operability and other relevant factors are recognised. Further, the approach also recognises that a useful method of arriving at a market comparable result is to employ the same procedure that market participants utilise in deriving and supporting their negotiating positions. For Asia Pacific forest resources, the most common method of negotiating transaction values involves DCF constructions.

The manner in which Pöyry applies the Comparable Sales and Expectation approaches may at first impression appear to be similar. Both employ a DCF formulation and refer to estimates of future cash flows. This does not imply that they can or should be unquestioningly coalesced into a single method. There is sufficient difference between them that they can potentially lead to different results.

1.3.1 Realisation Value of Current Standing Stock

This method warrants distinct discussion because it has had historical application. It recognises the potential net realisation value of the current timber content of the forest if it were cut down immediately. A value is based on the merchantable content (or "standing stock") at the time of the valuation. It is therefore a special case within the Expectation approach. Because the forest is harvested immediately, the cash flow modelling is confined to a single period. No discounting is required to recognise the cost of capital. This value is both tangible and comparatively straightforward to calculate. It does however have obvious limitations:

- For plantation forests, the timber realisation value of the stand may be very low for most of the rotation length. Despite this, the vendor will be mindful of the funds invested in each stand and are expected to seek some reimbursement.
- By the final years of the characteristic rotation, the marginal rate of value growth of the standing stock becomes considerable. An informed and rational owner will recognise the economic opportunity associated with holding the growing trees rather than selling them. Only if the purchaser's offer matches the vendor's perception of economic opportunity cost can the vendor be indifferent as to whether to hold or sell. Inherently, therefore, the vendor's perspective is based not on the current timber content but instead on the future anticipated revenue.
- For forest resources of significant size it is unlikely that the market could absorb all of the forest wood content at once without log prices being depressed.

The first effect leads to an unduly conservative valuation, while the third can lead to an overly optimistic result. It is unlikely that the two effects would exactly offset one another. Pöyry's preference in valuing forests is to avoid this method altogether, as it is unlikely to reflect either the buyer's or vendor's analysis.

1.4 Cost Method

There are different interpretations of the cost approach. A straightforward version takes the costs involved in acquiring or establishing and maintaining the forest and

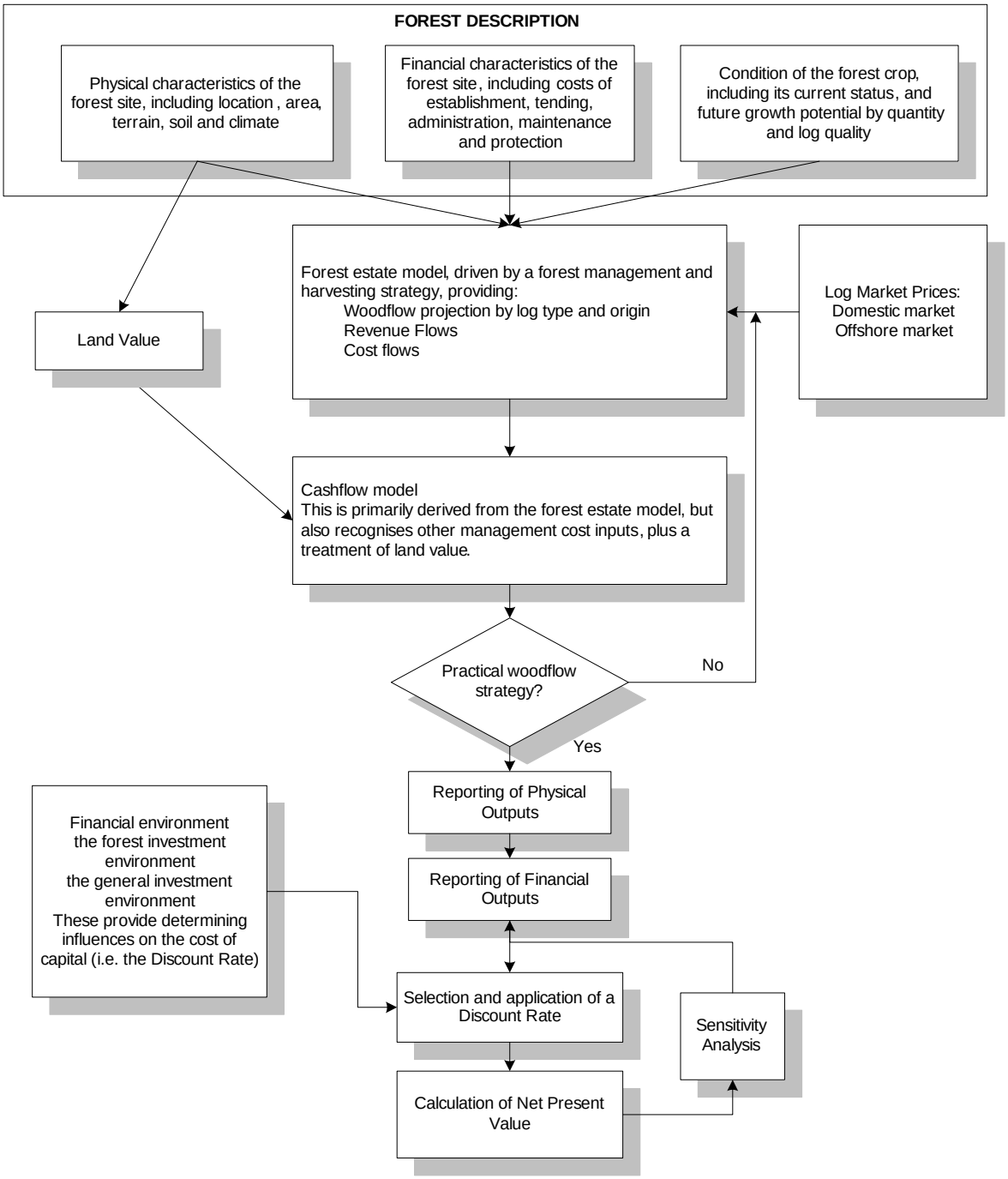
accumulates these with compound interest from the inception of the investment to the current point in time. The forest value is therefore the price that forest owners would have to receive if they were to obtain a satisfactory rate of return on their investment to date. The method is equivalent to the accountants' concept of "capitalising" establishment/acquisition costs plus interest, although the forest valuer is more inclined to adopt assumed costs which are "standard" and current at the time of the valuation.

By using costs that are current, along with a "real" (inflation-corrected) compounding rate, the valuation is updated for inflation. The use of "industry standard" costs ensures that only costs consistent with efficient practice are recognised. Forest valuers are wary of the compounding approach, and likewise capitalisation. In the market place a "high cost" forest does not necessarily prove to be a "high value" forest and yet this is what the method implies.

1.5 Valuation Process

The process followed in deriving a value for Sino-Forest's tree crop is illustrated in Figure 1-2. The first stage of the valuation process involves assembling a comprehensive "description" of the forest. Key components of this include a land area summary and information on the growth potential of the tree crop.

Figure 1-2:
Schematic Outline of the Valuation Process



At the heart of modern forest management is a forest estate modelling system that employs a linear programming formulation to derive a credible harvesting strategy. This technology enables the collective resource to be modelled to meet various aims, including resource level constraints as well as the supply of various forest products into their end-use markets.

Following confirmation that the results of the forest estate modelling process are managerially workable, the generation of wood flows and the allocation of products to markets enables the derivation of cash flows upon which a DCF valuation can be

based. Application of the discount rate to these cash flows produces a present value for the tree crop. The responsiveness of this valuation to changes in the input variables can then be tested with a variety of sensitivity analyses so as to derive a spread of potential tree crop values. This will indicate how sensitive the model is to changes in key inputs.

1.6 Other Aspects of the Valuation Process

In applying the DCF approaches, the following aspects also require consideration:

- Analysis of pre-tax or post-tax cash flows
- The period of analysis
- Terminal value
- Harvesting strategy

These aspects are discussed in more detail below.

1.6.1 Analysis of Pre-tax or Post-tax Cash Flows

Both approaches have been demonstrated in valuing planted forests. For cash flows derived on a pre-tax basis a pre-tax discount rate is applied. Post-tax cash flows should be discounted at a post-tax discount rate. If the discount rates have been consistently derived, either approach should lead to the same tree crop value.

1.6.2 The Period of Analysis

Wood flows and associated cash flows may be modelled on a perpetual basis or they may be confined to the current rotation.

Forest estate models have come to be an integral part of the forest valuation process, being applied to identify the forest's long-term supply capability. Despite this extended wood flow-modelling horizon, there has been a general tendency to confine the scope of the financial analysis to those cash flows solely associated with the tree crop that currently exists. This includes all parts of the present forest from the oldest stands to those just established. It excludes, however, trees that are yet to be planted as these are considered to be part of a new investment cycle.

Wider business appraisal practice encourages the confinement of the scope of DCF analysis to the current investment cycle. There are arguments that forest valuation should be no different. The practice of considering the performance of the existing tree crop alone lies with the general preference for avoiding unnecessary conjecture associated with costs, yields, anticipated revenues and the future discount rate.

As generally applied, the current rotation model is not to be confused with a "liquidation" or "realisation" model. Instead, the harvesting strategy for the current tree crop is assumed to be consistent with a long-term sustainable management policy, and although there will be future rotations, they will not contribute to the net present value calculation, i.e. they are "NPV neutral". In effect, all funds invested in them are assumed to earn such proceeds that the investment generates exactly the discount rate.

The current rotation model effectively assumes that through adaptive management the forest owners will seek to secure at least NPV neutrality on their reinvestment in succeeding rotations.

Pöyry finds that the current rotation model is widely applied. Furthermore the IAS41 standard encourages this approach stating:

> *"The objective of a calculation of net present value of expected cash flows is to determine the fair value of a biological asset in its present location and condition" (paragraph 21)*
>
> *"An entity does not include any cash flows for financing the assets, taxation, or re-establishing biological assets after harvest (for example, the cost of replanting trees in a plantation forest after harvest)." (paragraph 22)*

This does not suggest that this places the matter beyond scrutiny. In some locations the approach has found initial application in an environment where log prices have been high. Second and subsequent rotations, which included the expectation of continuing firm log prices, led in many situations to a net addition to the first rotation's NPV. In those circumstances, confining the valuation to the current rotation represented some conservatism.

With log prices having softened, and a greater uncertainty surrounding the prospects of real price growth, current rotation models are now tending to provide higher valuations than their perpetual equivalents, if the discount rate is unchanged. It may be too simplistic to assume that future rotations can indeed be made "NPV-neutral". Certainly, it may be more straightforward with some forests than others to achieve the improvement in performance required. It would seem intuitively reasonable that those forests whose next rotation may be very hard to make profitable should be valued at a lower level than those which require little adaptive management. While Pöyry would prefer to incorporate some recognition of this effect in the valuation method, it is not considered that the market's treatment of it is adequately handled by simply turning to a perpetual model.

Pöyry expects that forest valuers will continue to consider the relative suitability of current-rotation and perpetual models. Refinements to the methodology may necessarily await the availability of more empirical transaction data.

Within the valuation of Sino-Forest's tree crop Pöyry has modelled the resource over multiple rotations in order to reflect the long-term management outlook of the estate. However, the market value estimate is clearly based solely on the cash flows arising from the management and harvest of the existing tree crop and the current rotation of those trees.

APPENDIX 2

Field Inspection – Planted Resource

SUMMARY

Pöyry undertook a field inspection of the Sino-Forest Corporation planted forest estate in Southern China (Guangdong and Guangxi Provinces) between 1 and 12 December 2008. A three person Pöyry team, accompanied by Sino-Forest staff, inspected 17 selected Sino-Forest plantation compartments varying in age from 2 – 6 years, and gathered data and information relating to local market conditions and the local and regional plantation forestry industry.

Interviews with a City-level Forestry Bureau, several local wood markets and veneer mills and a visit to a Sino-Forest clonal nursery provided Pöyry with the opportunity to gather information on recent historical, current and expected future log prices, as well as data on operational forestry costs associated with eucalypt plantation management in the region.

The survey and inventory sites were within three main areas in two provinces:

- A Sino-Forest plantation near Guangzhou city in Guangdong Province.
- Near Tianlin town and near Hezhou city in Guangxi Province.

Analysis of the inventory data collected during the field inspection is provided in the Yield section and Appendix 5 of the 2008 Valuation Report.

A photo essay is provided as part of this appendix.

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1 INTRODUCTION

Pöyry undertook a field inspection of the Sino-Forest planted forest estate in Guangdong and Guangxi Provinces between 1 and 12 December 2008.

A three person Pöyry team, accompanied by Sino-Forest staff, inspected several eucalypt plantation areas owned by Sino-Forest over this period, and gathered data and information relating to local market conditions and the local and regional plantation forestry industry. This included an interview with a city Forestry Bureau in Guangdong Province, visits to several small veneer mills and log markets, and discussions with local Sino-Forest staff about plantation management issues.

Pöyry staff carried out a survey and inventory of 17 selected Sino-Forest eucalypt compartments in a Sino-Forest plantation near Guangzhou city in Guangdong, near Tianlin town in Guangxi and near Hezhou city in Guangxi. The inventory included plot work across a range of sites and age-classes. This data provides Pöyry with qualitative and quantifiable data that is used to estimate the growth and yield parameters of Sino-Forest's regional plantation estate for the 2008 valuation. These parameters include estimates of the total standing and recoverable volume (per unit area) of the Sino-Forest plantation resource (productivity) and the growth rate of the resource. Analysis and discussion of these results is covered in the Growth and Yield section of the main 2008 Valuation Report. The methodology applied in gathering the above qualitative and quantitative data is described in following sections.

2 FIELD METHODOLOGY

2.1 Interviews

Pöyry carried out an interview with a Guangdong city Forestry Bureau, and was able to discuss and obtain information on a range of typical plantation management costs, covering establishment through to harvesting operations. Current market log price information was also presented. Visits to local veneer mills and log markets (the majority of which currently receive Sino-Forest plantation logs) were also instructive in providing further historical, current and expected log price information. These findings are presented in Section 3.1.

2.2 Inventory

2.2.1 Overview

The planted forest Pöyry team conducted the field inspection and inventory in Guangdong and Guangxi provinces planted forests during the period 1 and 12 December 2008. Sino-Forest has plantation estates in Guangdong and Guangxi provinces totalling about 193 000 ha as at 31 December 2008. The inventory focussed on assessing the current condition, standing volume and likely recoverable volume of plantation eucalypt species throughout surveyed areas. In co-operation with Sino-Forest staff and local forestry workers, each team focussed on plantation forest areas currently owned by Sino-Forest.

Several separate groups of Sino-Forest owned compartments, as defined by ‘cluster-map’ areas that were selected by Pöyry, were visited and assessed.

The survey and inventory sites were within three main areas in two provinces:

- A Sino-Forest plantation near Guangzhou city in Guangdong Province.
- Near Tianlin town and near Hezhou city in Guangxi Province.

2.2.2 Inventory Location Selection

The forest team field inspection covered the three regions within Guangdong and Guangxi Provinces with the largest forest resources in terms of stocked plantation area and with consideration made for practical time constraints.

The selection of broad geographic locations in which inventory was undertaken was made by Pöyry based on area and age-class distribution data received from Sino-Forest. Sets of ‘cluster-maps’ (maps providing latitude-longitude co-ordinate points surrounding Sino-Forest plantation compartments) were then used to select one-two compartments for surveying and inventory within each cluster-map area visited. Each cluster-map area typically included 5-15 individual forest compartments. Pöyry staff determined which cluster maps to survey, and which compartments to survey within each cluster map. An important determining factor in selecting a compartment to survey was the need to cover a range of age-classes and sites across the surveyed Sino-Forest plantation estate.

Two to four individual plots were established within each cluster-map region selected for inventory, depending on time and access constraints. A maximum of two plots were established in one compartment, and practical efforts were made to cover the range of age-classes present within each cluster-map of compartments.

2.2.3 Plot Survey Methodology

Some plots were located close to access roads and others at some distance, to ensure a reasonable representation of the crops assessed. Plot centres were typically located a set number of paces (50 or 100) in from a particular point. This ensured that the crop and land characteristics at the final plot centre locations were random without being biased towards areas that are easy to measure. Starting from each plot centre, circular plots of 100 m² (0.01 ha) were established using a slope adjusted radius or a vertex. A few plots were made with an area of 200 m² to ensure a sufficient number of trees were measured. The following information was recorded at each plot: Date, time, location - county/town/village, plot number, waypoint, average slope, plot size and corresponding adjusted radius, altitude, GPS coordinates, spacing, age of the plantation, rotation (first or subsequent=coppiced), comments on general site and growth conditions, etc. Within each plot all diameters (at breast height of 1.3 m) of trees larger than 3.0 cm diameter at breast height (DBH) were measured (see Photo 2-1).

Photo 2-1:
Measurement of Plot-tree Diameter at Breast Height (1.3 m)

In addition, between six and ten trees were measured for total tree height within the plot, with these trees representing the range of diameters in the plot.

2.2.4 Data Analysis

Analysis and discussion of the results of the quantitative inventory is reported in the Growth and Yield section of the 2008 Valuation Report.

The field inventory data analysis is briefly described as follows:

1. Diameter and height measurements from Pöyry's field inventory were used to produce diameter-height relationships for each measured plot using linear regression analysis.

2. These regression equations were then used to estimate heights for plot trees with no actual height measurements.

3. Total standing tree volume (TSV) was then calculated using these height and diameter relationships, and application of a eucalypt tree volume equation (covered in detail in the main 2008 Valuation Report). Resulting TSVs are used in producing yield tables for the surveyed plantation forest resource.

2.2.5 Compartment Traverses with GPS

A limited number of compartment boundary area checks were also carried out by Pöyry staff as a part of the planted forest field inspection.

Pöyry staff carrying GPS units walked around selected compartments to map the external compartment boundary. This GPS track of the boundary was then compared to those represented on Sino-Forest's compartment maps. A detailed description of this process and the results is presented in the Remote Sensing section of the 2008 Valuation Report.

3 FINDINGS

3.1 Interviews

3.1.1 Guangdong Province – City-level Forestry Bureau Interview

Points relating to forest management factors including growth rates, operational and management costs and log prices are presented below in note form – all figures are sourced directly from the Forestry Bureau.

1. Species mix. The dominant forestry species in the interviewed City (County level City) are pine and eucalypt, accounting for 60%-80% of total forest area with 30%-40% pine and 30%-40% eucalypt.

    a. MAI by dominant species:

Species	MAI (m^3/mu/a)
Pine	0.3-0.8
Eucalypt	1-2

2. Recoverable volumes. Total recoverable volume varies by species.
    a. For pine, TRV=50%-60% TSV
    b. For eucalypt, TRV=70%-85% TSV
    c. Percentage of TRV breakdown into species and log grades:

Species	SED (cm)	Percentage of the TRV
Pine	8-12	15
	14-18	60
	>20	25
Eucalypt	<8	20
	8-10	60
	>12	20

3. Roading Cost. The average cost of pre-harvest roading ranges between RMB5-10/mu.

4. Harvesting Cost. Typical harvesting cost includes felling, delimbing, cutting into logs, loading and carrying the logs to a roadside. No debarking cost included.

    a. Average harvesting cost:

Species	Average Harvesting Cost (RMB/m^3)
Pine	100-150
Eucalypt	40-80

5. Cartage Cost. Average cartage distance to mills is 60 km with a maximum distance of approximately 100 km. Average cost of log cartage ranges between RMB1-1.5/m^3/km. Short haul distances of 10-20 km typically receive a higher cartage cost of 2.5/m^3/km. Two-stage truck transport is not commonly required in Gaoyao City.

6. Loading Cost. Log sellers typically pay the cost of loading which ranges between RMB8-10/m^3.

7. Log Prices.
    a. Current average log prices (delivered to roadside):

Species	Grades (by SED) (cm)	Current Price (on roadside)
Masson Pine	<6	RMB220/ton
	6	RMB350/m^3
	8-10	RMB450/ m^3
	>12	RMB560/ m^3
Eucalypt	<8	RMB290-300/ton
	8-12	RMB400/ m^3
	>12	RMB520/ m^3

8. Forestry Taxes (incomplete information). For plantation forests, the Forestry Bureau levies a forestry tax of 15% of roadside prices. This tax includes a forest cultivation fund and maintenance fee.

9. Annual Allowable Cut (AAC). For plantation forest resources, the AAC depends on annual planned harvesting volumes (no further information).

10. Land rental charge. Current local annual land rental ranges between RMB40 -90/mu/a.

11. Generic plantation establishment cost regime:

Year	Item	Cost (RMB/mu)
0	Includes labour cost of manual site preparation (including clearing land, setting fire lanes, hardening, hole digging, setting base fertilizer, refilling soil).	160-180
	Base fertilizer (material cost)	50-100
	Labour cost on seedling	40-50
	Labour cost on planting	20-30
1	Labour cost on weeding, tending, and re-fertilizing	40-60
	Fertilizer (material cost)	80-100
2+	Labour cost on tending and fertilizing	40-60

Furthermore, Sino-Forest pays RMB5/mu/a for forest fire prevention and prepares budget of RMB2/mu/a for pest control.

Singling cost is extra to the above at RMB70-90/mu in year 0-1.

3.1.2 Eucalypt Log Prices and Mill-site Visits

Visits to small veneer-mills yielded recent historical, current and expected price data for eucalypt logs such as those produced in Sino-Forest's plantation estate. These small eucalypt mills typically had log inputs of less than 10 000 m^3 per annum.

This price information is summarised below, with relevant accompanying notes. An analysis of log prices used in the 2008 Valuation is presented in the Market section of the main report. Grade definitions vary with mill.

1. Guangdong Province

Current log prices at small veneer mills vary by grade:

Grade	Price Range (RMB/t delivered)
<6 cm SED (pulp) 2.2 m	200

Grade	Price Range (RMB/m³ delivered)
6 – 8 cm SED	300 – 350
8 – 10 cm SED	550
10 – 12 cm SED	600 – 650
>12 cm SED	650

SED = small-end diameter

Typically 20-65% log inventory 8 – 10 cm SED, 30-50% of log inventory 8-12 cm SED and 20-50% >12 cm SED. Logs are bought from log merchants who deliver to the mill. A check on several logs returned an average age of ~6.5 years. Small veneer mills typically taking 2.6 m lengths.

November log prices were generally lower than those received in December (current). The difference between current and November prices ranged between RMB50-100/m³.

Log price expectations for the next 12 months also varied between visited veneer mills/log markets. The majority of sites visited foresaw short-term declines in log prices of RMB50-100/m³ due to either weather (wet-season harvest volumes in late winter and spring typically cause a log price rise as supply declines) or local and regional impacts of the current global economic downturn.

Cartage Costs

Typical cartage costs to visited veneer mills/log markets ranged between RMB30-40/m^3 within a distance of 70 km, with average cartage distances of 40-70 km and a maximum cartage distance of 100-120 km.

2. Guangxi Province

Visits to Guangxi veneer mills/log markets were limited in scope compared to those in Guangdong Province.

Current log prices at small veneer mills vary by grade:

Grade	Price Range (RMB/m³ delivered)
6 – 8 cm SED	520
8 – 10 cm SED	520
10 – 12 cm SED	540 – 560
>12 cm SED	540 – 560

SED = small-end diameter

Inventory log mix and grade specifications were largely the same as Guangdong Province.

Recent and expected future log price movement were also the same as in Guangdong Province.

Log prices were stated to have been declining since September by one veneer mill manager.

Cartage Costs

Log merchants buying wood from the Tianlin region in Guangxi Province plantations commonly send wood about 100 km to the neighbouring provinces of Yunnan and Guizhou. This is because the local eucalypt processing industry is very small, as the plantation base around Tianlin is both young and limited in area. No information on costs was available.

3.1.3 Sino-Forest Clonal Propagation Nursery Visit

The clonal eucalypt nursery owned and run by Sino-Forest and not far from Guangzhou, produces 6 000 000 cuttings each year to supply Sino-Forest plantations in Guangdong and Guangxi, and also supplies other growers. Clonal stock has been supplied to local Sino-Forest plantations since 2002.

Clonal stock is grown from cuttings in a nutrient medium. The mother plants from which cuttings are made are selected from superior individuals within the commercial production population.

Briefly, the nursery process entails cuttings grown in a nutrient agar medium in the clonal lab until they reach 4-5 cm in height, at which time they are placed in outside beds. After a further 70 days or so in the outdoor nursery the stock is delivered to the field for planting.

3.2 Inventory – Qualitative Findings

This section provides qualitative statements regarding the growth and yield of surveyed Sino-Forest plantations in Guangdong and Guangxi Provinces.

The qualitative statements provided below apply to surveyed compartments within both Guangdong and Guangxi Provinces, except where specifically stated as otherwise.

1. Notable differences in growth and yield of first and second rotation (coppice) crops.

   Surveyed first rotation crops generally had better form (straighter trees, lower incidence of forking, lower incidence of double-leaders) than second rotation (coppice) crops and more uniformity in diameter and height growth.

   Second rotation (coppice) crops generally had higher stocking (stems per ha or 'sph') due to multiple stems per original crop tree. However, surveyed first rotation compartments carried greater volumes than coppiced stands assuming all other things are equal (e.g. age-class). Coppiced stands are also likely to contain a lower proportion of high-value large log classes, such as those >10 cm sed, than in first rotation crops of the same age. In surveyed second rotation stands, up to 80% of original crop trees had >1 stem, and a maximum of 3 stems.

   Second rotation stands showed a much larger variation in diameter and height growth than first rotation compartments.

2. Spacing varied with compartment but was generally 4 * 1.5 m (1 667 sph) or 4* 2 m (1 250 sph). In all surveyed compartments tree mortality was <5%. Broken tops were isolated and sporadic in distribution and in only one surveyed compartment comprised >10% of crop trees.

3. Younger compartments (aged 2-2.5 years old) showed evidence of the 2-3 year manual strip-weeding operation carried out as part of the establishment regime. In general, undergrowth was not seen to unduly influence crop growth and yield.

4. Age-classes 2, 3 and 6 years were surveyed.

5. Small gaps are not mapped out on compartment maps provided. This would affect a small area of the total estate net stocked area if found to be uniform across the estate, likely to be <2%.

6. No thinning was carried out in surveyed stands.

7. Typical rotation ages in surveyed forests were 6.5 years, with a minimum of 5.5 years and a maximum of 10 years.

Growth and yield on ridges was generally, but not always, lower than that in neighbouring gullies.

4 PHOTO ESSAY

4.1 Guangdong

Photo 4-1:
Example Sino-Forest Compartment Map. Nos 26 – 37 denote compartment number, with boundaries outlined in bold. The table at the bottom right of the map gives compartment details such as species, area (ha), establishment date and rotation.

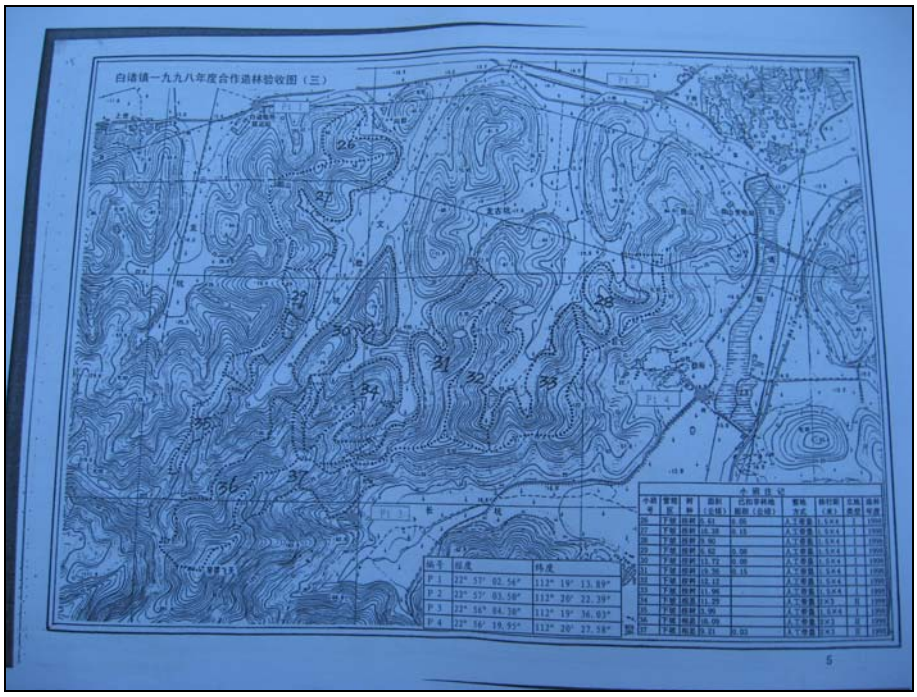

Photo 4-2:
A 3.5 year old (coppiced 2005) eucalypt plantation in Guangdong Province. Coppice (second) rotation. High volume growth (high stocking) but poor form. Plots in this compartment were at about 60 m altitude, and indicated an average stocking of 1700 – 2050 stems per ha (sph), an average dbh of about 9 cm, average tree height of 13 – 15 m and a total standing volume (TSV) of 106 – 116 m³/ha. Good road access.

Photo 4-3:
A 6.5 year old (planted 2002) eucalypt plantation in Guangdong Province. First rotation. Good growth and good straight form. Plots at ~120 masl, average 1400 –1900 sph, ~12 cm dbh, 17 m height and 170 - 193 m³/ha TSV.

Photo 4-4:
A 3.5 year old (planted 2005) eucalypt plantation in Guangdong Province. First rotation. Good uniform growth and good straight form. No plots.

Photo 4-5:
Sino-Forest's Clonal Propagation Nursery in Guangdong Province. Superior clonal cuttings are grown in nutrient agar medium in a controlled environment until 4 - 5 cm high before being moved to outside beds. Stock is used to supply Sino-Forest plantations in Guangdong and Guangxi Provinces.

Photo 4-6:
A 2.5 year old (coppiced 2006) eucalypt plantation in Guangdong Province. Coppice rotation. Average growth and form. Plots at 120 - 140 masl, average 1400 – 2400 sph, ~7 - 9 cm dbh, ~11 m height and 71 - 80 m^3/ha TSV. Steep country, difficult access.

Photo 4-7:
A 3.5 year old (coppiced 2005) eucalypt plantation in Guangdong Province. Coppice rotation. Average to poor growth and form. Plots at 110 – 130 masl, average 900 – 1100 sph, ~10 - 12 cm dbh, ~12 m height and 48 - 87 m³/ha TSV. Steep country, difficult access.

4.2 Guangxi

All first rotation plantations

Photo 4-8:
A 3 year old (planted 2005) eucalypt plantation in Guangxi Province. First rotation. Good growth and form. Plots at 540 - 570 masl, average 1300 – 1400 sph, ~11 cm dbh, ~13 - 15 m height and 96 - 102 m³/ha TSV. Steep site.

Photo 4-9:
A 2.5 year old (planted 2006) eucalypt plantation in Guangxi Province. First rotation. Very good uniform height and diameter growth and very good form. Plots at 540 - 740 masl, average 1100 – 2100 sph, about 10 - 12 cm dbh, about 13 - 16 m height and 95 - 126 m³/ha TSV. Steep country, difficult access.

Photo 4-10:
Log market visit in Guangxi Province. This log market purchases 2.2 m length eucalypt logs from forests on average 10 – 15 km from the site. No Sino-Forest wood is at the market because the local resource is too young for harvest. Logs are sold to local veneer mills or exported from Guangxi into neighbouring provinces for use in furniture manufacture.

Photo 4-11:
Typical eucalypt plantation country in Guangxi Province. The trees in the foreground are a 3 year old Sino-Forest stand. Steep gullies and ridges with 4wd access characterise these plantations, which often have difficult access.

Photo 4-12:
A 3.5 year old (planted 2005) eucalypt plantation in Guangxi Province. First rotation. Very good uniform height and diameter growth and very good form. Plots at 610 - 740 masl, average 1200 – 1300 sph, about 12 - 14 cm dbh, about 14 - 17 m height and 108 - 143 m³/ha TSV. Steep country, difficult access.

Photo 4-13:
A 2.5 year old (planted 2006) eucalypt plantation in Guangxi Province. First rotation. Good uniform height and diameter growth and good straight form. Plots at 140 - 280 masl, average 900 – 1500 sph, about 12 - 16 cm dbh, about 13 - 16 m height and 62 - 109 m³/ha TSV.

Photo 4-14:
Eucalypt veneer sheets drying at a small veneer mill (annual log intake of about 16 000 m³) in Guangxi Province. Average cartage distance for logs to this mill of 30 – 40 km. Sino-Forest has young forests reaching maturity in 3 – 5 years that are 5 – 10 km distance from this mill. The veneer is trucked to Guangdong and Shanghai for use in flooring.

Photo 4-15:
Eucalypt plywood (9 ply) at a medium sized (24 000 m³ annual log input) plywood mill outside of Nanning in Guangxi Province. Approx. 30% of this mills annual log input in 2008 is from Sino-Forest plantations. All log input is >8 cm SED, with 40% >12 cm SED.

APPENDIX 3

Field Inspection – Purchased Forest

SUMMARY

Pöyry undertook a field inspection of the Sino-Forest Corporation purchased forest estate in Southern China (Guangxi and Hunan Provinces) between 1 and 12 December 2008. A three person Pöyry team, accompanied by Sino staff, inspected 23 selected Sino-Forest plantation compartments varying in age from 4 to 24 years. These were in nine different towns in Guangxi and Hunan. Data and information relating to local and regional plantation forestry industry were collected.

Interviews with a city Forestry Bureau, and discussion with several Sino-Forest local managers provided Pöyry with the opportunity to gather information on recent historical, current and expected future log prices, as well as data on operational forestry costs associated with eucalypt, Masson pine, and Chinese fir plantation management in the region.

The survey and inventory sites were restricted to three main areas in the two provinces.

Analysis of the inventory data collected during the field inspection is provided in the Yield section and Appendix 5 of the 2008 Valuation Report.

A photo essay is provided as part of this appendix.

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1 INTRODUCTION

Pöyry undertook a field inspection of the Sino-Forest Corporation (Sino-Forest) purchased forest estate in Guangxi and Hunan Provinces between 1 and 12 December 2008.

A three person Pöyry team, accompanied by Sino-Forest staff, inspected several Masson pine and Chinese fir plantation areas owned by Sino-Forest over this period. Data and information were gathered relating to the local and regional plantation forestry industry. This included an interview with a city Forestry Bureau in Guangxi, and discussions with Sino-Forest's local forest manager and wood yard owners.

Pöyry visited 13 selected Sino-Forest sites in total, spread between Guangxi and Hunan. Visual inspection and inventory plot work were carried out on 23 compartments with Masson/slash pine and Chinese fir being the main species. The majority of the plantations fall in the age range between 10 – 20 years. The inspections and inventory provided Pöyry with both qualitative and quantitative data and information for use in the 2008 valuation. This includes estimates of the total standing and recoverable volume (per unit area) of various species in the estate supporting estimation of future growth and yield.

The methodology applied in gathering the above qualitative and quantitative data is described in following sections.

2 FIELD METHODOLOGY

2.1 Interviews

A city Forestry Bureau in Guangxi Province met with the Pöyry team. The discussions provided an overview of the forestry sector, development expectations for forestry, as well as the local market prices for logs and other responses to Pöyry's questionnaire. As the Pöyry team travelled to the various locations to conduct the inventory work, informal discussions were held with participants in the forest industry. Information relating to forest operations, supply and consumption of the local forest resources was gathered. These findings are presented in Section **Error! Reference source not found.**.

2.2 Inventory

Overview

The purchased forest Pöyry team conducted the field inspection and inventory in Guangxi and Hunan provinces between 1 and 12 December 2008. The inventory focussed on assessing the current condition, standing volume and likely recoverable volume of existing forest (with Masson/slash pine and Chinese fir being the dominant species) throughout surveyed areas.

The geographic locations of several separate groups (cluster-maps) of Sino-Forest owned compartments were selected by Pöyry using information provided by the Company, and based on area and age-class distribution information for each visited forest block.

2.2.1 Inventory Location Selection

The purchased forest team field inspection covered the three regions within Guangxi and Hunan provinces with consideration made for practical time constraints.

The selection of broad geographic locations in which inventory was undertaken was made by Pöyry based on area, species, and age-class distribution data received from Sino-Forest. Sets of 'cluster-maps' (maps providing latitude-longitude co-ordinate points surrounding the Company's acquired forest compartments) were then used to select one or two compartments for surveying and inventory within each cluster-map area visited. Each cluster-map area typically included 5-10 individual forest compartments. Pöyry staff determined which cluster maps to survey, and which compartments to survey within each cluster map. An important determining factor in selecting a compartment to survey was the need to cover a range of age-classes and sites across the surveyed Sino plantation estate.

One to eleven individual plots were established within each cluster-map region selected for inventory, depending on time and access constraints. A maximum of eight plots were established in one compartment, and practical efforts were made to cover the range of age-classes present within each cluster-map of compartments.

2.2.2 Plot Survey Methodology

Some plots were located close to access roads and others at some distance, to ensure a reasonable representation of the crops assessed. Plot centres were typically located a set number of paces (50 to 200) in from a particular point. This ensured that the crop and land characteristics at the final plot centre location were random without being biased towards areas that are easy to measure. Starting from each plot centre, circular plots of between 100 and 400 m² in area (0.01 or 0.04 ha) were established using a slope adjusted radius or a vertex. The larger plots were made to ensure a sufficient number of trees were measured. The following information was recorded at each plot: Date, time, location - county/town/village, compartment number, plot number, waypoint, average slope, plot size and corresponding adjusted radius, altitude, GPS coordinates, spacing, age of the plantation, comments on general site and growth conditions, etc. Within each plot all diameters (at breast height of 1.3 m) of trees larger than 5.0 cm diameter at breast height (DBH) were measured.

In addition, about ten trees were measured for total tree height within or immediately bordering the plot, with these trees representing the range of diameters in the plot.

2.2.3 Data Analysis

Analysis and discussion of the results of the quantitative inventory is reported in the Growth and Yield section of the 2008 Valuation Report.

The field inventory data analysis is briefly described as follows:

1. Diameter and height measurements from Pöyry's field inventory were used to produce diameter-height relationships for each measured plot using linear regression analysis.

2. These regression equations were then used to estimate heights for plot trees with no actual height measurements.

3. Total standing tree volume (TSV) was then calculated using these height and diameter relationships, and application of a tree volume equation for eucalyptus, Masson/slash pine, Chinese fir, or mixed hardwood (covered in the main 2008 Valuation Report). Resulting TSV data were used in producing yield tables for the forest estate.

4. Compartment traverses with GPS.

A limited number of compartment boundary area checks were also carried out by Pöyry staff as a part of the planted forest field inspection.

Pöyry staff carrying GPS units walked around selected compartments to map the external compartment boundary. This GPS track of the boundary was then compared to those represented on Sino-Forest's compartment maps. A detailed description of this process and the results are presented in the Remote Sensing section of the 2008 Valuation Report.

2.3 Interviews

2.3.1 Guangxi City Forestry Bureau Interview

According to the latest forest resource survey (updated 2007), the total area of the City is 1 150 000 ha (17.255 million mu). Forest land area is 844 000 ha (12.666 million mu), 73.4% of the total land area. Total standing volume is 33.89 million m^3. Forest coverage is 63.8%. The tree species breakdown is as follows:

- Chinese fir and pines – 53%
- Eucalypts - 10%
- Other broadleaf species – 35%
- 'Economic forests' (horticultural crops harvested annually such as fruits, tea etc) – 2%

Middle-to-young age forests account for 60% of the total area. Of the total 844 000 ha forestry land, 269 000 ha is protection forest, or 32% of the total, and 473 000 ha is commercial timber forest, or 56% of the total (including planned short-rotation fast-growing high-yield forest 230 000 ha).

The following answers are the responses to Pöyry's questionnaire.

1. Typical or average volumes per hectare for main species growing in area of Forest Bureau's authority.

Masson pine: mostly operated by individuals, best growth conditions produce 6-7 m^3 (TRV)/mu, and an average 4-5 m^3 (TRV)/mu at harvest.

Chinese fir: some areas are suitable for growing Chinese fir. The best result is 15 m^3/mu (TRV), with an average of 8 m^3/mu.

Eucalypt: average 10 m^3/mu (TRV). The snowfalls at the beginning of 2008 negatively impacted on the yield by about 30%.

Mixed hardwood: conversion rate is < 60%. Very low site index at 2-3 m^3/mu, Best growth conditions produce 3-4 m^3/mu.

2. Conversion from Total Standing Volume (TSV) (m^3/mu) to Total Recoverable Volume (TRV) (m^3/mu) –

Masson Pine: 65%, Chinese fir: 70%. Eucalypt: 80%.

3. During the period of 2003-2004, the cost of roading for farm trucks/tractors was RMB50/mu, and is RMB80/mu).

Big farm truck tonnage is 8-12 t. If the wood is destined for within the city, the farm truck or tractor will cart the wood directly to the processing mills. The calculated trucking cost is equivalent to RMB4-5/m^3.

4. What is the local average cost of harvesting in RMB/m^3 (felling, delimbing, debarking, carrying logs to a roadside)?

In 2007 the harvesting cost is RMB90-110/m^3. In 2008 the average is RMB120/m^3, while the range is RMB110-130/m^3.

5. Current costs of log cartage?

Short haul (< 50 km) cartage cost is RMB1-2/m^3/km depending on the site condition, road condition, and truck tonnage, and destination.

6. Typical transferring route of harvested logs:

a. To Guangdong, forest ->farm truck/tractor -> truck;

b. To local market/mills, forest -> farm truck/tractor -> end user.

7. Harvesting cost includes uploading fee. Unloading cost is undertaken by buyers (often the wood processing plant).

8.

Species	Grades (by SED) (cm)	Current Price (local mill gate) RMB/m^3
Masson Pine	8-12	450
	14-18	550
	20	650
Eucalypt	>8	600
	large diameter	650
Chinese Fir	14-18	700

The wood price was higher at the beginning of 2008, and has since dropped about RMB100-150/m^3, about a 20% reduction. In Guilin the Chinese fir price was about RMB900/m^3 in the beginning of 2008, now only RMB700+ /m^3.

9. Information on forestry taxes (not Income Tax):

Have to pay the following fees:

Forest Development Fund:	RMB40/m^3 for fast-growing high-yield forests, pine – RMB60/m^3, Chinese fir – RMB80/m^3.
Quarantine Inspection Fee	RMB0.5 – 1.0/m^3
Design Fee	RMB8 -12/m^3
Measurement Fee	log – RMB8/m^3, chips – RMB5/m^3, sawn timber – RMB5-10/m^3
VAT	60% x fixed price by different grades, specs, and dimensions, stipulated by the local Tax Bureau

10. The current AAC for the City is 750 000 m^3/annum for the 11th 5-year Plan (2006-2010). The AAC is determined by calculating the annual growth and reduction rate of the forest resource, then the calculation results are used to determine a proposed AAC. The proposed AAC is reported to the provincial government and then to the state government which will investigate and determine if the proposed AAC is appropriate. The final allocated AAC is then granted by the state government.

11. The exact rental depends on the site conditions.

In 2002 the average rental was RMB5/mu for eucalypt plantation sites. The rental for 2006 was in the range of RMB10-20/mu, with an average of RMB15/mu.

In 2008, the rental for the poor sites was RMB15/mu, for the best sites the rental is RMB30-35/mu. The average is about RMB25/mu.

12. The current local average costs of eucalypt plantation operations are as follows:

Item	Unit	1st year	2nd year	3rd year	Other years	Notes
Land preparation, controlled burning, clearing, pitting, and planting	RMB/mu	250	-	-	-	(RMB200-210/mu for the first year in year 2007)
Weeding+fertilizing (excluding cost fo fertilizer)	RMB/mu/a	-	170	170	170	RMB85/mu/time, 2 times/year, for the 2nd, 3rd, and following years.
Protection	RMB/mu/a	10	10	10	10	
Fertilizer	RMB/mu/a	110	Fertilizer: 0.5 kg/tree x 2 times/first year, typically stocking is 83/110 trees/mu. The majority of eucalypt plantations in the City have 83-90 trees/mu although 110 trees/mu is also common, fertilizer price is RMB2000-2400/t. So fertilizer cost is about RMB110/mu for the first year. A typically well-managed eucalypt plantation is RMB1100-1200 for the rotation of 6 years. If fertilizer cost is over RMB1000 for the whole rotation, the yield will exceed 8-9 m^3/mu/			
Singling	RMB/mu				20	
Planting stock						Seedling RMB0.6-0.7, cutling RMB0.35 – 0.40

For Chinese fir and pine, the fertilizer cost and rental is lower than eucalypt plantations.

Pine seedling is RMB0.25-0.3/stock, 110-130 trees/mu

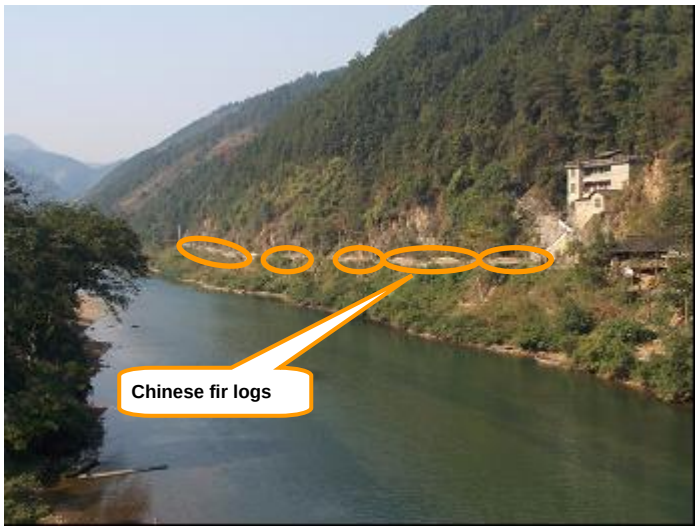
Chinese fir: seedling RMB0.20/stock, 150 trees/mu.

Thinning cost for pine and Chinese fir is RMB140-150/mu.

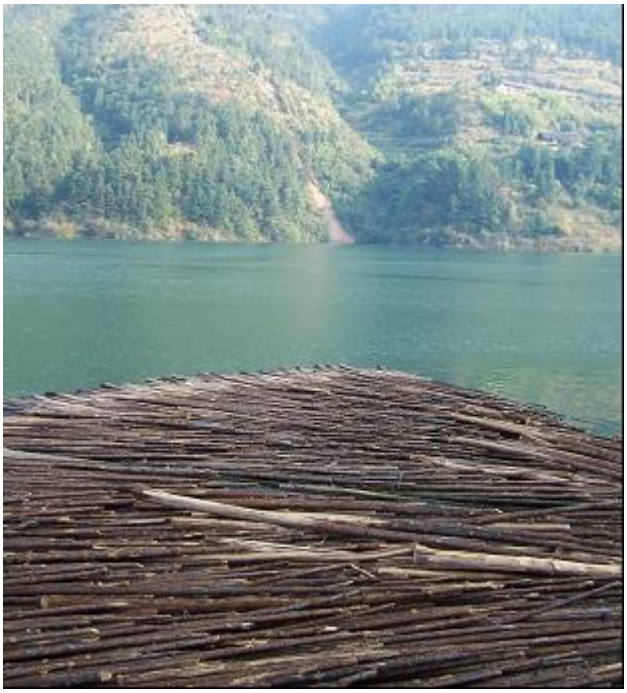
Appendix 3

Infrastructure. Hunan has good roads built into the mountains and along the rivers around the forest resources in the county. Concrete roads extend into the depths of Chinese fir forests. The road conditions are relatively good although the road the consultants travelled on was built over six years ago. There are many 40-80 tonne trucks loaded with Chinese fir logs on the road.

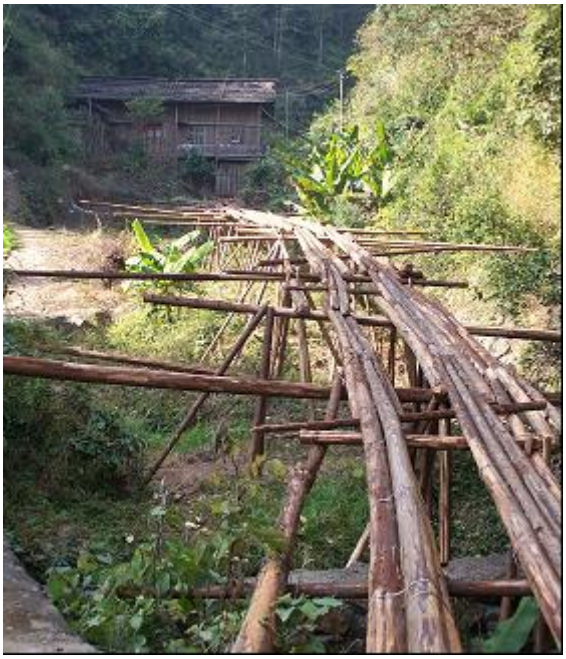
The concrete road was built on the riverbank of a big river. Across from the river there is no road. The hills covered with Chinese fir are mostly quite steep.



For forests located on the same side of the river as the road, the logs are directly moved down the hills and piled at the roadside. For forests located on the other side of the river without a road, logs are often bundled and then transferred to the road-side of the river bank by floating.



At certain sites there are harvesting cables moving logs to the road side from across the river. For forests far away from truckable roads or river transport, before being bundled and floated to the roadside riverbanks the logs are often dragged down the hills through wooden harvesting lanes/racks (made with Chinese fir logs) built above streams or creeks which lead into the harvesting areas.



Therefore, small truckable lanes, wooden harvesting lanes, harvesting cables, main truck roads, small truck/tractor tracks, and rivers together form an effective harvested log routing system.

The Chinese fir forests in general and those of Sino-Forest that Pöyry visited are quite uniform in terms of growth conditions.

For most of the steep Chinese fir forests Sino-Forest has acquired, it is unlikely they will replace with eucalyptus after harvesting, Chinese fir will still be the most likely species for replanting.

3 PHOTO ESSAY

3.1 Guangxi Province

Photo 1:
A 4.5 year old (planted 2004) eucalypt plantation, Soil appears thick and rich. Good trees on easy country to harvest. Short carriage to a roadside where large trucks can loaded.

Photo 2:
A 17 year old slash pine plantation in Guangxi province, Poor growth condition, within 100 m to truckable road, low undergrowth, easy harvesting, most big trees are tapped (debarked for oil tapping).

3.2 Hunan Province

Photo 3:
A 13 year old (1995) slash pine stand in Hunan Province, Easy harvesting, dense undergrowth, close to truckable road, all big trees are partly debarked (about 50% of circumference) for oil tapping.

Photo 4:
A 13 year old (1995) Chinese fir plantation in Hunan Province. Low undergrowth, straight form, easy harvesting, close to truckable road, very steep, dense stocking. Little thinning done.

Photo 5:
A 16 year old (1992) Chinese fir plantation in Hunan province. A lot of sprouted (coppice) stocks. Growth condition looks rather poor. The site is 0.5-1 km to truckable road. Minimum undergrowth.

Photo 6:
A 17 year old (1991) Chinese fir plantation in Hunan Province. Minimum undergrowth, thinned, growth condition looks very good, Easy harvesting, but rather far from the nearest navigable reservoir (several km). The harvested log transferring route will be forest -> small trail -> reservoir -> truckable road.

Photo 7:
A 17 year old (1991) Chinese fir plantation in Hunan Province, minimum undergrowth, trees are of good, straight form. Close to tractor road, about 1 km to truckable road. Compartment no. 71 is quite big, about half of the length borders a truckable road, while another half neighbours a small trail which connects to the truckable road within 1 km distance.

Photo 8:
A 17 year old (1991) Chinese fir plantation in Hunan province, minimum undergrowth, upper half is of poor growth condition and near a ridge, Lower half is of reasonable growth condition, there are some coppiced stems, minimum undergrowth.

APPENDIX 4

Verification of Sino Forest Areas Using Remote Sensing

SUMMARY

The purpose of this report is to provide independent verification of the extent of Sino-Forest's forest estate. It has been prepared in support of 2008 valuation exercise.

The assessment uses a selection of Sino-Forest's hand drawn maps which represented 150 compartments (1 639 ha) distributed across the resource. Typically plantation boundaries follow natural features (ridges or streams and contours), land use changes or roads.

Maps were registered and digitised into the GIS using the coordinates provided[1] and overlaid on the satellite data. Satellite imagery obtained between 2006 and 2008 was used to verify that:

- The plantation was stocked
- The extent and shape of the plantation were correctly mapped
- The area of the plantation was accurate
- The species present (pine, fir or eucalypts) were as stated on the maps.

Ground traces collected via GPS during the field inspections were also used to verify plantation extent.

No area adjustments were deemed necessary as the area differences over the 1 639 ha assessed were negligible at 0.1%, or 4 ha.

[1] Sino Forests provided four coordinates in Latitude and Longitude so maps could be roughly located on the satellite imagery.

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1.1 Location of Sino Forest Resource Counties 1
1.2 Area Verification 1
1.3 Area Statement Summary 3

Attachments

Attachment 1: Satellite Imagery Comparisons
Attachment 2: Area Comparison

1.1 Location of Sino-Forest Resource Counties

Sino-Forest has provided hand drawn maps with bounding coordinates of selected forest resources found throughout South China. Pöyry drew a representative sample from this selection that covers the geographical spread, plantation tenure (purchased or planted) size, age and species.

Pöyry has utilised the provided scanned maps to validate the forest resource primarily through the use of recent satellite imagery and GPS traces (boundary walk-arounds).

1.2 Area Verification

The area verification exercise examined 1 639 ha of plantations which is equivalent to a 0.5% sample of Sino-Forest's forest estate. In total 19 scanned maps were geographically registered and 150 stand boundaries were digitised. Not all scanned maps provided to Pöyry were used for the area verification process due to the quality of the satellite data. Selected scan maps were distributed across the resource to ensure the sample was representative.

Recent satellite image data was used to assist in the verification of planted areas in the counties selected. Pöyry obtained six Landsat images which cover the counties in question (pixel resolution 30 m).These images were acquired between September of 2007 and May 2008.

The verification process involved three stages:

- Registering the scanned maps into the GIS using the Landsat imagery to identify plantation locations.
- Transfer of the hand drawn forest compartment maps to the GIS.
- Cross checking and, if necessary, adjustment of compartment boundaries using a combination of high resolution imagery and GPS traces (both provide an accurate representation of stand boundaries).

Examples of the outputs from this process are provided in Table 1 which compares the original hand-drawn map against the high and low resolution imagery. The low resolution data (acquired in 2008) is used to detect forest change such as harvesting events.

Table 1:
Area Verification Maps for Selected Locations

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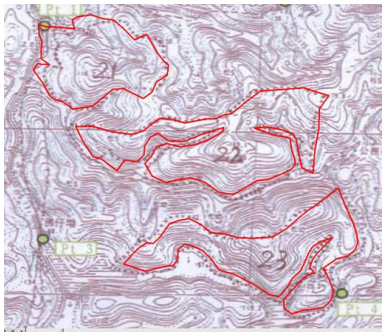
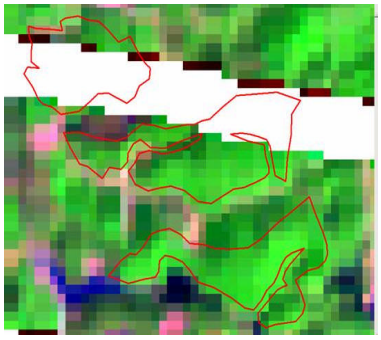
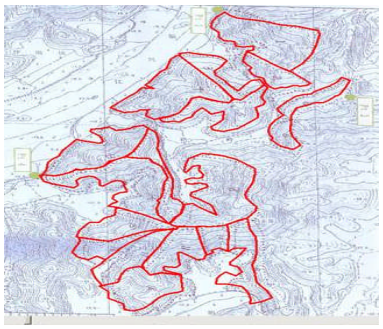
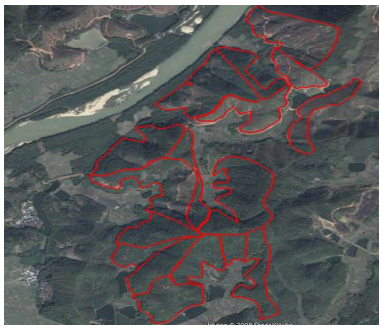
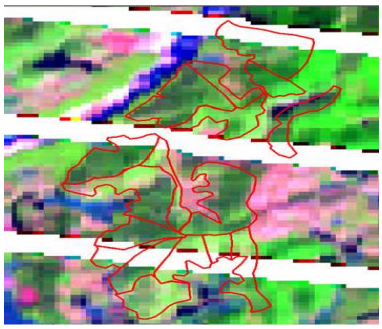
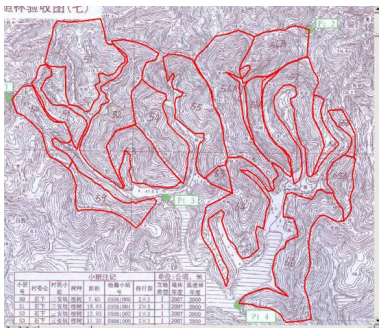
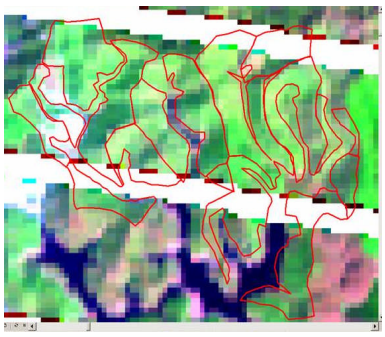
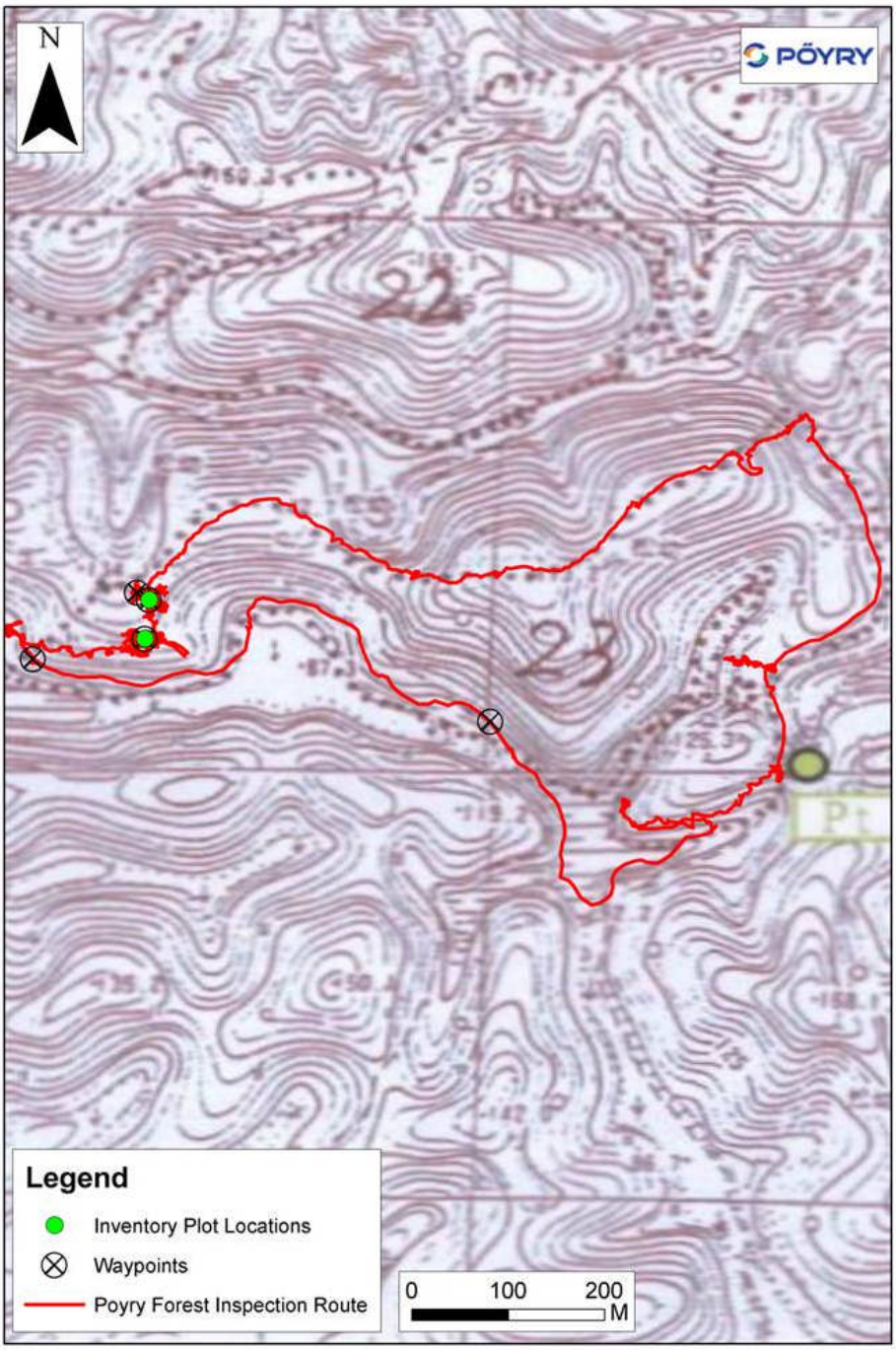
		
		
		

In addition GPS traces collected during the field inspection were also used to define compartment boundaries. Map 1 shows a GPS trace of a compartment traverse overlaid onto the geo-referenced compartment map.

Map 1:
GPS Trace Overlaid on Hand Drawn Compartment Map



1.3 Area Statement Summary

A comparative analysis conducted over 150 individual compartments between Sino-Forest's compartment records and Pöyry's audit indicated that area differences are negligible at 0.2%.

While individual differences are observed between areas, these are evenly distributed (positively and negatively) with no apparent bias. Larger differences are seen in smaller compartments since proportionally any changes in area have a greater impact (Table 2).

Table 2:
Area Comparison

Province	No. Cmpts	Sino-Forest (ha)	Pöyry (ha)	Diff (%)
Guangdong	8	57.8	53.9	-7
Guangdong	16	179.4	168.8	-6
Guangdong	12	136.8	121.2	-11
Guangdong	7	86.8	118.5	37
Guangxi	6	51.0	44.8	-12
Guangxi	6	118.6	131.0	10
Guangxi	10	137.9	126.5	-8
Guangxi	6	66.1	66.3	0
Hunan	1	7.5	10.8	44
Hunan	4	59.0	65.6	11
Hunan	5	18.7	20.8	11
Hunan	3	23.3	24.6	6
Hunan	6	92.7	108.6	17
Guangdong	18	180.0	184.3	2
Guangdong	3	41.2	38.7	-6
Guangdong	10	66.6	65.1	-2
Guangdong	17	146.3	137.9	-6
Guangdong	6	80.7	71.1	-12
Guangdong	6	85.4	81.4	-5
	150	**1635.8**	**1639.8**	0.24

Attachments 1 and 2 provide details of the individual compartment and satellite data used for the analysis.

Attachment 1

Satellite Imagery Comparisons

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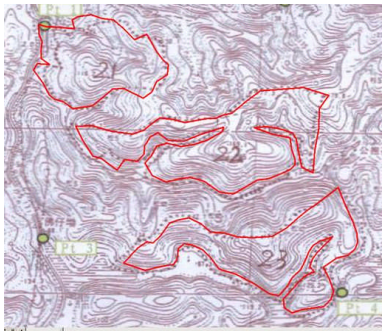
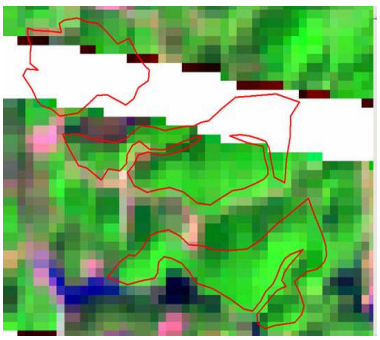
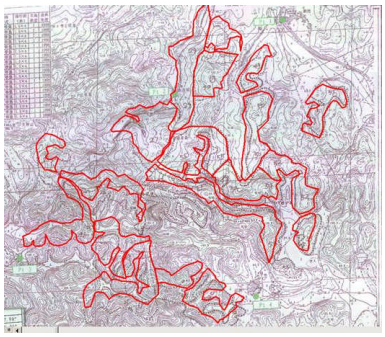
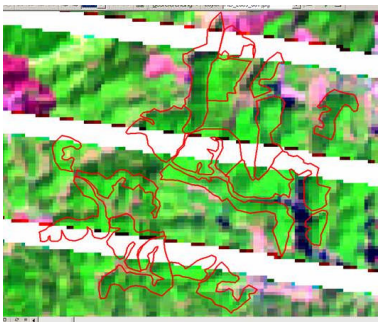
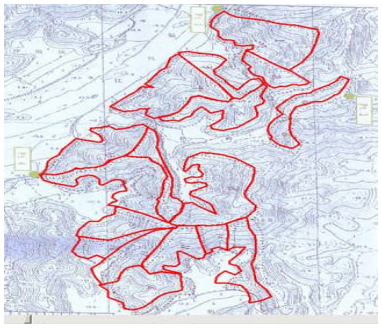
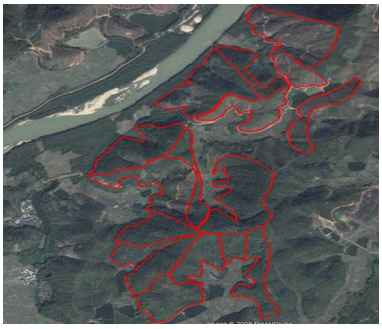
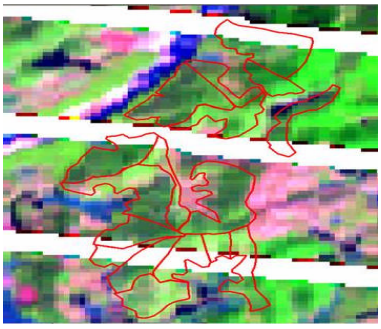
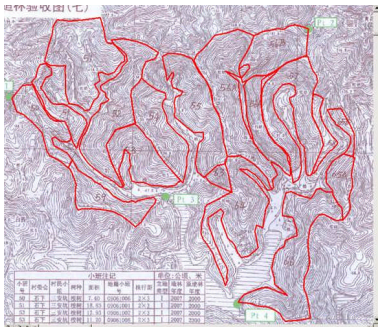
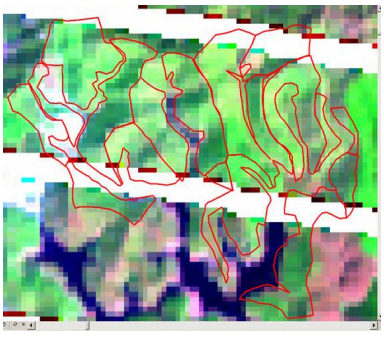
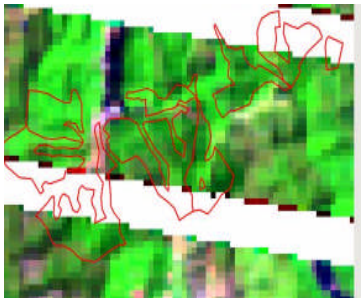
		
		
		
		
	High-Resolution imagery not available.	

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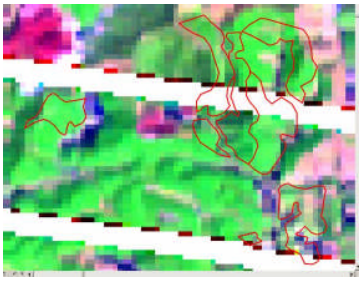
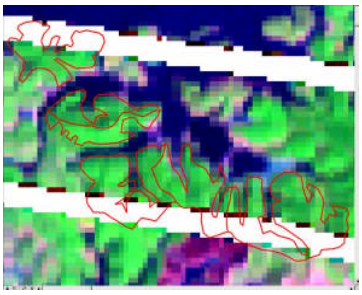
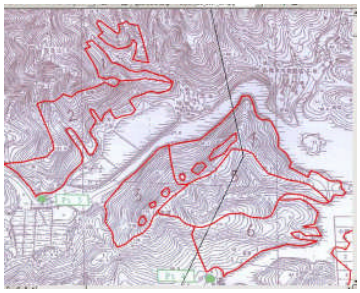
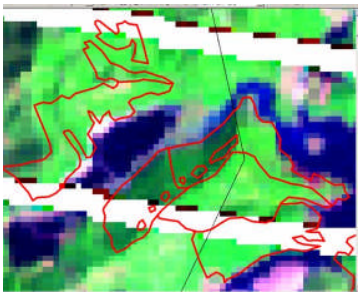
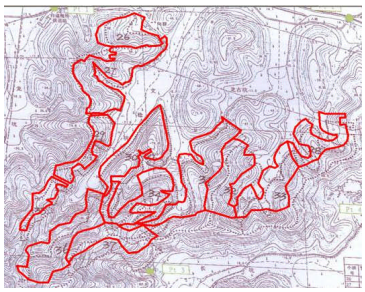
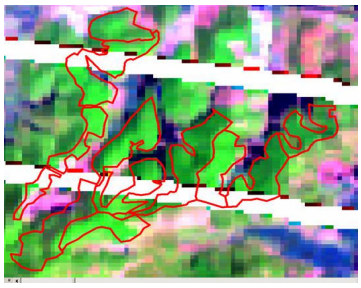
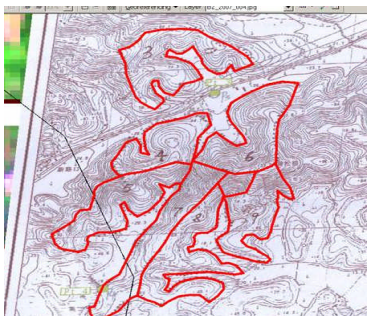
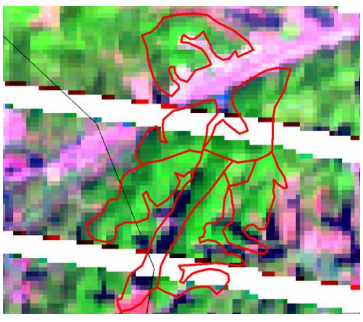
	High-Resolution imagery not available.	
	High-Resolution imagery not available.	
	High-Resolution imagery not available.	
	High-Resolution imagery not available.	
	High-Resolution imagery not available.	

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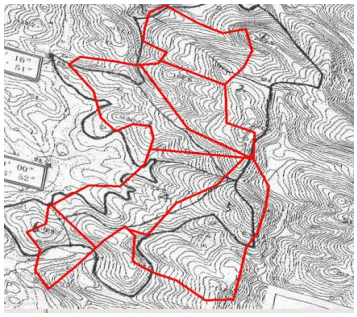
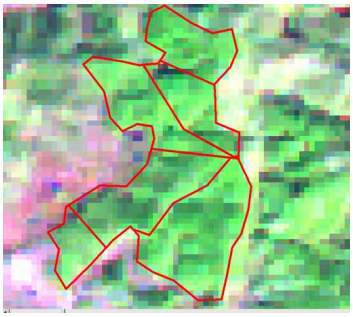
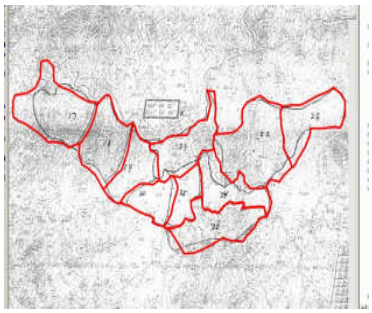
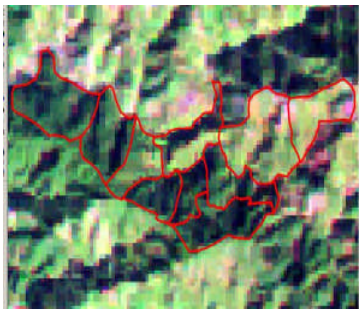
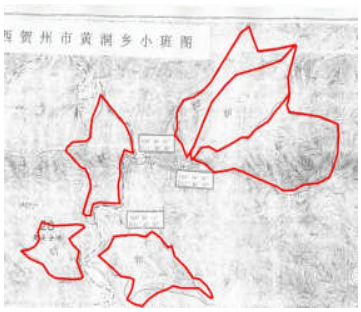
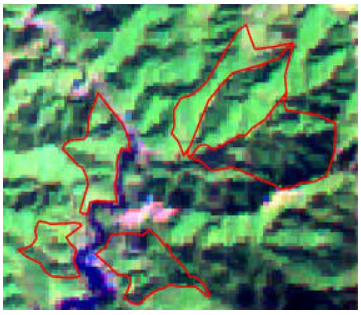
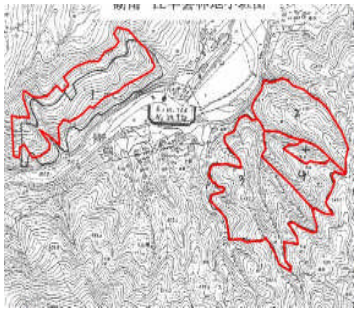
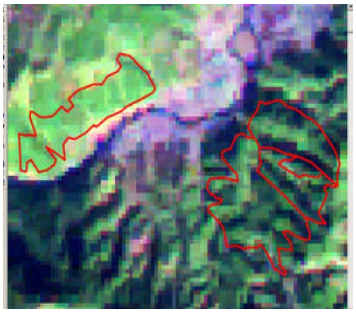
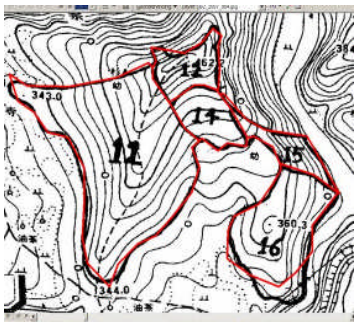
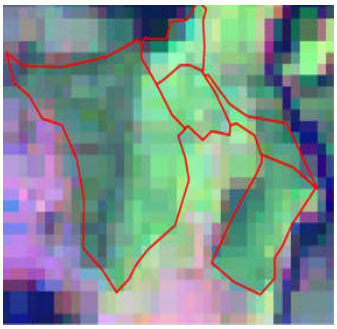
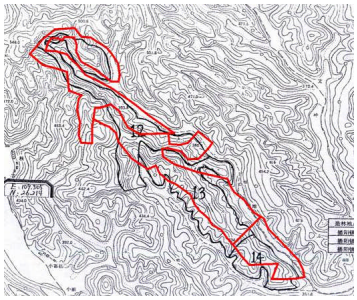
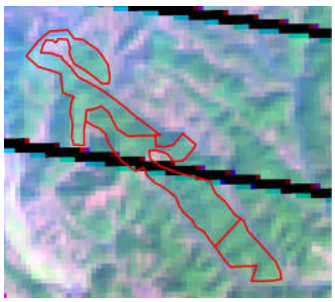
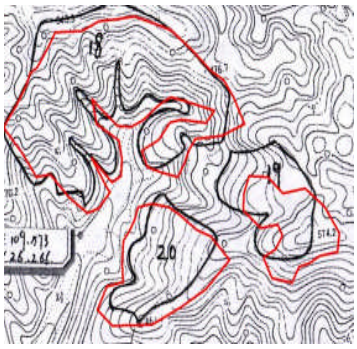
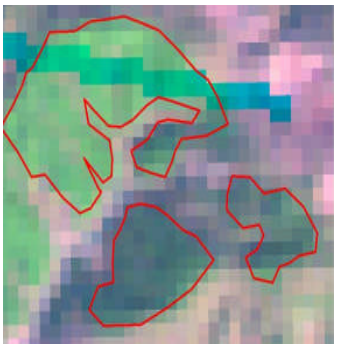
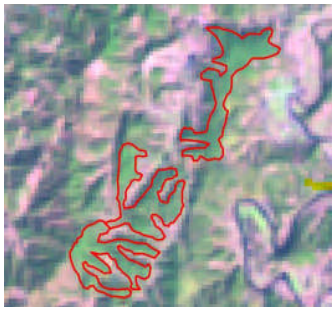
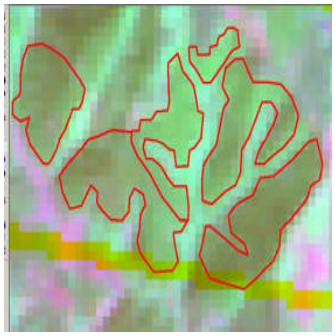
	High-Resolution imagery not available	
	High-Resolution imagery not available	
	High-Resolution imagery not available	
	High-Resolution imagery not available	
	High-Resolution imagery not available	

Provided Scan Map	High Resolution Verification	Landsat Verification
	High-Resolution imagery not available	
	High-Resolution imagery not available	
	High-Resolution imagery not available	
	High-Resolution imagery not available	

Attachment 2

Area Comparison

Table 1:
Area Comparison Between Planted and Purchased Forest

Map	Pöyry Area			Sino-Forest Area		
	Planted	Purchased	Total	Planted	Purchased	Total
	(ha)			(ha)		
1	53.88		53.88	57.83		57.83
2	168.79		168.79	179.38		179.38
3	121.18		121.18	136.79		136.79
4	118.52		118.52	86.82		86.82
5	44.82		44.82	50.96		50.96
6		130.98	130.98		118.6	118.60
7	126.53		126.53	137.87		137.87
8	66.35		66.35	66.13		66.13
9		10.84	10.84		7.47	7.47
10		65.57	65.57		59	59.00
11		20.75	20.75		18.73	18.73
12		24.58	24.58		23.33	23.33
13	59.64	49.01	108.64	52.4	40.27	92.67
14	184.30		184.30	180		180.00
15	38.66		38.66	41.17		41.17
16	65.07		65.07	66.55		66.55
17	137.94		137.94	146.32		146.32
18	71.05		71.05	80.74		80.74
19	81.36		81.36	85.4		85.40
Total	**1 338.09**	**301.73**	**1 639.83**	**1 368.36**	**267.40**	**1 635.76**

Table 2:
Comparison by Compartment

Province	Cmpt	Sino-Forest (ha)	Sino-Forest (mu)	Pöyry (ha)	Pöyry (mu)	Species	Planted Year	Land Status
Guangdong	3	14.4	217	20.0	300	Euc	2002	Planted
Guangdong	4	9.0	135	12.5	188	Euc	2003	Planted
Guangdong	5	13.2	198	17.6	265	Euc	2002	Planted
Guangdong	6	13.3	200	18.4	276	Euc	2002	Planted
Guangdong	7	12.3	186	17.1	257	Euc	2002	Planted
Guangdong	9	9.9	149	13.6	204	Euc	2002	Planted
Guangdong	8	14.5	218	19.1	288	Euc	2002	Planted
Guangdong	26	5.6	85	7.6	115	Euc	1998	Planted
Guangdong	27	16.5	248	15.2	229	Euc	1998	Planted
Guangdong	29	6.7	101	5.7	87	Euc	1998	Planted
Guangdong	35	3.9	60	3.5	53	Acacia	1998	Planted
Guangdong	30	13.8	207	11.7	176	Euc	1998	Planted
Guangdong	36	16.0	241	13.9	210	Acacia	1998	Planted
Guangdong	34	11.2	169	9.4	142	Acacia	1998	Planted
Guangdong	31	19.5	293	15.9	239	Euc	1998	Planted
Guangdong	32	12.1	182	10.2	154	Euc	1998	Planted
Guangdong	33	11.9	179	11.0	165	Euc	1998	Planted
Guangdong	28	9.9	149	8.2	124	Euc	1998	Planted
Guangdong	37	9.2	139	8.2	124	Acacia	1998	Planted
Guangdong	1A	8.1	122	7.7	116	Euc	1999	Planted
Guangdong	1	9.4	142	8.4	126	Euc	1998	Planted

Province	Cmpt	Sino-Forest (ha)	Sino-Forest (mu)	Pöyry (ha)	Pöyry (mu)	Species	Planted Year	Land Status
Guangdong	3	11.7	177	10.9	164	Euc	1998	Planted
Guangdong	2	10.1	152	9.5	143	Euc	1999	Planted
Guangdong	3A	2.3	35	2.3	36	Euc	1999	Planted
Guangdong	10	10.1	152	9.5	143	Euc	1998	Planted
Guangdong	9	0.7	11	0.6	10	Euc	1998	Planted
Guangdong	4	5.2	78	4.7	72	Euc	1999	Planted
Guangdong	50	7.4	111	6.6	99	Euc	2007	Planted
Guangdong	52	12.9	194	14.5	219	Euc	2007	Planted
Guangdong	54	13.6	204	9.8	148	Euc	2007	Planted
Guangdong	53	11.2	168	9.0	135	Euc	2007	Planted
Guangdong	55	13.4	201	13.7	206	Euc	2007	Planted
Guangdong	58	5.3	80	2.4	36	Euc	2007	Planted
Guangdong	57	15.5	233	14.9	224	Euc	2007	Planted
Guangdong	56B	6.8	102	8.5	129	Euc	2007	Planted
Guangdong	56A	23.3	350	23.0	346	Euc	2007	Planted
Guangdong	51	18.8	282	20.1	302	Euc	2007	Planted
Guangdong	59	8.0	121	6.8	103	Euc	2007	Planted
Guangdong	63	1.8	28	1.5	23	Euc	2007	Planted
Guangdong	64	18.1	272	14.4	217	Euc	2007	Planted
Guangdong	65A	4.4	67	4.0	61	Euc	2007	Planted
Guangdong	65B	2.1	32	1.6	24	Euc	2007	Planted
Guangdong	66	16.4	246	17.1	258	Euc	2007	Planted
Guangdong	23	13.2	198	14.4	217	Euc	1998	Planted
Guangdong	24	8.9	135	10.1	152	Euc	1998	Planted
Guangdong	25	11.9	179	11.8	177	Euc	1998	Planted
Guangdong	26	9.0	136	8.3	126	Euc	1998	Planted
Guangdong	27	15.0	226	14.6	219	Euc	1998	Planted
Guangdong	28	4.7	72	3.7	57	Euc	1998	Planted
Guangdong	29	12.4	186	16.1	242	Euc	1998	Planted
Guangdong	30	13.3	200	13.9	210	Euc	1998	Planted
Guangdong	49	4.5	68	4.2	64	Euc	1998	Planted
Guangdong	50	9.0	136	11.6	174	Euc	1998	Planted
Guangdong	51	5.9	89	7.1	108	Euc	1998	Planted
Guangdong	52	10.5	158	9.9	149	Euc	1998	Planted
Guangdong	53	4.3	65	3.7	56	Euc	1998	Planted
Guangdong	54	11.4	171	10.7	162	Euc	1998	Planted
Guangdong	55	15.9	239	15.9	239	Euc	1998	Planted
Guangdong	56	15.2	228	14.1	212	Euc	1998	Planted
Guangdong	58	4.8	72	4.5	68	Euc	1998	Planted
Guangdong	59	9.5	143	8.8	133	Euc	1998	Planted
Guangdong	13	10.4	156	10.4	157	Euc	2000	Planted
Guangdong	14	14.1	212	13.4	201	Euc	2000	Planted
Guangdong	12	6.3	95	5.3	80	Euc	2000	Planted
Guangdong	9	9.0	135	7.5	113	Euc	2000	Planted
Guangdong	8	14.9	224	16.1	242	Euc	2000	Planted
Guangdong	10	3.0	45	2.8	42	Euc	2000	Planted
Guangdong	11	6.9	104	6.6	99	Euc	2000	Planted
Guangdong	18	9.9	149	8.4	127	Euc	2000	Planted
Guangdong	17	6.5	98	6.8	103	Euc	2000	Planted
Guangdong	16	3.6	55	3.9	60	Euc	2000	Planted

Province	Cmpt	Sino-Forest (ha)	Sino-Forest (mu)	Pöyry (ha)	Pöyry (mu)	Species	Planted Year	Land Status
Guangdong	15	5.5	83	6.6	100	Euc	2000	Planted
Guangdong	4	13.2	198	13.7	206	Euc	2000	Planted
Guangdong	2	5.7	86	4.2	64	Euc	2000	Planted
Guangdong	3	4.1	61	4.4	67	Euc	2000	Planted
Guangdong	6	7.2	108	6.0	91	Euc	2000	Planted
Guangdong	5	11.6	174	7.4	111	Euc	2000	Planted
Guangdong	1	14.3	215	13.6	204	Euc	2000	Planted
Guangdong	23	15.6	234	12.8	193	Euc	2002	Planted
Guangdong	22	17.0	255	15.8	238	Euc	2002	Planted
Guangdong	21	8.5	128	9.9	149	Euc	2002	Planted
Guangdong	4	6.5	99	6.3	95	Euc	2006	Planted
Guangdong	3	6.6	99	6.5	98	Euc	2006	Planted
Guangdong	2	1.2	18	1.1	18	Euc	2006	Planted
Guangdong	7	0.3	5	0.2	4	Euc	2006	Planted
Guangdong	12	8.3	125	8.1	122	Euc	2006	Planted
Guangdong	11	12.6	189	12.3	185	Euc	2006	Planted
Guangdong	10	2.8	42	2.7	41	Euc	2006	Planted
Guangdong	9	14.0	210	14.1	212	Euc	2006	Planted
Guangdong	8	7.6	115	7.1	107	Euc	2006	Planted
Guangdong	13	6.3	96	6.3	95	Euc	2006	Planted
Guangxi	18	16.6	250	13.6	204	Fir	?	Planted
Guangxi	17	14.6	220	18.7	281	Fir	?	Planted
Guangxi	20	7.6	115	7.7	116	Fir	?	Planted
Guangxi	19	8.1	122	9.2	138	Fir	?	Planted
Guangxi	23	8.6	129	12.2	184	Fir	?	Planted
Guangxi	22	24.6	369	22.1	332	Fir	?	Planted
Guangxi	25	8.6	130	6.1	92	Fir	?	Planted
Guangxi	24	13.7	206	11.1	168	Fir	?	Planted
Guangxi	26	17.1	257	14.0	211	Fir	?	Planted
Guangxi	21	18.0	270	11.5	173	Fir	?	Planted
Guangxi	86	20.2	303	25.8	388	Fir	1993	Purchased
Guangxi	85	15.6	234	17.1	258	Fir	1993	Purchased
Guangxi	87	38.4	576	36.6	550	Fir	1993	Purchased
Guangxi	88	16.9	254	19.4	292	Fir	1993	Purchased
Guangxi	89	9.0	136	11.0	165	Fir	1993	Purchased
Guangxi	90	18.4	276	20.7	312	Fir	1993	Purchased
Hunan	7	7.4	112	10.8	163	Fir	1984	Purchased
Hunan	1	17.0	256	19.6	295	Fir	1995	Purchased
Hunan	2	11.3	170	13.1	197	Fir	1995	Purchased
Hunan	3	20.9	314	23.8	358	Fir	1995	Purchased
Hunan	4	9.6	145	8.8	133	Fir	1995	Purchased
Hunan	12	1.2	18	1.5	23	Pine	1995	Purchased
Hunan	11	10.2	154	12.2	184	Pine	1995	Purchased
Hunan	14	1.6	25	1.7	26	Pine	1995	Purchased
Hunan	15	1.0	16	1.2	19	Pine	1995	Purchased
Hunan	16	4.5	68	3.9	59	Pine	1995	Purchased
Guangxi	6	12.2	183	10.3	155	Euc	2005	Planted
Guangxi	5	9.3	140	8.4	127	Euc	2005	Planted
Guangxi	4	1.5	23	1.7	26	Euc	2005	Planted
Guangxi	3	6.9	104	6.4	97	Euc	2005	Planted

Appendix 4 – Attachment 2

Province	Cmpt	Sino-Forest (ha)	Sino-Forest (mu)	Pöyry (ha)	Pöyry (mu)	Species	Planted Year	Land Status
Guangxi	2	12.6	189	10.6	160	Euc	2005	Planted
Guangxi	1	8.3	125	7.1	107	Euc	2005	Planted
Hunan	12	18.0	270	22.2	333	Fir	1992	Purchased
Hunan	71	17.8	268	22.4	337	Fir	1991	Planted
Hunan	72	17.7	266	19.4	292	Fir	1991	Planted
Hunan	73	16.8	252	17.7	266	Fir	1991	Planted
Hunan	14	5.6	85	8.4	126	Fir	1992	Purchased
Hunan	13	16.6	249	18.3	276	Fir	1992	Purchased
Hunan	18	15.2	228	15.3	230	Fir	1991	Purchased
Hunan	20	4.4	66	5.8	87	Fir	1991	Purchased
Hunan	19	3.7	56	3.4	52	Fir	1991	Purchased
Guangdong	6	12.3	186	10.9	164	Euc	1998	Planted
Guangdong	8	6.2	93	5.3	81	Euc	1998	Planted
Guangdong	7	7.98	120	6.6	100	Euc	1998	Planted
Guangdong	9	17.6	264	15.2	229	Euc	1998	Planted
Guangdong	10	13.2	199	11.2	169	Euc	1998	Planted
Guangdong	11	23.2	349	21.5	324	Euc	1998	Planted
Guangdong	1	6.0	90	5.8	87	Euc	1999	Planted
Guangdong	2	17.9	269	17.5	264	Euc	1999	Planted
Guangdong	3	11.8	178	10.9	164	Euc	1999	Planted
Guangdong	4	16.9	255	15.2	229	Euc	1999	Planted
Guangdong	5	17.4	261	17.0	256	Euc	1999	Planted
Guangdong	6	15.2	228	14.6	220	Euc	1999	Planted
Guangxi	5	11.0	165	19.1	287	Pine	2004	Planted
Guangxi	1	12.7	191	8.6	130	Pine	2004	Planted
Guangxi	2	18.3	275	7.8	118	Pine	2004	Planted
Guangxi	4	8.6	129	14.5	219	Pine	2004	Planted
Guangxi	6	4.1	62	4.9	74	Pine	2004	Planted
Guangxi	3	11.3	170	11.1	167	Pine	2004	Planted

APPENDIX 5

Derivation of Yields

1 INVENTORY IN PURCHASED FOREST

A total of sixty-two plots were established and measured in a variety of species and locations in the purchased forest estate.

Tree volume equations were applied in the calculation of tree volume. These equations have been supplied by Forest Bureaus.

Table 1-1:
Tree Volume Equations Applied to Inventory Data

For all species: Total Stem Volume$_{(ib)}$ (m^3) = a*DBH(cm)^b*Height(m)^c			
	a	**b**	**c**
Chinese Fir	0.00005878	1.9699831	0.896462
Masson Pine	0.00006234	1.8551497	0.956825
Broadleaf	0.00005048	1.9085054	0.990765
Eucalypts	0.00008649	1.8294100	0.8608900

The main statistics from the inventory are summarised in Table 1-2, below.

Table 1-2:
Summary Statistics from Purchased Forest Inventory

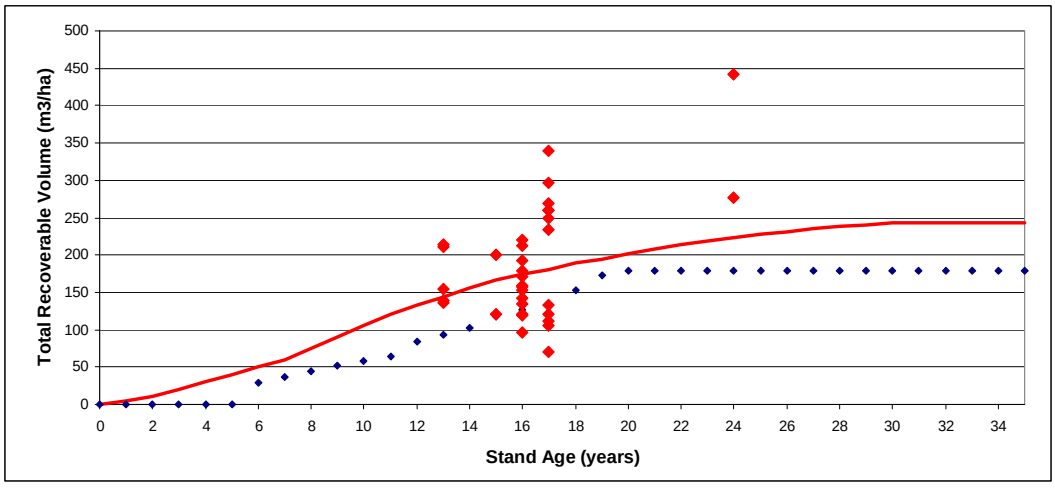
Plot No.	Date	Province	Plot Size (ha)	Species	Planted	Stocking (s/ha)	Mean dbh (mm)	Mean Height (m)	TSV (m^3)/Ha
1	2-Dec-08	Guangxi	0.01	*E. grandis*	2004	1500	95	12.2	77
2	2-Dec-08	Guangxi	0.01	*E. grandis*	2004	1700	105	13.1	102
3	2-Dec-08	Guangxi	0.01	*E. grandis*	2004	1000	143.5	16.94	133
4	2-Dec-08	Guangxi	0.02	Masson pine	1991	1700	122	9.9	122
5	2-Dec-08	Guangxi	0.02	Mixed	1991	950	100	7.1	35
6	2-Dec-08	Guangxi	0.02	Masson pine	1991	1150	140	12.1	112
7	2-Dec-08	Guangxi	0.02	Mixed	1991	2250	115	10.6	131
8	3-Dec-08	Guangxi	No	Mixed	1992	No			
9	4-Dec-08	Guangxi	0.01	Chinese fir	1993	3800	86	9.3	151
10	4-Dec-08	Guangxi	0.01	Chinese fir	1993	3300	113	10.9	251
11	5-Dec-08	Guangxi	0.02	Slash pine	1991	700	169	14.0	110
12	5-Dec-08	Guangxi	0.02	Slash pine	1991	800	177	14.4	146
13	5-Dec-08	Guangxi	0.04	Slash pine	1991	550	232	16.2	188
14	5-Dec-08	Guangxi	0.04	Slash pine	1991	700	168	10.6	83
15	5-Dec-08	Guangxi	0.02	Slash pine	1991	850	162	12.3	115
16	5-Dec-08	Guangxi	0.04	Slash pine	1991	575	174	11.1	81
17	5-Dec-08	Guangxi	0.03	Slash pine	1991	700	178	11.4	106
18	5-Dec-08	Guangxi	0.04	Slash pine	1991	775	163	10.6	91
19	5-Dec-08	Guangxi	0.03	Slash pine	1991	1133	156	11.9	133
20	7-Dec-08	Hunan	0.01	Slash pine	1995	2700	114	9.6	176
21	7-Dec-08	Hunan	0.02	Slash pine	1995	700	164	14.5	102
22	7-Dec-08	Hunan	0.02	Slash pine	1995	1000	111	10.4	56
23	7-Dec-08	Hunan	0.02	Slash pine	1995	1150	156	13.7	170
24	7-Dec-08	Hunan	0.02	Slash pine	1995	750	150	12.3	92
25	7-Dec-08	Hunan	0.03	Slash pine	1995	900	151	13.9	126
26	7-Dec-08	Hunan	0.03	Slash pine	1995	767	145	12.4	85
27	7-Dec-08	Hunan	0.03	Slash pine	1995	767	146	12.3	85
28	7-Dec-08	Hunan	0.03	Slash pine	1995	567	136	10.8	49
29	7-Dec-08	Hunan	0.03	Slash pine	1995	1300	109	9.8	83
30	7-Dec-08	Hunan	0.03	Slash pine	1995	567	132	10.7	48
31	8-Dec-08	Hunan	0.01	Chinese fir	1995	3700	117	11.2	267
32	8-Dec-08	Hunan	0.01	Chinese fir	1995	3200	99	9.3	170
33	8-Dec-08	Hunan	0.02	Chinese fir	1984	850	221	18.7	346

Plot No.	Date	Province	Plot Size (ha)	Species	Planted	Stocking (s/ha)	Mean dbh (mm)	Mean Height (m)	TSV (m^3)/Ha
34	8-Dec-08	Hunan	0.01	Chinese fir	1995	4900	106	9.4	264
35	8-Dec-08	Hunan	0.01	Chinese fir	1995	4100	100	7.9	193
36	8-Dec-08	Hunan	0.01	Chinese fir	1995	4200	99	8.1	175
37	8-Dec-08	Hunan	0.02	Chinese fir	1984	1800	204	17.3	552
38	10-Dec-	Hunan	0.02	Chinese fir	1991	1950	177	14.2	424
39	10-Dec-	Hunan	0.02	Chinese fir	1991	2450	143	13.2	337
40	10-Dec-	Hunan	0.01	Chinese fir	1992	3200	108	7.8	150
41	10-Dec-	Hunan	0.01	Chinese fir	1992	2400	131	9.6	198
42	10-Dec-	Hunan	0.01	Chinese fir	1992	3200	107	8.1	149
43	10-Dec-	Hunan	0.01	Chinese fir	1992	3400	99	7.0	120
44	10-Dec-	Hunan	0.01	Chinese fir	1992	2600	126	10.0	191
45	10-Dec-	Hunan	0.02	Chinese fir	1991	1400	190	14.2	325
46	10-Dec-	Hunan	0.02	Chinese fir	1991	1600	179	12.8	325
47	11-Dec-	Hunan	0.01	Chinese fir	1992	3000	130	9.2	223
48	11-Dec-	Hunan	0.01	Chinese fir	1992	1600	143	10.2	168
49	11-Dec-	Hunan	0.01	Chinese fir	1992	2300	143	10.7	241
50	11-Dec-	Hunan	0.01	Chinese fir	1992	2600	137	11.0	265
51	11-Dec-	Hunan	0.01	Chinese fir	1992	2600	141	11.0	275
52	11-Dec-	Hunan	0.02	Chinese fir	1992	1200	169	11.9	177
53	11-Dec-	Hunan	0.02	Chinese fir	1992	1900	144	10.5	198
54	11-Dec-	Hunan	0.01	Chinese fir	1992	2100	144	11.1	214
55	11-Dec-	Hunan	0.01	Chinese fir	1991	1400	155	11.1	167
56	11-Dec-	Hunan	0.02	Chinese fir	1991	1700	133	10.6	151
57	11-Dec-	Hunan	0.02	Chinese fir	1991	2000	169	14.6	372
58	11-Dec-	Hunan	0.02	Chinese fir	1991	2350	107	6.3	88
59	11-Dec-	Hunan	0.02	Chinese fir	1991	2200	159	12.3	312
60	11-Dec-	Hunan	0.02	Chinese fir	1991	2750	110	8.5	140
61	11-Dec-	Hunan	0.02	Chinese fir	1991	2600	109	8.3	132
62	11-Dec-	Hunan	0.02	Chinese fir	1991	2750	133	11.5	292

1.1 Chinese Fir

1.1.1 Total Recoverable Volume (TRV)

Figure 1-1:
Yield Curves - 2008 Chinese fir and 2007 Area Weighted Average Chinese fir



The dotted blue line represents the area weighted average yield table for Chinese fir in the 2007 valuation. The red diamonds are the 2008 inventory plot yields (in recoverable volume terms), and the red line the yield curve (best-fit) applied to Chinese fir in the 2008 valuation.

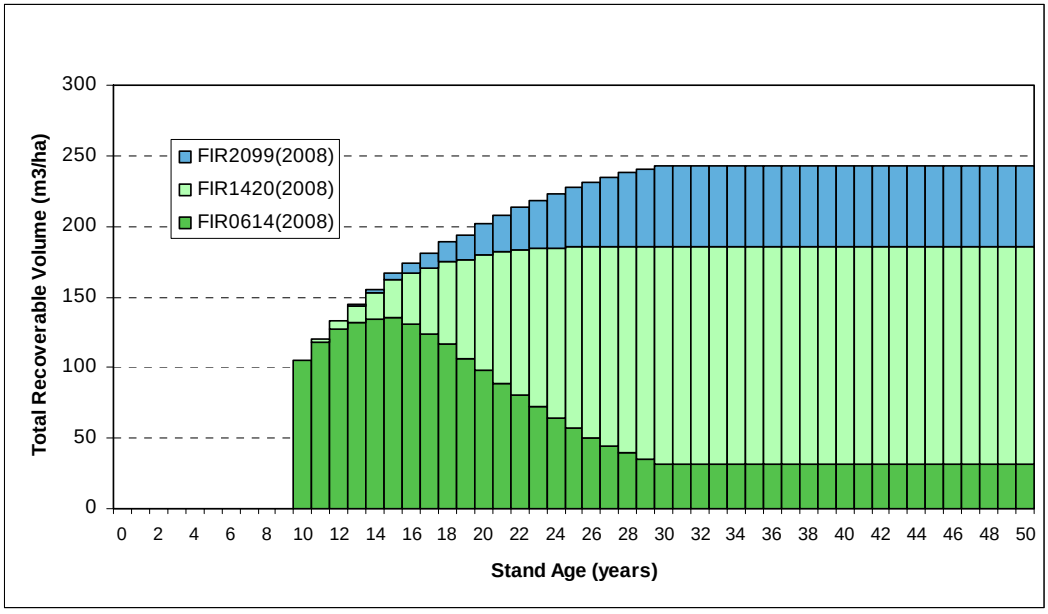
1.1.2 Recoverable Volume by Log Grade

When log prices vary widely between log grades, estimating the harvest yield by log grade becomes an important aspect of forecasting the growth and yield from forests, and in turn the value of that wood.

During the inventory of the purchased forest, Pöyry also measured long length Chinese fir logs in a log yard. This data was then used to estimate the percentage of total recoverable volume in the three log size classes, on stand age, for Chinese fir. These percentages were then applied to the Chinese fir yield table (TRV) to disaggregate the total recoverable volume into recoverable volume by log grade.

Figure 1-2.presents the breakdown by log type assumed in the 2008 valuation.

Figure 1-2:
Yield Table Applied to All Chinese Fir Crops – 2008 Valuation



1.2 Eucalypts

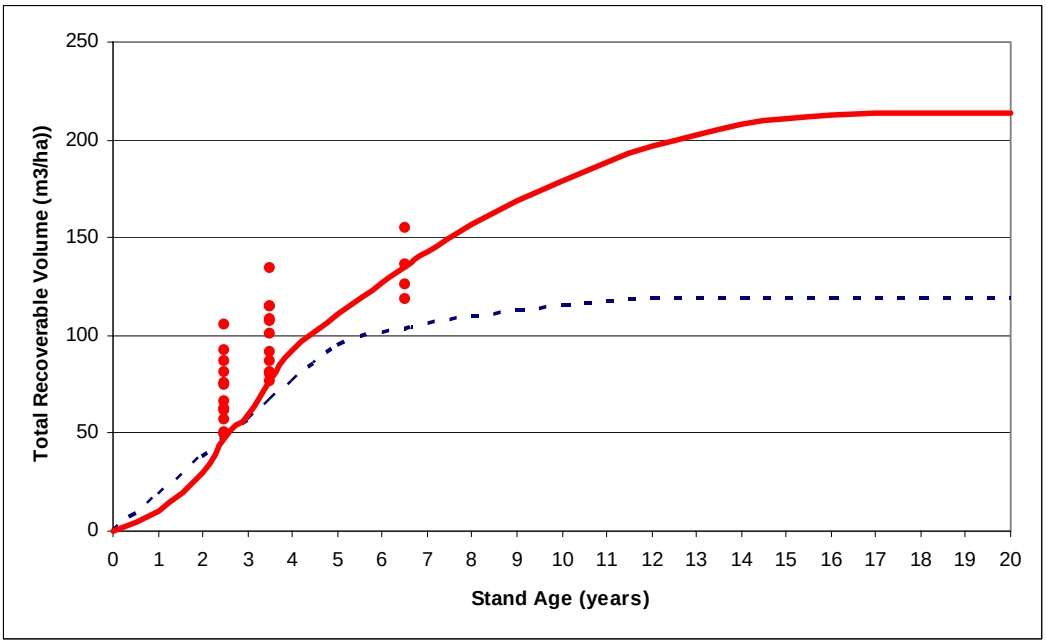
Table 1-3:
Summary Statistics from Planted Forest Inventory

Plot No.	Measurement Date	City	Plot Size (ha)	Species	Planting Year	Stocking (sph)	Mean DBH (cm)	Mean Height(m)	TSV (m^3/ha)
1	1/12/08	Guangdong	0.01	Eucalypt	2002	950	13.5	20.7	148
2	1/12/08	Guangdong	0.01	Eucalypt	2002	1250	12.7	17.5	157
3	2/12/08	Guangdong	0.01	Eucalypt	2005	1700	9.4	14.1	106
4	2/12/08	Guangdong	0.01	Eucalypt	2005	2050	9.1	13.7	116
5	3/12/08	Guangdong	0.01	Eucalypt	2002	1400	12.3	17.0	170
6	3/12/08	Guangdong	0.01	Eucalypt	2002	1900	11.5	17.8	193
7	3/12/08	Guangdong	0.01	Eucalypt	2005	1300	12.8	14.7	140
8	3/12/08	Guangdong	0.01	Eucalypt	2005	1000	10.0	12.5	65
9	4/12/08	Guangdong	0.01	Eucalypt	2006	1400	9.8	12.1	71
10	4/12/08	Guangdong	0.01	Eucalypt	2006	1800	9.2	12.4	77
11	4/12/08	Guangdong	0.01	Eucalypt	2006	2400	7.4	11.0	71
12	4/12/08	Guangdong	0.01	Eucalypt	2006	1600	9.4	12.1	80
13	5/12/08	Guangdong	0.01	Eucalypt	2005	1100	12.0	12.9	87
14	5/12/08	Guangdong	0.01	Eucalypt	2005	900	9.8	12.1	48

Plot No.	Measurement Date	City	Plot Size (ha)	Species	Planting Year	Stocking (sph)	Mean DBH (cm)	Mean Height(m)	TSV (m^3/ha)
15	5/12/08	Guangdong	0.01	Eucalypt	2005	800	9.9	11.9	45
16	5/12/08	Guangdong	0.01	Eucalypt	2005	1100	10.1	13.3	73
17	5/12/08	Guangdong	0.01	Eucalypt	2006	1500	9.4	13.9	93
18	5/12/08	Guangdong	0.01	Eucalypt	2006	1600	11.1	16.2	132
19	8/12/08	Guangxi	0.01	Eucalypt	2005	1400	11.0	14.8	102
20	8/12/08	Guangxi	0.01	Eucalypt	2005	1300	11.4	13.8	96
21	8/12/08	Guangxi	0.01	Eucalypt	2005	1500	11.2	14.6	126
22	8/12/08	Guangxi	0.01	Eucalypt	2005	1100	12.1	15.6	100
23	8/12/08	Guangxi	0.01	Eucalypt	2006	2100	10.0	13.3	115
24	8/12/08	Guangxi	0.01	Eucalypt	2006	1400	11.1	13.8	95
25	9/12/08	Guangxi	0.01	Eucalypt	2005	1200	12.5	15.6	114
26	9/12/08	Guangxi	0.01	Eucalypt	2005	1200	12.9	13.8	108
27	9/12/08	Guangxi	0.01	Eucalypt	2005	1200	13.5	17.3	143
28	9/12/08	Guangxi	0.01	Eucalypt	2005	1300	11.9	17.3	135
29	11/12/08	Guangxi	0.01	Eucalypt	2006	1100	10.3	12.8	62
30	11/12/08	Guangxi	0.01	Eucalypt	2006	1400	11.0	16.0	83
31	11/12/08	Guangxi	0.01	Eucalypt	2006	1500	10.2	15.2	102
32	11/12/08	Guangxi	0.01	Eucalypt	2006	1500	11.0	15.0	109
33	11/12/08	Guangxi	0.01	Eucalypt	2006	900	11.3	13.6	63
34	11/12/08	Guangxi	0.01	Eucalypt	2006	1300	10.4	13.5	78
35	30/10/08	Guangdong	0.01	Eucalypt	2005	1900	11.7	16.3	168
36	30/10/08	Guangdong	0.01	Eucalypt	2005	1300	12.3	17.1	134
37	30/10/08	Guangdong	0.01	Eucalypt	2005	1200	13.2	18.1	143

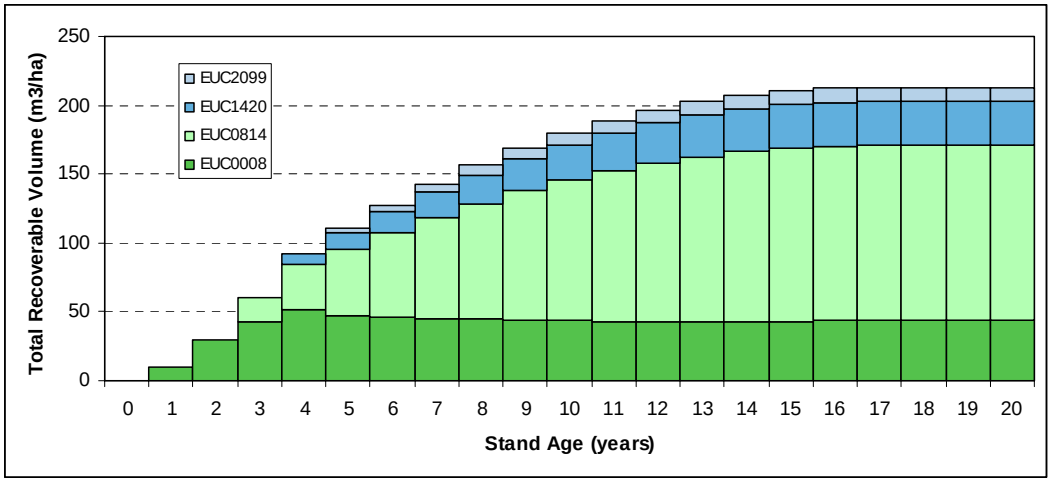
1.2.1 Total Recoverable Volume (TRV)

Figure 1-3:
Yield Curves - 2008 Eucalypts and 2007 Area Weighted Average Eucalypts



The dotted blue line represents the area weighted average yield table for eucalypts in the 2007 valuation. The red dots are the 2008 inventory plot yields (in recoverable volume terms), and the red line shows the yield curve (best-fit) applied to eucalypts in the 2008 valuation.

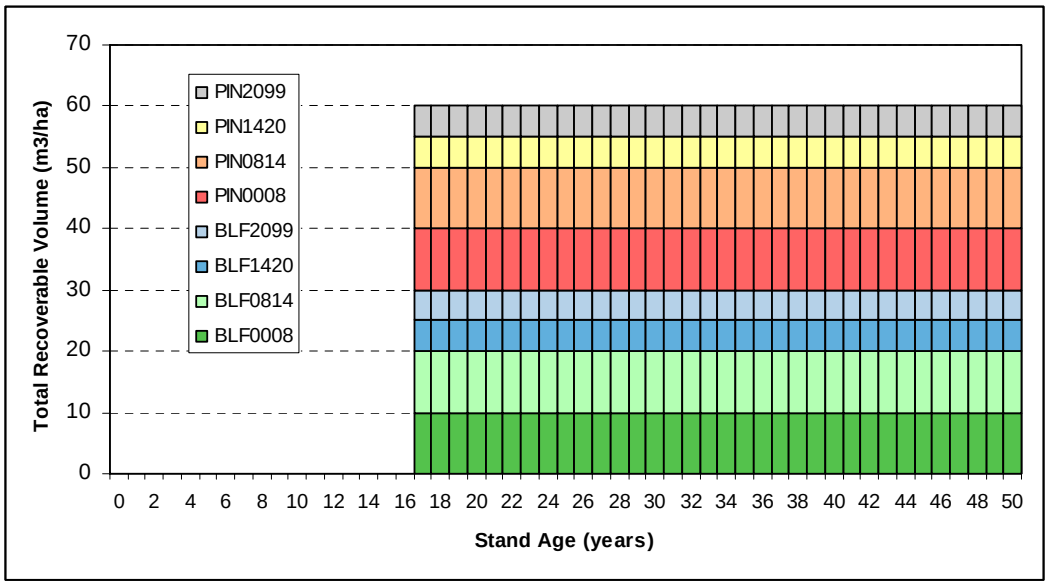
Figure 1-4:
Yield Table Applied to All Eucalypt Crops – 2008 Valuation



Pöyry's yield table for eucalypts is based on the analysis of the 37 inventory plots as shown in Figure 1-4, above. The distribution of the log grades is based on an extrapolation/interpolation of the Chinese fir data and consideration of the diameter distribution data within the inventory plots.

1.3 Other Species

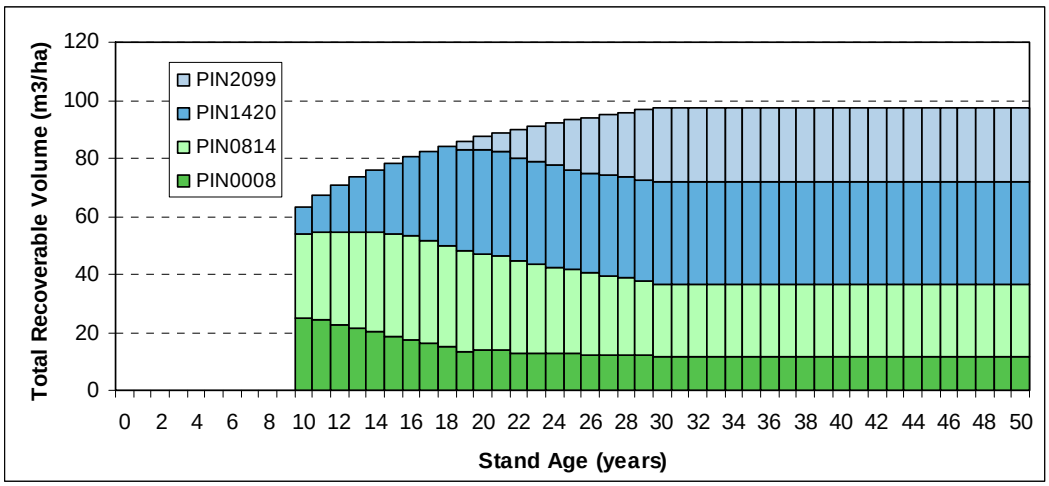
Figure 1-5:
Yield Table Applied to All 'Other Species' Crop – 2008 Valuation



1.4 Pines

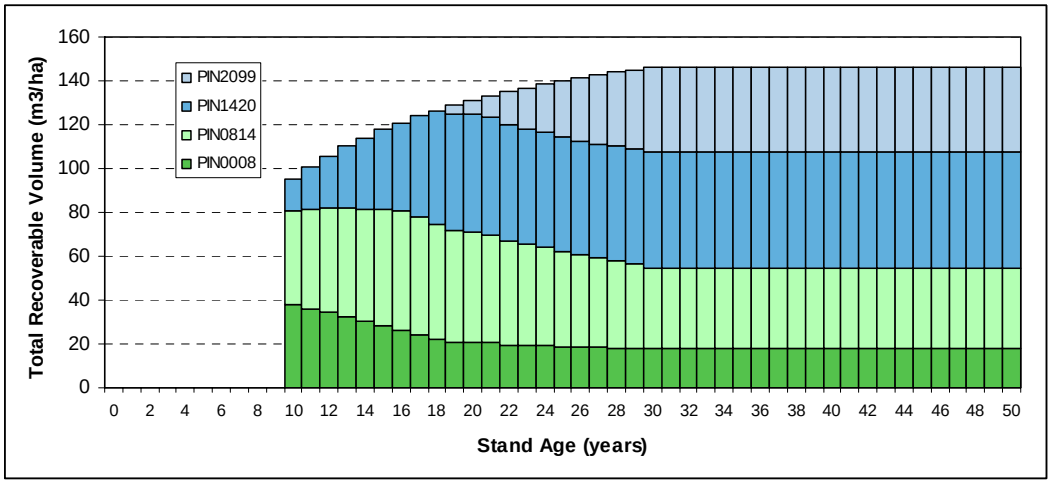
The total recoverable yield by log size grade for Masson pine is shown in the graph below.

Figure 1-6:
Yield Table Applied to All Masson Pine Crops – 2008 Valuation



The yield from foreign pine (usually slash pine) is normally greater than for Masson pine. Pöyry has used a yield table derived from other work in southern China for the Sino-Forest 'foreign pine' tree crops. This is shown in Figure 1-7.

Figure 1-7:
Yield Table Applied to All Foreign Pine Crops – 2008 Valuation



1.5 Other Tree Crops (Croptypes)

The yield tables for broadleaf species and for *Acacia* species are the same as those applied in the 2007 forest valuation.

APPENDIX 6

Investment Appraisal for Forest Investment in China

Auckland UniServices Limited

POSTAL ADDRESS
c/- The University of Auckland
Private Bag 92019, Auckland, New Zealand

STREET ADDRESS
Level 10, UniServices House
70 Symonds Street, Auckland

TEL +64 9 373 7522
FAX +64 9 373 7412
WEB www.uniservices.co.nz

Investment Appraisal for Forest Investment in China

AUCKLAND UNISERVICES LIMITED

a wholly owned company of

THE UNIVERSITY OF AUCKLAND

Auckland UniServices Limited

Client
Steve Croskery
Senior Consultant
Pöyry Forest Industry
2208-2210, Cloud Nine Plaza
No. 1118 West Yan'an Road
SHANGHAI 200052, P.R. China

Consultant
Dr Alastair Marsden
Department of Accounting & Finance
School of Business & Economics
The University of Auckland
Private Bag 92019
Auckland, New Zealand.

10 December 2008

Auckland UniServices Limited

POSTAL ADDRESS
c/- The University of Auckland
Private Bag 92019, Auckland, New Zealand

STREET ADDRESS
Level 10, UniServices House
70 Symonds Street, Auckland

TEL +64 9 373 7522
FAX +64 9 373 7412
WEB www.uniservices.co.nz

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Investment Appraisal for Forest Investment in China

A. Background and brief executive summary

A.1 Introduction

You have requested Auckland UniServices Limited ("Auckland UniServices" or "we") to prepare a report on the weighted average cost of capital ("WACC") for a generic forest asset in the country of China.

In accordance with the terms of our engagement we use the capital asset pricing model ("CAPM") to determine the cost of equity capital.

The cost of capital is denominated in United States dollars ("USD") from the perspective of an international investor.

This report is subject to our declaration and restrictions on the use as set out in section B and Appendix 1.

A.2 Results

In summary we conclude under the different versions of the CAPM model that we apply:

- The estimates of the **real post-corporate tax** WACC denominated in **USD** for a generic forest asset in China is between **7.3%** and **10.8%.**

Table 1		
Chinese corporate tax rate	**"Low" estimate**	**"High" estimate**
Corporate tax rate = 33%	7.3%	10.7%
Corporate tax rate = 24%	7.5%	10.8%

- The estimates of the **real pre-corporate tax** WACC denominated in **USD** for a generic forest asset in China is between circa **9.8%** and **15.9%.**[1]

Table 2		
Chinese corporate tax rate	**"Low" estimate**	**"High" estimate**
Corporate tax rate = 33%	10.9%	15.9%
Corporate tax rate = 24%	9.8%	14.3%

These cost of capital estimates apply as at 18 November 2008.

[1] The conversion of a post-tax WACC to an "equivalent" pre-tax WACC is based on a simple transformation formula. In practice, however, formal modelling of the entity's cashflows is required to determine an "equivalent" pre-tax WACC.

Our “low” and “high” estimates are not absolute lower and upper bounds of the possible range of the WACCs but rather reflect a low and high range based on estimates of the parameter inputs under the difference versions of the CAPM we adopt. The lower and upper bounds for the WACC will be wider than the range of estimates provided in the tables above if we undertook additional sensitivity analysis based on different versions of the CAPM.

A.3 Impact of the recent credit crisis

As at the date of this report, financial and capital markets are being impacted by very high volatility, a liquidity crisis in most debt markets and highly uncertain economic prospects. As a result of the global credit crisis, our estimates of the real post-tax WACC for a generic forest asset have substantially increased compared to the estimates in our report dated February 2008.

The credit crisis began with the collapse of the sub-prime mortgage market in the US and significant write-downs in the value of securitised mortgages and collateralised debt obligations. However, it has now extended to an insolvency problem for major banks and corporations both in the US, Europe and many other developed and emerging economies.

Many economies are now forecast to be facing a significant recession or downturn in economic activity.

In our view the consequences of the global credit crunch include, inter-alia:

- Significantly higher cost of capital for those firms that have high leverage and/or high degrees of operating leverage. Credit or default spreads on investment grade (BBB) debt has widened to around 4.50% - 5.00% (or more). Equity risk premiums will also have increased, at least over the short-to-medium term time horizon.

- Significant balance sheet risk and focus by firms and investors on “de-leveraging”. Companies that have significant debt maturing in the near-term and have a weak credit rating may find it extremely difficult to re-finance their debt obligations. Even where debt can be re-financed it is likely to be at much higher credit spreads than existed before the onset of the credit crisis.

- Higher than normal volatility in interest rates, commodity prices, inflation rates and exchange rates.

- Reduced corporate profitability as consumers change their spending patterns and consumers’ demand for many goods and services is reduced. This is likely to impact on most sectors of the economy.

- Increased regulation to address “market failure”.

A.4 Limitations of the CAPM

The CAPM is a theoretical asset pricing model and we strongly recommend (to the extent such evidence is available) our estimates of the cost of capital for a Chinese forest entity be compared to implied discount rates or other evidence based on actual forest or forest related sales in the Chinese market.

We note the Chinese legal, institutional and bankruptcy laws differ to Western capital markets. In addition restrictions on the level of foreign ownership of forest assets may apply in China and in emerging markets the level of corporate governance may vary significantly between companies (see Klapper and Love, 2004, Chen et al., 2003).

Corporate governance is important as it provides mechanisms whereby outside investors can protect themselves against expropriation of assets by insiders. Corporate governance can impact on the risks that outside investors may face in respect of any expropriation of assets.

These factors together with size and other market frictions may warrant an adjustment to the cashflow expectations and/or an increment to the cost of capital for the forest if investors' property rights are not clearly defined. Where control is not obtained a minority discount and /or illiquidity discount may apply.

B. Declaration, recipients of our report, use of our advice and restrictions on the use of this report

This report has been prepared for Pöyry Forest Industry Limited ("Pöyry"). The report was written by Dr Alastair Marsden on behalf of Auckland UniServices and has been based primarily on information available up to 18 November 2008. The cost of capital estimates apply as at that date.

The current volatility in the equity and debt markets and potential for irrational behaviour by investors makes valuation and determination of a fair cost of capital difficult to determine as at the date of this report. Potential market participants may have materially different views on value and cost of capital in the current global credit crisis. Our report should therefore be viewed in this context.

Because of its special nature, our report may not be suited for any purpose other than as described in this report. We will not be liable for any loss or damage to any party other than Pöyry who may rely on our report. Appendix 1 sets out in more detail our statement of independence, qualifications, declaration, disclaimer and restrictions on the use of this report.

C. Information Sources

In preparing this report we have relied on information received from:

- Data sourced from internet websites (as referenced);
- Other articles and sources (where referenced); and
- Discussions with yourself.

In accordance with the terms of our engagement letter we have not audited or independently verified any of the information sourced or provided to us.

D. Introduction to capital budgeting and cost of capital in developing markets:

An estimate of the cost of capital is critical to value any entity or investment project using discounted cash flow ("DCF") analysis.

Investments in developing markets are generally perceived to have higher risk compared to investments in countries with a stable political and economic environment. Risks of investing in developing markets include high inflation, capital controls, political instability, corruption, poor accounting and managerial controls, an uncertain legal framework and lack of protection of investor property rights.

The alternative conceptual approaches to recognise these "risks" using DCF analysis and to value an entity in a developing country are to:[2]

- Discount 'promised' cash flows at a cost of capital that includes a risk premium for country and other idiosyncratic factors. Under this approach an increment is added to the cost of capital to recognise risk that is not explicitly modelled into the cashflow expectations; or

- Discount 'expected' cash flows based on probability-weighted scenarios. Under this approach certain specific country risks will likely result in a downward adjustment in cash flow expectations compared to the alternative approach of adding an increment to the cost of capital.

To recognise the higher perceived risk of investing in developing markets, common practice is to adopt the first approach and adjust the discount rate by adding a premium to the cost of capital that incorporates an increment for country-risk premium factors (see Keck at al. (1998), Lessard (1996)).

James and Koller (2000) argue, however, that the better (alternative) approach to capital budgeting in markets is to recognise specific project or unique country risks in

[2] See Chapter 19, Copeland, T., Koller, T. and J. Murrin, 2000.

the expectations of cashflows. First, with increased global integration of capital markets investors can diversify away from many specific country risks. Second, many country risks may be unique or idiosyncratic to that country and may not apply equally to all industries in that country. Third, use of the credit risk of the country to determine the cost of capital for an entity may be a poor proxy for the entity's risk.

We are not privy to the specific risks that Pöyry proposes to model in the cashflows to value the Chinese forest assets. However, the range of cost of capital estimates that we derive in this report incorporate a country risk premium.

E. Overview of the different CAPM models we apply to estimate the cost of equity for developing markets

E.1. Use of Capital Asset Pricing Model ("CAPM") in developing markets

The risks attributable to any investment can broadly be classified as:

- Systematic or non-diversifiable risk, e.g., world market risk, macro-economic risks associated with shocks to GNP, interest rates etc; and

- Non-systematic or unique projects risks. For developing markets these are often one-sided or asymmetric (and primarily of a 'downside nature').

Under the standard CAPM, risk is measured by the beta of a project or investment. Beta only captures systematic or non-diversifiable risk in the firm or project.

We summarize below the global CAPM and the versions of the CAPM based on those proposed by Damodaran (2003) to estimate the cost of capital for an investment in emerging markets. We then apply Damodaran's versions of the CAPM to determine the cost of capital for a generic forest asset in China.[3]

E.2. Global CAPM

Under the global CAPM the expected return on equity, R_{ei}, for the company is given by:

$$R_{ei} = R_{f\,US} + \beta_{i\,US} * (R_{M\,US} - R_{f\,US})$$

In this version of the global CAPM the US market is assumed to proxy for a global integrated market and investors are assumed to hold a globally diversified portfolio. In this case, $R_{f\,US}$ is US risk-free rate and the term $(R_{M\,US} - R_{f\,US})$ represents the expected global market risk premium.

[3] Also see Pereiro (2001) for an overview of some of the different cost of capital models that may be applied to emerging markets.

The beta of asset i ($\beta_{i\ US}$) is measured against a global market portfolio. Country risk is not accounted for in this model since it is assumed to be diversifiable.

E.3. Damodaran's Models

Under Damodaran's (2003) model the expected return on equity, R_{ei}, for the company is given by:

$$R_{ei} = R_{f\ US} + \beta_{i\ US} * (R_{M\ US} - R_{f\ US}) + \textit{Country risk premium}$$

Damodaran (2003) suggests a number of ways to the estimate the *Country risk premium*. These are:

(i) the country risk premium is set equal to the *country bond default spread*;

(ii) the country risk premium equals the product of the global market risk premium and the ratio of local equity market volatility and US (global) market volatility ($\sigma_{Local\ Equity}/\sigma_{US}$); and

(iii) the country risk premium equals the product of the *country bond default spread* ($R_{Country\ Risk}$) and the ratio of local equity market volatility and country bond volatility ($\sigma_{Local\ Equity}/\sigma_{Country\ Bond}$).

Intuitively we may expect a country's equity risk premium to be larger than the country bond default spread. We use Damodaran's approach No. (iii) to determine the *Country risk premium* for emerging markets and the market of China.

The $\beta_{i\ US}$ is the equity beta for an equivalent or comparable US based project.

For individual projects, Damodaran's estimate of the *country risk premium* can be incorporated into the cost of equity in three different ways.

Model 1. The same *country risk premium* is assumed for all projects in the country:

$$R_{ei} = R_{f\ US} + \beta_{i\ US} * (R_{M\ US} - R_{f\ US}) + \textit{Country risk premium}$$

Model 2. The country equity risk premium is adjusted by the equity beta of the project:

$$R_{ei} = R_{f\ US} + \beta_{i\ US} * [R_{M\ US} - R_{f\ US} + \textit{Country risk premium}]$$

Model 3. The country equity risk premium is adjusted by a 'lambda' coefficient that measures the individual project's exposure to country risk:

$$R_{ei} = R_{f\ US} + \beta_{i\ US} * (R_{M\ US} - R_{f\ US}) + \lambda_i * \textit{Country risk premium}$$

F. Application of suggested approaches to estimate the weighted average cost of capital for a generic forest asset in China.

Damodaran's (2003) models discussed in the prior section above are used to estimate the cost of capital for the forestry sector in China.

F.1. Assumptions

Assumptions with respect to US / global risk parameters are presented in Table 3 below.

Table 3: Global risk parameters		
	US / Global	*US / Global*
	Low	*High*
Asset beta of US forestry firms ($\beta_{i\ US}$)	0.60	0.80
Risk-free rate - global ($R_{f\ US}$)	3.93%	3.93%
Market risk premium ($R_{M\ US} - R_{f\ US}$)	5.50%	6.50%
Expected US inflation	1.00%	1.00%

F.1.1. Parameter estimates in Table 3

Risk free rate

The average yield as at 18 November 2008 on long-term (10-20 yr) USD Treasury bonds was circa **3.93%.**[4] This is assumed to be a proxy for the global long-term risk free rate.

Market risk premium ($R_{M\ US} - R_{f\ US}$)

The market risk premium ("*MRP")* can be estimated in a number of ways. These include simple historical averaging of the observed risk premium, forward-looking approaches, the methodology of Siegel (1992) and survey evidence.

Damodaran (2008) provides a historical arithmetic estimate of the *MRP* for the US market over the period 1928-2007 of 7.79% (stocks minus short-term Treasury bills) and 6.42% (stocks minus long-term Treasury bonds).[5]

Most forward-looking estimates of the *MRP* are lower than the historical estimates of the *MRP*. For example, Fama and French (2002) generate forward-looking estimates

[4] Source: US Department of Treasury. http://www.treasury.gov/offices/domestic-finance/debt-management/interest-rate/yield.html, November 2008.

[5] Dimson, Marsh and Staunton (2005, Table 11, p39) provide estimates of the historical arithmetic *MRP* for 17 developed countries over the period 1900 – 2004. The countries and historical arithmetic mean market risk premia estimates over the period 1900 – 2004 are Australia (7.8%), Belgium (4.2%), Canada (5.6%), Denmark (3.0%), France (5.8%), Germany (8.3%), Ireland (5.1%), Italy (7.7%), Japan (9.7%), Netherlands (5.8%), Norway (4.2%), South Africa (6.8%), Spain (4.1%), Sweden (7.3%), Switzerland (3.1%), United Kingdom (5.2%) and the United States (6.6%).

for the US standard market risk premium of 2.6%-4.3% over the period 1951-2000. Similarly Claus and Thomas (2001) generate estimates of the *MRP* for a number of countries with a maximum of 3.0%.

Siegel (1992, 1999) argues that historical US estimates of the *MRP* have been biased upwards due to unexpectedly high inflation in the latter part of the 20th century. Similarly, Dimson, Marsh and Staunton (2005, 2006) consider a downward adjustment to the measured historical *MRP* is justified if there has been a long-term change in capital market conditions and investors' required rates of return in the future are expected to be lower than in the past. Dimson et al. conclude a plausible estimate of the ex-ante arithmetic *MRP* measured relative to short-term bonds is around 5.0%. Relative to long term bonds the *MRP* would be circa 4.0%. However, Ibbotson and Chen (2003) argue, based on a decomposition of historical equity returns into supply factors of inflation, earnings, dividends, the price to earnings ratio, dividend payout ratio, book value, return on equity and GDP, that the forecast arithmetic *MRP* (relative to long-term bonds) is around 6.0% for the United States.[6]

Impact of the recent global credit crisis

The recent global credit crisis has led to a substantial fall in equity markets worldwide. This trend has been exacerbated during the month of October 2008 and the early part of November 2008. Market volatility has also been much higher than normal.

On a forward looking basis, an estimate of the ex-ante *MRP* will be higher if investors' risk aversion has increased and the fall in equity prices outweighs the impact of lower forecast cashflows and profitability for firms.

The increase in market volatility can, however, be viewed in two ways.[7] High volatility may simply reflect that investors continue to require long-run observed historical risk premiums. When the credit crisis eventually passes, markets will return to normal levels of volatility and there will be no change to the long-term *MRP*.

On the other hand the impact of the credit crisis and higher current volatility may reflect a structural increase in the *MRP*, at least over the short to medium term time horizon.

Conclusion on MRP

In conclusion we assume the ex-ante global *MRP* to be **5.50%** to **6.50%.** While this is lower than historical estimates of the market risk premium for many developed countries, the assumption of <u>full</u> market integration under a global CAPM should lead to greater diversification of risk and hence lower the forward-looking market risk premium.

[6] A review article by Mehra (2003) on the equity risk premium puzzle also concludes that the *MRP* is likely to be similar to what it has been in the past. The equity risk premium puzzle refers to the inability of standard economic models to explain why the *MRP* has been so high in many developed countries such as the United States.

[7] See Damodaran (2008) for a discussion of this point.

Our estimate of the global *MRP* is, however, 0.5% higher than the estimate in our prior report for Pöyry dated February 2008 on the cost of capital for a generic forest in China. This reflects our view that investor risk premiums are likely to have increased, at least in the short-to-medium term, as a result of the global credit crisis.

Global Beta

As already noted beta is a measure of the systematic risk of a firm (i.e., non-diversifiable risk or that part of the risk of an asset that cannot be diversified away). Beta is a relative risk measure and measures the sensitivity of returns on a stock relative to market returns (e.g., in response to macroeconomic shocks to GDP, interest rates, taxes etc.). The beta of the market is one.

Estimation of beta almost invariably involves an element of judgement.

Beta estimates that we calculated from data sourced from Damodaran (2008)[8] for US, European, Australian and Canadian companies are:

Table 4: OLS[9] asset betas

Market	***Industry***	***Number of companies***	***Mean Asset Beta (OLS)***
United States	Paper/Forest Products	22	0.91
Australia / Canada	Forestry	12	0.95
Europe	Paper & Related Products	30	0.69

The sample shows an "average" range of OLS asset betas between 0.69 and 0.95.

US Betas - Data from Value Line

Table 5: US Betas - Data from Value Line[10]

Industry classification	***Year***	***Number of Firms***	***Average Equity Beta***	***Unlevered Asset Beta***
Paper/Forest Products	2008	***39***	0.93	0.69
Paper/Forest Products	2007	40	0.84	0.60
Paper/Forest Products	2006	40	0.82	0.53
Paper/Forest Products	2005	39	0.86	0.57
	Average	**40**	**0.86**	**0.60**

The average US betas for paper and forest products firms is circa 0.60 (Value Line estimates).

[8] Damodaran (2008). http://pages.stern.nyu.edu/~adamodar/New_Home_Page/. Beta estimates are as at Jan. 2008.
[9] Ordinary least squares.
[10] Damodaran (2008). http://pages.stern.nyu.edu/~adamodar/New_Home_Page/.

Akers and Staub (2003), however, report higher asset beta estimates of between 0.67 and 0.76 for US timber assets measured relative to a global market portfolio.

In summary the US and other country asset beta estimates of Damodaran (2008) and Akers and Staub (2003) range between 0.60 and 0.95. Under the assumptions of the global CAPM and where beta should be measured relative to a global market portfolio, we assume an estimate for the asset beta of between **0.60** and **0.80** (weighted towards the lower end of the range).[11]

US inflation rate

As at 18 November 2008 the ten-year inflation-indexed Treasury yield spread or the difference between nominal and inflation-indexed bonds yields was less than 1.00%.[12] The yield spread on 30- year US Treasury bonds compared to US Treasury real long term (> 10 yrs) interest rates was circa 1.3%. [13]

In our view the current narrow spread between nominal and inflation- indexed bonds reflects the possibility of deflation arising from the global credit crisis.

In the current economic environment we apply a long-run inflation rate of **1.00%** to deflate the US nominal WACC to calculate the US real WACC.

F.1.2. Parameter estimates in Table 6

Assumptions specific to the Chinese market are summarised in Table 6.

Table 6: Parameters used for China

	Low	**High**
Country bond default spread ($R_{Country\ Risk}$)	1.00%	2.00%
$\sigma_{Local\ Equity} / \sigma_{Country\ Bond}$	1.5	1.5
Sensitivity to country risk premium (λ_i)	0.80	1.20
Corporate tax	24.00%	33.00%
Debt margin	4.50%	4.50%
Debt ratio	15.00%	15.00%

[11] To convert an equity beta to an asset beta (and vice-versa) we use the following formula.
$\beta_i = \beta_a [1+ D/E * (1-t_c)]$; where:
β_i = equity beta;
β_i = asset beta;
D / E = target or long-run ratio of debt to equity; and
t_c = corporate tax rate.
[12] Based on an estimate of the 10-Year Inflation-Indexed Treasury yield spread – see Federal Reserve Bank of St Louis, November 2008.
[13] Source: US Department of Treasury. http://www.treasury.gov/offices/domestic-finance/debt-management/interest-rate/yield.html, November 2008.

Country bond default spread

The *country bond default spread* can be proxied by the difference between USD denominated bonds issued by a foreign country and USD Treasury bonds of similar maturity.

As at 18 November 2008 the average traded yields on long-term US dollar sovereign bonds (5 years maturity or greater) issued by the Chinese Government traded at yield spreads (premiums) of between circa 1.00% and 2.2% over US Treasury bonds. [14]

Table 7			
Bond maturity (yrs)	**Yield on USD Bonds issued by Chinese Government (as at 18 Nov 2008)**	**Yields on USD Treasury Bonds (as at 18 Nov 2008)**	**Spread over similar term USD Treasury bonds**
1 yr	3.93%	1.05%	2.88%
3 yrs	3.93%	1.44%	2.49%
5 yrs	4.44%	2.22%	2.22%
19 yrs	5.32%	4.32%	1.00%

The credit rating for China USD Bonds as at November 2008 was:[15]

Table 8		
Rating agency	**Rating**	**Comment**[16]
Moodys	A1	Upper-medium grade and subject to low credit risk
Standards & Poors	A+	Strong capacity to meet financial commitments
Fitch	A+	High credit quality

For China we assume a *country bond default spread* of between **1.00** and **2.00%.** This is higher than our default spread of between 0.8% and 1.2% used in our report dated February 2008 and again reflects increased investor risk aversion in the context of the current global credit crisis.

Ratio of local equity market volatility and country bond volatility **($\sigma_{\text{Local Equity}}/\sigma_{\text{Country Bond}}$)**

We do not have data to empirically measure this estimate. In the absence of any empirical evidence we assume the ratio of ($\sigma_{\text{Local Equity}}/\sigma_{\text{Country Bond}}$) is **1.5**.[17]

Sensitivity to country risk premium (λ_i)

The term λ_i is the sensitivity of each project / company to country risk (Damodaran, 2003). The average value of λ_i is one.

[14] Source Bloomberg, November 2008.
[15] Ibid.
[16] See the websites of Moodys, Standard & Poors and Fitch.
[17] See Damodaran (2008).

We understand the timber in the Chinese forest will be sold almost entirely into the domestic market (i.e., no exports) and with prices set domestically. Similarly costs to harvest and produce the timber are exposed to Chinese country risk.

Recent evidence by Cavaglia, Brightman and Aked (2000) suggests that with increased worldwide market integration, industry risk factors are growing in relative importance to country risk factors. The study by Cavaglia, Brightman and Aked is, nevertheless, confined to developed markets. Evidence by Harvey (1995) finds returns in developing markets are still likely to be influenced by local (domestic) factors compared to market returns in more developed countries.

In summary we assume the value of λ_i for a forest company in a developing market of China is between **0.8** and **1.2** (i.e., average exposure to Chinese country risk).

Corporate tax rate

Based on information provided by Pöyry and discussions with you we assume the corporate tax rate is **33%** in China. However, we also provide our estimate of the real post-corporate and real post-corporate tax WACC assuming a corporate tax rate of **24**%.[18]

We understand the corporate tax rate applies to the marginal cost of one dollar of additional interest expense on debt and hence is appropriate for use in the determination of the weighted average cost of capital. Other non-deductible taxes, certain payroll taxes and withholding payments may need to be modelled in the cashflows and are not accounted for in our estimate of the WACC.

In this respect we are not taxation experts and do not have a detailed knowledge of China's tax system.

We note the presence of any tax concessions in the Chinese market may lower the effective corporate tax rate. A lower effective corporate tax rate would raise our post-tax WACC estimate. The forest value may still, however, be greater due to higher expected after-corporate tax cashflows. In addition we note the presence of "tax holidays" (if any) and tax losses that can be carried forward potentially introduce considerable complexity into capital budgeting. A discussion of capital budgeting (and cost of capital) under time varying tax rates is outside the scope of this report.[19]

Debt margin and debt ratio

The impact of the global credit crisis has resulted in significantly higher cost of capital for those firms that have high leverage and/or high degrees of operating leverage.

[18] The standard tax rate on enterprise income tax is 33%, but the tax rate could be reduced to 24% for enterprises located at the coastal cities or 15% for those located at the special economic development zone. Source: PriceWaterHouseCoopers Hong Kong (2008) http://www.pwchk.com/home/eng/prctax_corp_overview_taxation.html

[19] See Cheung and Marsden (2003) for a discussion of some of the complexities of capital budgeting in the presence of initial tax losses.

In addition credit or default spreads on investment grade (BBB or Baa) debt has widened to around 4.50% - 5.00% (or more).

We do not have sufficient detailed information to accurately determine a debt margin for a forest project in the developing market of China. However, for the WACC calculated using the CAPM we assume a debt margin of **4.5%** over the US Government bond rate ($R_{f\ US}$). This is higher than historical debt margins but reflects much wider spreads in the current economic environment.

To calculate the WACC we assume a debt to equity ratio of **0.15:0.85** for a long term investment in a forest asset.

F.2. Economic data

You have requested us not to provide any commentary on the economic outlook or political developments in China. We understand this may be covered in a separate report prepared for Pöyry.

G. Results

Section E.3 sets out the three alternative models that we apply under Damodaran's (2003) approach.

G.1 Results for range of assumptions

We summarise in Table 9 the estimated WACC denominated in USD (both nominal and real) under Damodaran's (2003) Models 1, 2 and 3 assuming:

- Asset beta = 0.60 to 0.80;
- Market risk premium = 5.50% to 6.50%;
- Country bond default spread = 1.0% to 2.0%;
- Sensitivity to country risk premium (λ_i) = 0.8 to 1.2; and
- Corporate tax rate = 33%

Table 9: Weighted Average Cost of Capital Estimates from 3 Different Models for a generic forestry firm in China

Parameter assumptions	**Input value**	
	Lower end of range	**Higher end of range**
Asset beta	0.60	0.80
Market risk premium	5.50%	6.50%
Country bond default spread	1.00%	2.00%
Corporate tax rate	33%	33%
λ_i	0.80	1.20
Damodaran Models	**WACC (real - post tax)**	
Model 1. Same risk premium	7.5%	10.6%
Model 2. Beta adjusted premium	7.1%	10.3%
Model 3. Lambda adjusted premium	7.3%	11.1%
Average	**7.3%**	**10.7%**
Overall Average	**9.0%**	

These estimates are all *post-corporate* tax.

In Table 10 we summarise the estimated WACC denominated in USD (both nominal and real) under Damodaran's (2003) Models 1, 2 and 3 assuming:

- Asset beta = 0.60 to 0.80;
- Market risk premium = 5.50% to 6.50%;
- Country bond default spread = 1.0% to 2.0%;
- Sensitivity to country risk premium (λ_i) = 0.8 to 1.2; and
- Corporate tax rate = 24%

Table 10: Weighted Average Cost of Capital Estimates from 3 Different Models for a generic forestry firm in China		
Parameter assumptions	**Input value**	
	Lower end of range	**Higher end of range**
Asset beta	0.60	0.80
Market risk premium	5.50%	6.50%
Country bond default spread	1.00%	2.00%
Corporate tax rate	24%	24%
λ_i	0.80	1.20
Damodaran Models	**WACC (real - post tax)**	
Model 1. Same risk premium	7.7%	10.8%
Model 2. Beta adjusted premium	7.3%	10.5%
Model 3. Lambda adjusted premium	7.4%	11.3%
Average	**7.5%**	**10.8%**
Overall Average	**9.2%**	

The average **real post-corporate tax WACC** under the three alternative models is circa **7.3%** and **10.8%** as follows:

Table 11		
Corporate tax rate	**Low estimate**	**High estimate**
Corporate tax rate = 33%	7.3%	10.7%
Corporate tax rate = 24%	7.5%	10.8%

Our "low" and "high" estimates are not lower and upper bounds of the possible range of the WACCs but rather reflect a low and high range based on estimates of the parameter inputs under the difference versions of the CAPM we adopt. The lower and upper bounds for the WACC will be wider than the range of estimates provided in the tables above if we undertook additional sensitivity analysis based on different versions of the CAPM.

H. Comparison to our prior cost of capital estimates for a forest entity in China

We provide below a summary of our current estimates for the real post-corporate tax WACC for a generic forest asset in China compared to the estimates in our prior reports as at February 2008.

Table 12: WACC for a generic China Forest Asset

	Estimated range December 2007	Estimated range November 2008
Real after-corporate tax WACC	5.7% - 8.2%	7.3% - 10.8%
Real pre-corporate tax WACC	7.6% - 12.0%	9.8% - 15.9%

Both our after-corporate tax and pre-corporate tax cost of capital estimates have significantly increased over the period between December 2007 and November 2008. This predominantly reflects the impact of the global credit crisis and an increase in investors' risk aversion. Table 13 summarises the factors that are responsible for the increase in our cost of capital estimate over this period.

Table 13: Comparison of parameter estimates December 2007 versus November 2008

Parameter	Parameter estimate December 2007	Parameter estimate November 2008	Comment
Asset beta of US forestry firms ($\beta_{i\ US}$)	0.60 - 0.80	0.60 - 0.80	No change
Risk-free rate - global ($R_{f\ US}$)	4.32%	3.93%	Changing yields on USD long-term Treasury bonds
Market risk premium ($R_{M\ US} - R_{f\ US}$)	5.0% - 6.0%	5.5% - 6.5%	Increased risk aversion with global credit crisis
Expected US inflation	2.25%	1.00%	Deflation risk with global credit crisis
Country bond default spread ($R_{Country\ Risk}$)	0.80% - 1.20%	1.00% - 2.00%	Increased risk aversion with global credit crisis
$\sigma_{Local\ Equity} / \sigma_{Country\ Bond}$	1.5	1.5	No change
Sensitivity to country risk premium (λ_i)	0.80 - 1.20	0.80 - 1.20	No change
Corporate tax	24% - 33%	24% - 33%	No change
Debt margin	2.50%	4.50%	Increased risk aversion with global credit crisis
Debt ratio	15%	15%	No change

I. Summary and determination of a pre-corporate tax real WACC

Conversion to a real pre-tax WACC

There is no easy or simple method to transform a nominal post-corporate tax WACC to a real pre-corporate tax WACC. In this respect formal modelling of the entity's cashflows is required to determine an "equivalent" pre-tax WACC.

However, to an approximation we assume:[20]

Pre-tax real WACC = (Post-corporate real tax WACC) / (1- t_c)

Where t_c = corporate tax rate.

Based on this transformation our indicative estimate of the real pre-tax WACC (denominated in USD) is between circa **9.8%** and **15.9%**[21] as follows:

Table 14: Weighted Pre-corporate Tax Average WACC Estimates from 3 Different Models for a generic forestry firm in China

Corporate tax rate	Low estimate	High estimate
Corporate tax rate = 33%	10.9%	15.9%
Corporate tax rate = 24%	9.8%	14.3%

J. Size, liquidity and other premiums

Our cost of capital estimates are derived using different versions of the CAPM only.[22] In our determination of the cost of capital and WACC we have made no adjustment for factors such as size, control premiums, illiquidity premiums and other market frictions.

Making an ad-hoc adjustment to the "standard" CAPM model rate of return for size and liquidity measures is somewhat arbitrary. However, we understand from anecdotal evidence that many practitioners and forest valuers add an increment to the cost of capital to value small illiquid forests and/or where other significant market frictions may exist.

[20] In the case of forests where the timber is not expected to be harvested until some relatively long-time in the future, this transformation may overstate the "equivalent" pre-corporate tax WACC.
[21] As already noted, in view of the uncertainty of the parameter input estimates these low and high values should not be taken as absolute lower or upper bounds of the possible distribution of the WACC.
[22] There are a number of shortcomings of the CAPM (e.g., see Fama and French, 1993, 1996). We would be happy to discuss some of the possible shortcomings of the CAPM in more detail if requested.

K. Conclusion on USD Cost of Capital

In conclusion under the different versions of Damodaran's (2003) CAPM we consider a **real post-corporate tax WACC** (denominated in USD) for a China forest entity will likely be in the range of between **7.3%** and **10.8%**. The corresponding **real pre-corporate tax WACC** (denominated in USD) is in the range between circa **9.8%** and **15.9%** (based on our simple transformation formula). The range of estimates assumes a corporate tax rate of between 24% and 33%.

Our cost of capital estimates are as at 18 November 2008 and all denominated in USD.

L. Other Factors Relevant to the estimation of the Cost of Capital

If significant corporate governance and agency cost issues between insiders and outside investors arise (e.g., from lack of transparency, possible risk of expropriation of assets, restrictions on offshore remittance of profits or the likelihood of exchange rate controls), the use of a cost of capital at the upper end (or higher) of our range may be warranted.[23]

We also strongly recommend (to the extent such evidence is available) our estimates of the cost of capital for a Chinese forest entity be compared to implied discount rates based on transactional evidence for actual forest sales in the Chinese market.

In addition we note that China's legal, institutional and bankruptcy laws likely differ to Western capital markets. Restrictions on the level of foreign ownership of forest assets may apply in China and the level of corporate governance may vary significantly between companies in emerging markets (see Klapper and Love, 2004, Chen et al., 2003).

Corporate governance is important as it provides mechanisms whereby outside investors can protect themselves against expropriation of assets by insiders.

These factors together with any size and liquidity premium may warrant an adjustment to the cashflow expectations or an increment to the cost of capital for a forest investment if investors' property rights are not clearly defined.

[23] See Stulz (2005).

Appendix I

This appendix forms part of and therefore should be read in conjunction with this valuation report and our engagement letter of 23 October 2008.

Independence

Auckland UniServices do not have any interest in the outcome of this valuation. The fee proposed by Auckland UniServices in our engagement letter for the preparation of this report is solely time based which are charged at normal professional rates plus disbursements.

Qualifications

Auckland UniServices is the consulting arm of The University of Auckland.

Recipients of the report and restrictions on use of this report

The report has been prepared for Pöyry Forest Industry Limited ("Pöyry") to assist in the valuation of forest assets located in the markets of China.

Because of its special nature, our report may not be suited for any purpose other than as described in this report and as such, will be restricted for use by Pöyry only for the purpose of assisting Pöyry determine the cost of capital for a generic forest asset in China.

Declaration

This report was prepared primarily based on information available up to 18 November 2008. The findings and opinions contained in this report are expressed as at that date, and also reflect our assessment of the information provided to us as at that date.

This exercise is based upon information that has been supplied to us and described in this report. Much of the information forms the basis of future projections and estimates. As the achievement of any prediction is dependent on future events, the outcome of which cannot be assured, the actual outcome achieved may vary materially from forecast. In the circumstances, no warranty of accuracy or reliability is given.

In preparing our valuation we have received and relied upon the information received from Pöyry and other sources. Therefore Auckland UniServices does not imply, and it should not be construed, that it has carried out any form of audit on the accounting or other records or information provided to us for the purposes of this report.

Auckland UniServices Ltd reserves the right, but will be under no obligation, to revise or amend our report and the opinions contained herein, if any additional information (which may or may not be in existence on the date of this report) subsequently comes to light.

Our liability in providing the services

We have agreed that in the event of any error or omission by us in performing any work under the terms of this letter, then our liability to you for any loss or damage of any type you may suffer directly or indirectly as a result of or in connection with our work will be limited to an amount of ten times the fees charged by us for any work undertaken. We have agreed that this limitation of liability applies to us and all staff or persons employed by us in providing our services. This clause does not apply where our neglect giving rise to a claim is wilful or reckless.

In any event we will not be responsible or liable if information material to our task is withheld or concealed from us or wrongly represented to us.

It is a condition precedent to any liability of Auckland UniServices that any claim against Auckland UniServices must be made and notified to Auckland UniServices within two years of the date we complete the performance of the work specified in this agreement.

We will not be liable for any loss or damage to any other party that may rely on our report.

Additionally, we have no obligation to update our report or to revise the information contained therein because of events and transactions occurring subsequent to the date of the report.

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APPENDIX 7

Impact of the Global Credit Crisis on the Cost of Capital for Forest Investments

Auckland UniServices Limited

POSTAL ADDRESS
c/- The University of Auckland
Private Bag 92019, Auckland, New Zealand

STREET ADDRESS
Level 10, UniServices House
70 Symonds Street, Auckland

TEL +64 9 373 7522
FAX +64 9 373 7412
WEB www.uniservices.co.nz

Impact of the Global Credit Crisis on the Cost of Capital for Forest Investments

AUCKLAND UNISERVICES LIMITED
a wholly owned company of
THE UNIVERSITY OF AUCKLAND

Auckland UniServices Limited

Prepared for:
Bill Liley
Pöyry Forest Industry Limited
Level 5
HSBC Building
1 Queen Street
PO Box 105891
Auckland

Consultant
Dr Alastair Marsden
Department of Accounting & Finance
School of Business & Economics
The University of Auckland

POSTAL ADDRESS
c/- The University of Auckland
Private Bag 92019, Auckland, New Zealand

STREET ADDRESS
Level 10, UniServices House
70 Symonds Street, Auckland

TEL +64 9 373 7522
FAX +64 9 373 7412
WEB www.uniservices.co.nz

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Auckland UniServices Limited
c/o The University of Auckland
Private Bag 92019
Auckland

Impact of the Global Credit Crisis on the Cost of Capital for Forest Investments

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1 Introduction

1 Poyry Forest Industry Limited ("Poyry") have requested Auckland UniServices Ltd ("Auckland UniServices" or "we") to prepare a report on the impact of the current global credit crisis on the weighted average cost of capital ("WACC") for a generic forestry entity, where the cost of equity capital is determined using the capital asset pricing model ("CAPM").

1.1 Structure of the Report

2 Our Report is structured as follows:

- Section 2 provides an executive summary.
- Section 3 details the restrictions on the use of our report and information sources.
- Section 4 provides an overview of the global credit crisis.
- Section 5 considers the impact of the global credit crisis on the WACC for a generic forest entity.
- Section 6 discusses regional differences between countries and the impact of the global credit crisis.
- Section 7 considers the investors' time horizon and if this impacts on the WACC.
- Section 8 considers if the global credit crisis might impact on forest values due to capital rationing and alternative investment opportunities
- Section 9 considers the impact of the global credit crisis in the context that many current investors in timber assets have low leverage.

2 Executive summary

Forest Industry: An overview

3 The outlook for the forest industry over the next decade has a number of strengths, threats and opportunities. The industry's strengths and opportunities include:

- A long-term expected increase in wood demand from ongoing global population growth and urbanisation;[1] and
- Environmental benefits provided by sustainable forests, e.g., from carbon sequestration, prevention of soil erosion and contribution to a quality environment.

4 The forest industry faces threats from:

- Development of new or substitute products;
- Environmental pressures from climate changes, access to water resources etc;
- Global changes in wood demand and supply as Government policies change in response to economic and environmental changes; and
- Demand and price uncertainty from other macro-economic and political shocks (e.g. exchange and inflation rate shocks that impact on the price of timber and the price of substitute products). This may impact economies and countries in different ways.[2]

5 The global credit crisis has led to a worldwide disruption of timber markets.[3] The price of timber normally traded in USD has fallen in recent months as the crisis has deepened and reduced timber demand in both developed and emerging economies. In particular, the increase in the value of the USD has adversely impacted on US based timber exporters into the European markets, albeit shipping costs have dramatically reduced.[4]

6 The severity of the current global credit crisis means housing and financial markets may take longer than normal to recover from the current crisis.[5] Many commodity

[1] The global population is expected to increase from 6.6 billion to 8.3 billion by 2030. By the year 2030 around 60% of the world population is expected to be living in cities, compared with around 50% in 2003. See Ministry of Agriculture and Fisheries, October 2008, Future Drivers for New Zealand Forestry, Wellington, NZ.

[2] For example, we understand forest values in economies such as New Zealand, South Africa and Chile / Brazil are particularly sensitive to exchange rate movements as most of the timber products are exported.

[3] See for example The Journal of Southern Timber Market News, 2008, A quarterly report of market conditions for timber products of the Southeast US, 2nd quarter, Vol 12, No 2 and Random Lengths International, October 22, 2008, Volume 41, Issue20.

[4] See Random Lengths International, November 5, 2008, Volume 41, Issue21.

[5] See Belsky, E., Drew, R. and D. McCue, 2007, Projecting the underlying demand for new housing units. Inferences from the past, assumptions about the future. Joint Center for Housing Studies, -

prices (e.g., oil, minerals, fertilizer etc) have fallen as the credit crisis has continued. This may keep timber prices low over the short-to-medium term time horizon.

Impact of the Global Credit Crisis on Cost of Capital and Asset Values for Forest Owning Entities

7 The current volatility in the equity and debt markets and potential for irrational behaviour by investors makes both valuation and determination of a fair cost of capital difficult to determine in the present environment. In these current markets investors may have materially different views on value and cost of capital.

8 In our view, however, the impact of the global credit crisis on the cost of capital for a pure forest owning entity will be limited. We understand this class of forest owners has a long-term investment time horizon (>5 years), minimal or no debt and retains flexibility on the timing of any timber harvest. The ability to contract forest operations and delay timber harvesting until demand and prices improve will reduce the sensitivity of a forest entity's cashflows to macro-economic shocks and reduce the risks of forest ownership.

9 For forest investors with a short to medium term time horizon (< 5 years) we consider investors' risk aversion for equity investment will increase as a result of the current market disruption attributable to the credit crisis.

10 Forest entities that are highly leveraged will likely face pressures from their lenders to reduce debt. If asset values are impaired and/or debt covenants breached these entities may be forced to sell assets at distressed prices. The possibility of distressed sales by forest owning entities that are highly levered may impact in the short-term on the market forest prices.

11 Some investors in the market will face capital constraints and this may adversely impact on forest asset values if market disruption causes prices for alternative assets to fall below their long-term value. Investors with limited access to equity and debt markets may seek to purchase alternative assets where they offer a higher risk-adjusted return compared to forest assets priced to provide a normal expected rate of return only. In our view this could cause forest asset values to fall until prices for all assets reflect their fundamental underlying value.

12 One countervailing factor may be that an investment in forest assets represents 'hard" or "tangible" assets. Forest owners that have minimum or no debt can continue to hold forest assets and/or delay harvesting timber until market conditions improve. The forest owner may also have the ability to conserve cash resources by delaying forest

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Harvard University: November 2007, http://www.jchs.harvard.edu/publications/markets/w07-7.pdf. Cogman and Dobbs (2008) note that how long it takes for an economy to emerge from a downturn depends upon the policy response by Government and the stimulus packages they adopt. On average countries have needed two years to recover from banking crises and up to four years to return to normal growth levels. Cogman, D. and R. Dobbs, 2008, Financial crises, past and present, The McKinsey Quarterly, December 2008, 1 – 7.

maintenance costs. These factors may mitigate any downward pressure in forest asset prices attributable to the global credit crisis.

Impact of Global Credit Crisis on parameter inputs into the CAPM and WACC

13 In our view the global credit crisis has impacted on the following parameter inputs into the CAPM[6] and WACC for a forest entity.

[6] The determination of the WACC under the CAPM approach is only one of a number of possible estimates or approaches to estimate the cost of capital for a forest. Other evidence where available (for example, an implied discount rate based on transactional evidence) should also be considered in the determination of the cost of capital used to value a forest entity.

Parameter	Comment	Impact of the global credit crisis on WACC
Risk free rate	Yields on Government and Treasury bonds have fallen	A fall in the risk free rate will reduce the cost of equity capital and WACC.
Cost of debt	Yield spreads on corporate investment grade debt has significantly risen. Weaker credits are having difficulty re-financing their debt. For emerging countries the cost or spread for USD debt over US Treasury bonds has also significantly increased.	An increase in the cost of debt capital will increase the WACC. The impact of the global credit crisis on the cost of debt will vary by geographical region and differences in debt markets.
Market risk premium	Market risk premium on a short-term time horizon will likely have risen. Longer-term market risk premium unchanged.	Will increase WACC over a short-term time horizon (0 - 5 years).
Equity beta	No strong evidence of any significant change in beta for a global investor.	Beta may increase for forest entities in countries where demand for timber is highly sensitive to changes in exchange rates and the rate of inflation. The impact on beta will be limited where the forest owner has the ability to delay timber harvesting until demand and prices improve.
Leverage	Greater balance sheet risk and some companies de-leveraging their balance sheets.	Increase in the WACC under a classical tax system. No change under a full imputation system. An increase in leverage will, however, increase debt margins under both a classical and imputation tax system.
Inflation rate	Inflation outlook subdued and fall in expected future rate of inflation.	Will narrow the gap between a nominal and real cost of capital.
Country risk premium and exchange rate exposure	The USD has appreciated in value against many emerging economies and countries highly exposed to commodity price movements.	The country risk premium and cost of capital for forest entities in emerging economies will likely increase. Global investors will price exchange rate risk.

14 This executive summary should be read in conjunction with the remainder of our report, including the restrictions on the use of our report and the disclaimer.

3 Restrictions on the use of our report and information sources

3.1 Use of our report

15 This report has been written for Pöyry by Alastair Marsden on behalf of Auckland UniServices.

16 Because of its special nature, our report may not be suited for any purpose other than as described in this report and as such, will be restricted for use by Pöyry only. Auckland UniServices accepts no responsibility whatsoever for any loss, however incurred, for any person acting or relying on the contents of this report, other than Pöyry. Our limitations on liability are also set out in Appendix 1 and our letter of engagement agreed between Auckland UniServices and Pöyry.

17 This report was prepared based on information available up to and including 10 December 2008.

3.2 Information sources

18 In preparing this report we have relied on information obtained from external sources and articles (where referenced).

19 In accordance with the terms of our engagement letter we have not audited or independently verified any of the information sourced or provided to us.

4 The Global Credit Crisis

4.1 Overview

20 The global credit crisis began with the collapse of the sub-prime mortgage market in the US, starting August 2007. This led to significant write-downs in the value of securitised mortgages and collateralised debt obligations.

21 During 2008 the crisis deepened in the US with the demise of household names such as Bear Sterns Lehman Brothers, Freddie Mac, Fannie Mae, American Insurance Group and the requirement for the US Treasury to recapitalise major banks (e.g. Citibank). The sub-prime credit crisis has also led to an insolvency problem for major financial institutions and corporations in the UK, Europe and many other developed and emerging economies.

22 The systematic nature of the economic shock has led to a collapse in investor confidence. Because the shock has been systemic in nature and risks are positively correlated with market returns, investors have been unable to diversify away from these risks.

4.2 Consequences of the global credit crunch

23 The consequences of the global credit crunch have also included:

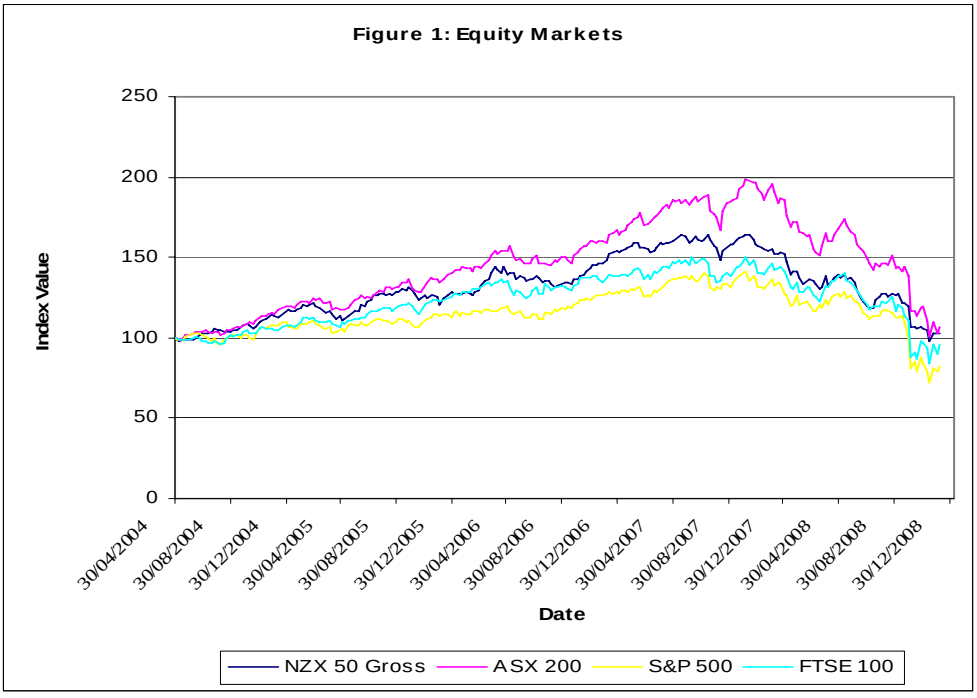
- Significant disruption and downward revisions in global forecasts of economic growth. Recent projections by the International Monetary Fund[7] in November 2008 now predict negative growth in economic output for many developed countries in 2009 and a significant slowdown in world economic output.

[7] International Monetary Fund, 2008, World Economic Outlook. An update of Key WEO Projections, Nov 6, 2008.

Table 1: World Economic Outlook ("WEO) Projections					
	Percentage Change				
		Projections		Difference from October 2008 WEO Projections	
Economy	**2007**	**2008**	**2009**	**2008**	**2009**
World output	5.0	3.7	2.2	-0.2	-0.8
United States	2.0	1.4	-0.7	-0.1	-0.8
Euro area	2.6	1.2	-0.5	-0.1	-0.7
Japan	2.1	0.5	-0.2	-0.2	-0.7
Canada	2.7	0.6	0.3	-0.1	-0.9
Emerging and developing countries	8.0	6.6	5.1	-0.3	-1.0
China	11.9	9.7	8.5	-0.1	-0.8
Brazil	5.4	5.2	3.0	0.0	-0.5
Source: International Monetary Fund, 2008, World Economic Outlook. An update of Key WEO Projections, Nov 6, 2008, page 5.					

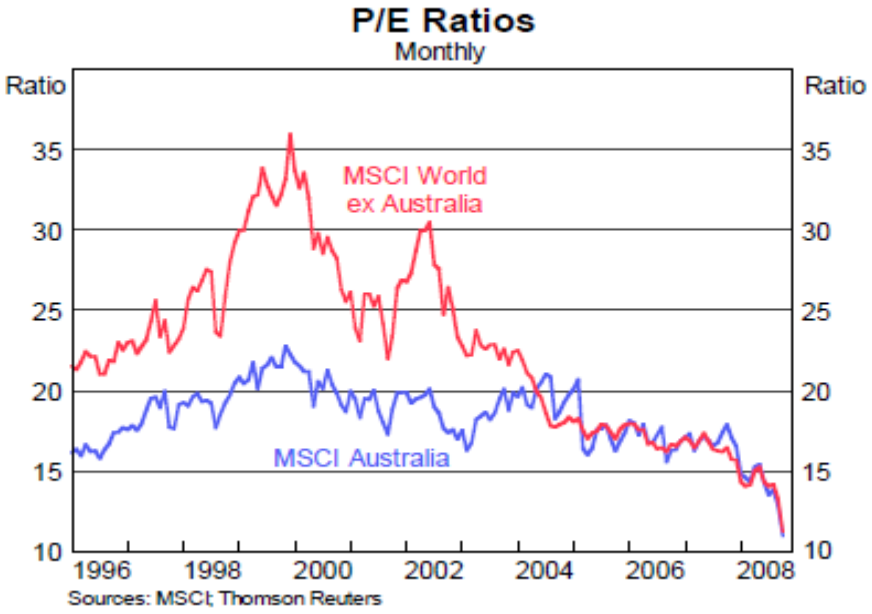
- A worldwide collapse in equity prices;

Fig 1 plots the share indices of the US, UK, Australian and New Zealand markets between April 2004 and October 2008, (with base index = 100 as at April 2004).



Compared to their peak levels in mid-2007, markets have lost between 30% - 60% of their value. Figure 2 below shows that the fall in equity prices has also led to a significant contraction in price to earnings ratios.

Figure 2



Source: RBA: http://www.rba.gov.au/ChartPack/index.html

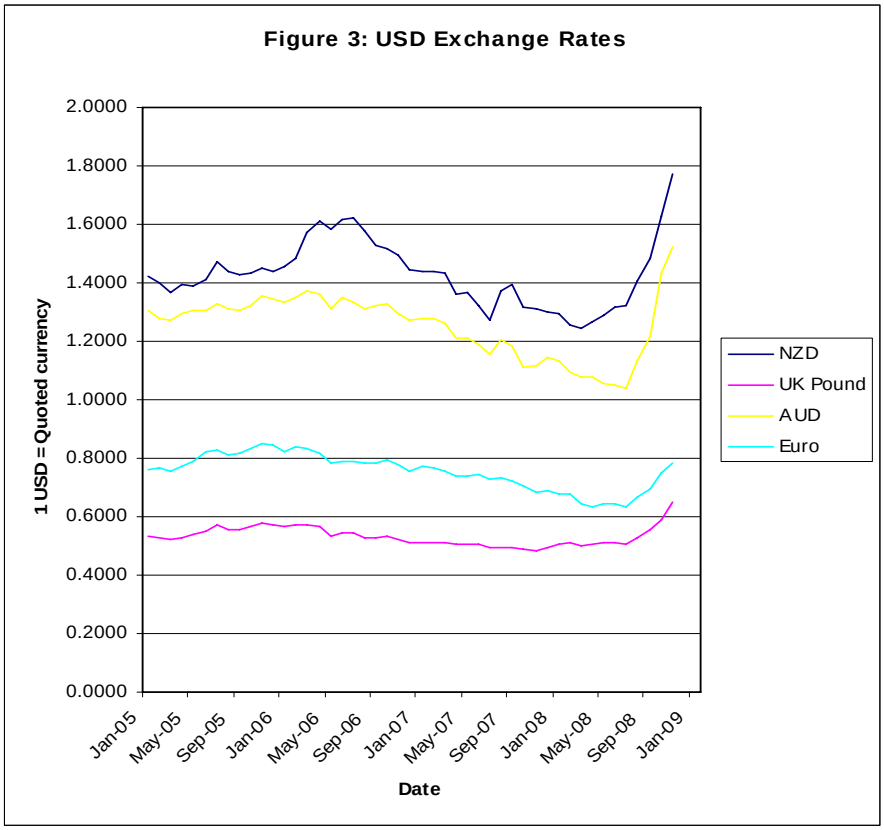
This fall in equity prices may be attributable to a variety of factors. These include:

- Investors expect a long-run decline in corporate profitability or investor cash flow expectations;
- An increase in the market risk premium or the long-term cost of equity capital;[8] or
- Irrational pricing behaviour and over-reaction (on the downside) by investors in response to the negative economic shock of the global credit crisis.

- Balance sheet risk and focus by companies and consumers on de-leveraging their debt positions. Companies that are a weak credit and have significant debt maturing in the near-term are finding it extremely difficult to re-finance the debt. Even where debt can be re-financed it is likely to be at significantly higher credit spreads than existed before the onset of the credit crisis. Credit or default spreads on investment grade (BBB or Baa) debt in many economies has widened to around 5.00% (or more).

- Higher than normal volatility in interest rates, inflation rates and exchange rates. Figure 3 below shows that the NZD and AUD has over the last several months significantly depreciated against the USD as investor risk aversion has increased.

[8] The implied market risk premium will move in the opposite direction to market returns.



- Reduced corporate profitability as consumers change their spending patterns and consumers' demand for most goods and services is reduced. This is likely to impact on most sectors of the economy.

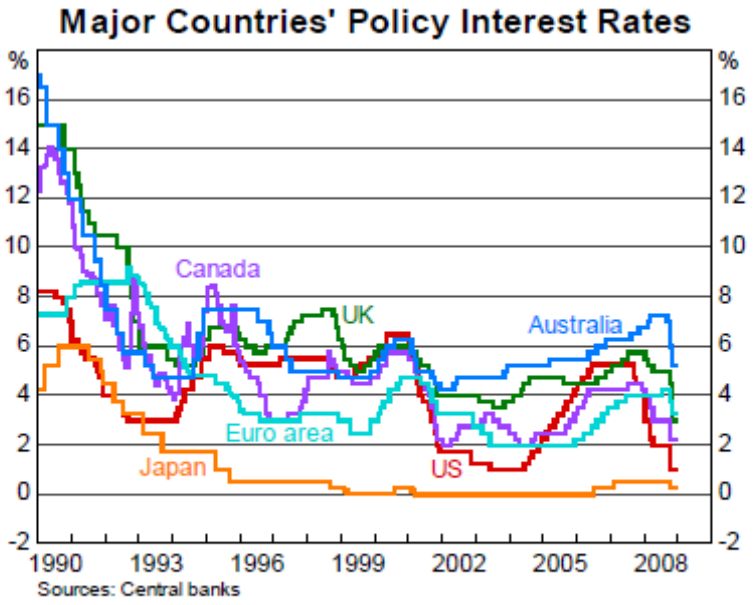
4.3 Government and Central Bank response to the Credit Crisis

24 In response to the global credit crisis, Governments and central banks have sought to address the causes of the crisis and take remedial action. This has included:

- Government intervention to prevent widespread bankruptcy of banks and financial institutions.

- Lowering of central bank discount rates (see Figure 4 below) and policies to encourage inter-bank lending and guarantees of bank deposits.

Figure 4



Source: RBA http://www.rba.gov.au/ChartPack/index.html

25 While there may be some evidence that the efforts by Governments and central banks to control the crisis are providing some relief for the financial markets, confidence is likely to take a long time to recover. For instance:

- The OECD in its recent pronouncement (25 November 2008)[9] concludes that member OECD countries face the most serious global recession since the early 1980s. The Economic Outlook sees US output falling during the first half of next year, then gradually picking up as the effects of the credit squeeze abate. US GDP is projected to fall in 2009 with only a slow recovery in 2010;

- International Monetary Fund[10] in November 2008 also predicts negative growth in economic output for many developed countries in 2009 and a slow recovery only;

- Many other economists predict any recovery in global markets will be "L" shaped as market participants will take a relatively long period of time to regain confidence and recoup past losses; and

- A recent poll by Duke University of 1,275 US Chief Financial Officers ("CFO") in December 2008 predicts the current US recession will last another year. Past Duke surveys have shown that CFOs have had strong ability to predict future economic conditions.[11]

[9] Organisation for Economic Co-operation and Development , 2008, http://www.oecd.org/document/35/0,3343,en_2649_201185_41721827_1_1_1_1,00.html
[10] International Monetary Fund, 2008, World Economic Outlook. An update of Key WEO Projections, Nov 6, 2008.
[11] CNN Money, 2008, Recession to last another year, 10 December 2008, by Catherine Clifford.

5 Impact of the Global Credit Crisis on the Weighted Average Cost of Capital ("WACC") for a Forest Entity

26 The standard definition of the WACC used to discount after-corporate tax *cash flows* is:

$$WACC = \frac{k_e(1-t_c)E}{V} + \frac{k_d(1-t_c)D}{V} \quad (1)$$

where:

k_e	=	cost of equity
k_d	=	cost of debt
E	=	market value of equity
D	=	market value of debt
V	=	$E + D$

5.1 Cost of equity capital

27 The capital asset pricing model ("CAPM") provides a basis for a widely accepted means of calculating an entity's cost of equity capital. While the usefulness and shortcomings of the CAPM are subject to much debate in the academic literature a report for UK regulators by Wright, Mason and Miles (2003)[12] argues that for practical purposes there is no clear alternative *theoretical* model[13] to the CAPM to estimate the cost of equity capital for an entity.

Standard form of the CAPM

28 The standard form[14] of the CAPM is:

$$k_e = r_f + \beta_L \times (R_m - r_f) \quad (2)$$

[12] Wright, S., Mason, R. and D. Miles, 2003, A study into certain aspects of the cost of capital for regulated utilities in the UK, Report commissioned by the UK economic regulators and the Office of Fair Trading.

[13] The CAPM to determine the cost of equity capital remains a widely used model adopted by many practitioners, academics and regulators alike. However the CAPM has been criticised on a number of grounds. For instance, Fama, E. and K. French, 1993, Common risk factors in the returns on stocks and bonds, Journal of Financial Economics 33, 3-56 argue that the CAPM lacks explanatory power. The CAPM may also fail to recognise:

- Size or small company risk premium;
- Idiosyncratic (unique) risk; and
- Lack of liquidity.

There is empirical evidence that suggests size, idiosyncratic and liquidity risk are factors that require an additional risk premium.

[14] Other versions of the CAPM are used in practice. For example many practitioners in New Zealand employ a tax-adjusted version of the CAPM that differs to the standard CAPM above. In Australia regulators and some practitioners also modify the cost of capital expression to incorporate the value of franking credits.

where: k_e = cost of equity capital after corporate tax
β_L = the levered or geared beta
r_f = risk free rate
MRP = $R_m - r_f$

29 The market risk premium ("*MRP*" or "$(R_m - r_f)$") is the excess return on the market portfolio over and above the return on the risk free asset.

30 For emerging countries common practice is also to add an increment for a country risk premium to the cost of equity capital under the standard CAPM.

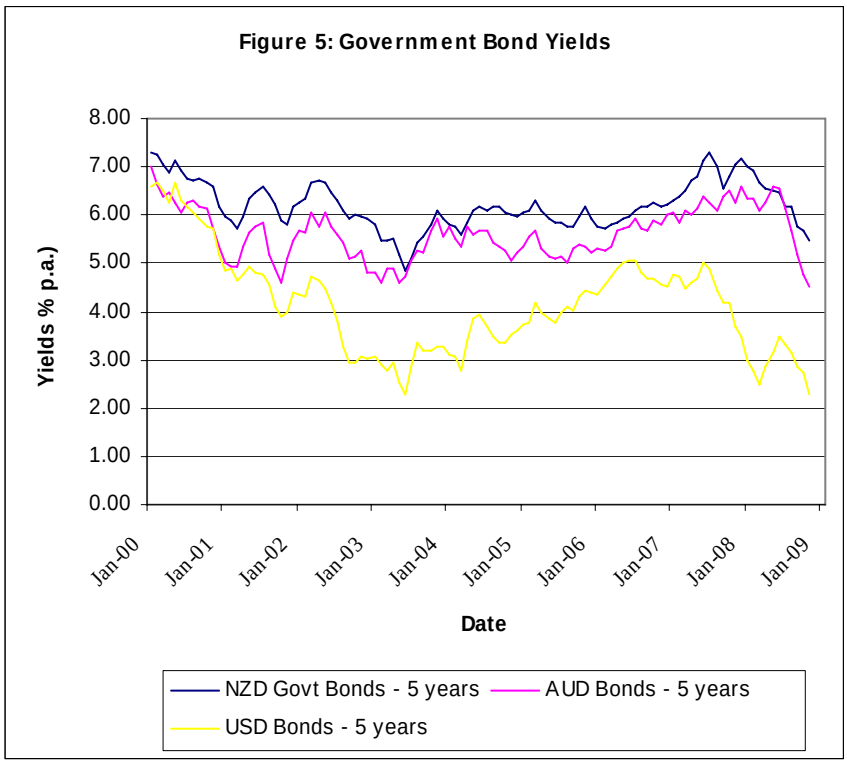
5.2 Impact of the Credit Crisis on the Components of the WACC

5.2.1 Risk free rate

31 The yield on Government bonds is used as a proxy for the risk free rate. A simple rule of thumb is to use the risk free rate whose term approximates the half-life of the present value of the cashflows under consideration. For most forestry investments this suggests long-term Government bonds should be used to proxy for the risk free rate.

Impact of the global credit crisis on the Risk Free Rate

32 Fig 5 plots yields on 5 year United States, Australian and New Zealand Treasury or Government bonds. The figure shows that yields or Treasuries or Government bonds have fallen significantly during the later half of 2008.



Data Sources: Websites of Federal Reserve Bank, Reserve Bank of New Zealand and Reserve Bank of Australia

33 A fall in the risk free rate will, inter-alia, lower the cost of equity capital and a company's WACC.

5.2.2 Cost of debt

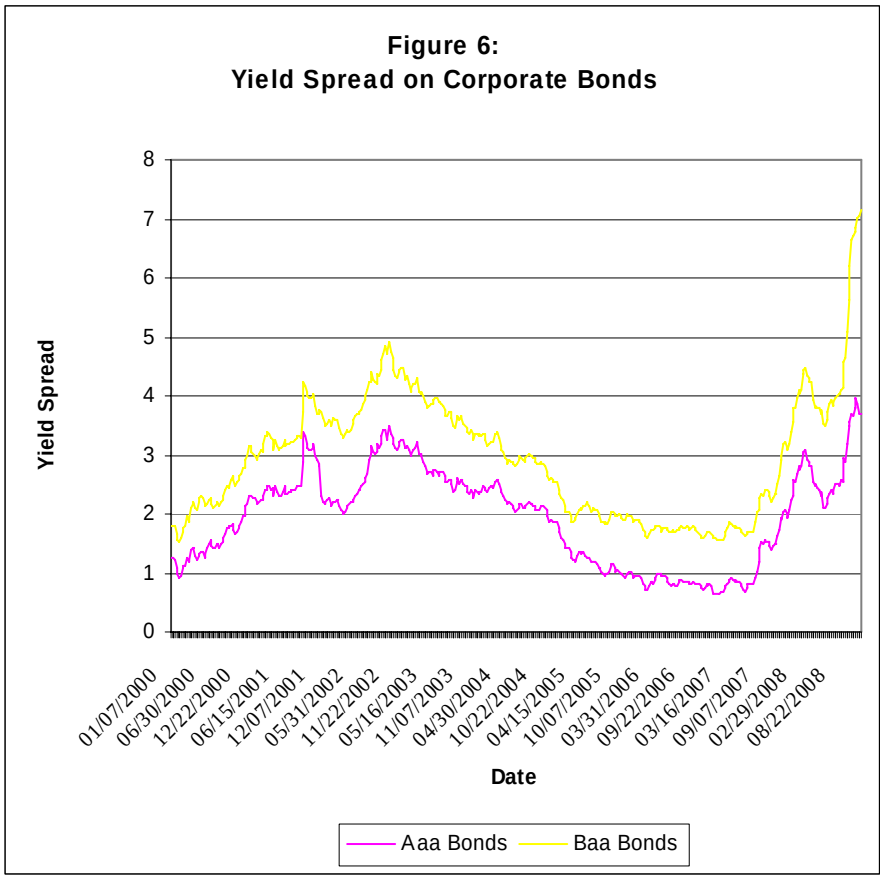
34 The cost of debt is the cost of funds attributable to the risk of the company's assets if the funds were borrowed on a non-recourse basis. The cost of debt will be at a premium to Treasury or Government bond rates.

Impact of the global credit crisis on the cost of debt

35 The global credit crisis has lead to a significant increase in the cost of debt particularly for companies that are a weak credit with high gearing and/or have high operating leverage.

36 Fig 6 plots the yield spread on Aaa and Baa Corporate bonds relative to 5 year US Treasury securities. The figure shows that over the last 2 – 3 months the credit spread differential between Treasury securities (proxy for the risk free rate) and corporate bonds has considerably widened.

Figure 6:
Yield Spread on Corporate Bonds

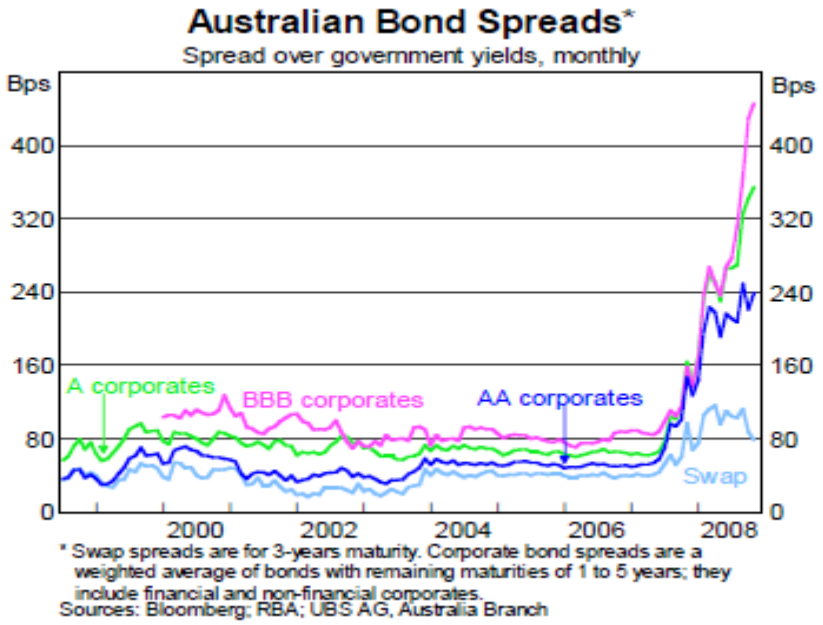


Data Source: http://www.federalreserve.gov/ - statistical data

37 Recent US credit spreads for Aaa Bonds have increased to approximately 4.0% while credit spreads for Baa corporate bonds have increased to approximately 7.0%.

38 In Australia and New Zealand spreads over Government bond yields have also increased (see Figure 7 and Table 2).

Figure 7



Source: RBA http://www.rba.gov.au/ChartPack/index.html

Table 2: Bond Yield Spreads	
Credit ratings for NZD Bond issuers	**Average spread over Government Bond Yields (% p.a.)**
A+ to AA-	2.3%
BBB+	3.6%
BBB	4.0%
BBB-	4.5%
Data Source: Website of ASB Securities	

39 The increase in the credit spread for corporate debt will increase the company's WACC.

5.2.3 Market risk premium

40 The market risk premium or *MRP* has been defined as $(R_m - r_f)$.

41 The *MRP* can be estimated in a number of ways. These include simple historical averaging of the observed risk premium, forward-looking approaches, the methodology of Siegel (1992) and survey evidence.

42 Ibbotson (2008)[15] measured the historical *MRP* for US stocks for the period 1926-2007 at between 7.05% (referenced to the S&P and long-term bonds) and 8.48% (referenced to the S&P and short-term bonds). Similarly, Damodaran (2008)[16] provides a historical arithmetic estimate of the *MRP* for the US market over the period 1928-2007 of 7.79% (stocks minus short-term Treasury bills) and 6.42% (stocks minus long-term Treasury bonds).[17]

43 Most forward-looking estimates of the *MRP* are lower than the historical estimates of the *MRP*. For example, Fama and French (2002)[18] generate forward-looking estimates for the US standard market risk premium of 2.6%-4.3% over the period 1951-2000. Similarly Claus and Thomas (2001)[19] generate estimates of the *MRP* for a number of countries with a maximum of 3.0%.

44 Siegel (1992, 1999)[20] argues that historical US estimates of the *MRP* have been biased upwards due to unexpectedly high inflation in the latter part of the 20th century. Similarly, Dimson, Marsh and Staunton (2005, 2006)[21] consider a downward adjustment to the measured historical *MRP* is justified if there has been a long-term change in capital market conditions and investors' required rates of return in the future are expected to be lower than in the past. Dimson et al. conclude a plausible estimate of the ex-ante arithmetic *MRP* measured relative to short-term bonds is around 5.0%. Relative to long term bonds the *MRP* would be circa 4.0%.

45 On the other hand, Ibbotson and Chen (2003)[22] argue, based on a decomposition of historical equity returns into supply factors of inflation, earnings, dividends, the price to earnings ratio, dividend payout ratio, book value, return on equity and GDP, that

[15] Ibbotson, R., 2008, Market results for stocks, bonds, bills and inflation 1926 – 2007, 2008 Valuation Yearbook, Morningstar Inc.

[16] Damodaran, A., 2008, Equity risk premiums (EPR): Determinants, estimation and implications, Sept 2008. Website: http://pages.stern.nyu.edu/~adamodar/New_Home_Page

[17] Dimson, Marsh and Staunton (2005, Table 11, p39) provide estimates of the historical arithmetic *MRP* for 17 developed countries over the period 1900 – 2004. The countries and historical arithmetic mean market risk premia estimates over the period 1900 – 2004 are Australia (7.8%), Belgium (4.2%), Canada (5.6%), Denmark (3.0%), France (5.8%), Germany (8.3%), Ireland (5.1%), Italy (7.7%), Japan (9.7%), Netherlands (5.8%), Norway (4.2%), South Africa (6.8%), Spain (4.1%), Sweden (7.3%), Switzerland (3.1%), United Kingdom (5.2%) and the United States (6.6%). Dimson, E., Marsh, M. and Staunton, M., 2005, Global Investment Returns Yearbook 2005, London Business School and Triumph of the Optimists: 101 Years of Global Investment Returns, Princeton University Press.

[18] Fama, E. and K. French, 2002, The equity premium, Journal of Finance 57, 2, 637-659.

[19] Claus, J. and Thomas, J., 2001, Equity premia as low as three percent? Evidence from analysts' earnings forecasts for domestic and international stock markets, Journal of Finance 56, 5, 1629-1666.

[20] Siegel, J., 1992, The Equity Premium: Stock and Bond Returns Since 1802, Financial Analysts Journal Jan-Feb, 28-38. Siegel, J., 1999, The Shrinking Equity Premium, Journal of Portfolio Management 26, 1, 10-17.

[21] Ibid. Dimson, E., Marsh, M. and Staunton, M., 2006, The worldwide equity premium: A smaller puzzle, London Business School.

[22] Ibbotson, R. and P. Chen, 2003, Long-run stock returns: Participating in the real economy, Financial Analysts Journal Jan/Feb 59, 88-98.

the forecast arithmetic *MRP* (relative to long-term bonds) is around 6.0% for the United States.[23]

Impact of the global credit crisis on the market risk premium

46 As noted, the impact of the global credit crisis has resulted in:

- A substantial reduction in equity values. Prima-facie this will increase both company and market leverage where leverage (being the ratio of debt to equity) is measured using the market value of equity as opposed to the book value of equity;

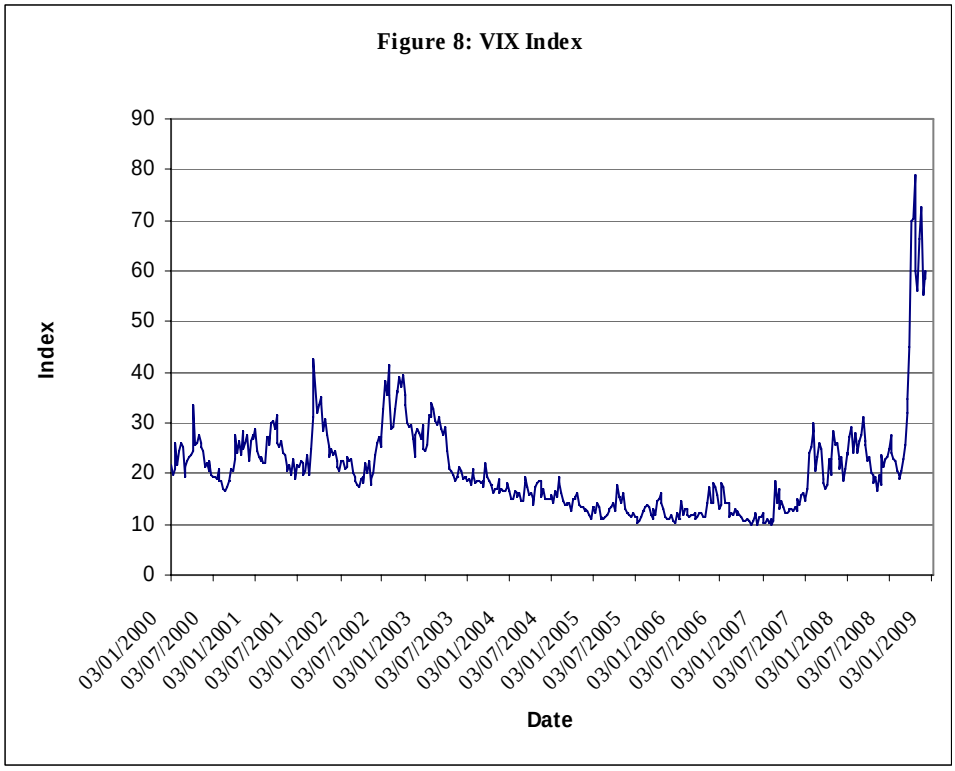
  Lally (2002)[24] argues the *MRP* is positively related to market leverage. Using US data over the period 1952 – 1997, Lally shows the resulting estimate of the *MRP* may vary by as much as 3.4% based on the highest (0.43) and lowest (0.12) market leverage observed over this period.

- An increase in market volatility.

  A number of academic studies argue that the *MRP* is positively related to market volatility. For example Merton (1980)[25] derives an expression for the market risk premium as proportional to market volatility. Using NZ data Boyle (2005)[26] applies the Merton methodology and finds estimates of the *MRP* vary between 0.9% and 33.6%. While this might suggest the CAPM has limited usefulness as a model, Lally (2008)[27] argues this is due to Boyle's use of (past historical) volatility estimates in his determination of the *MRP* which will vary considerably more than expected future volatility.

  Fig 8 plots a measure of volatility in the US equity market based on the VIX index. This is a 30-day volatility measure implied by traded S&P 500 index options. The figure shows considerably heightened volatility since Sept – Oct 2008.

[23] A review article by Mehra (2003) on the equity risk premium puzzle also concludes that the *MRP* is likely to be similar to what it has been in the past. The equity risk premium puzzle refers to the inability of standard economic models to explain why the *MRP* has been so high in many developed countries such as the United States. See Mehra, R., 2003, The equity premium: Why is it a puzzle?, Financial Analysts Journal Jan/Feb 59, 54-69.
[24] Lally, M., 2002, Time varying market leverage, the market risk premium and cost of capital, Journal of Business Finance and Accounting, 29(9), 1301 – 1318.
[25] Merton, R., 1980, On estimating the expected return on the market, Journal of Financial Economics 8, 323 – 61.
[26] Boyle, G., 2005, Risk, expected return and the cost of equity capital, New Zealand Economic Papers 39(2), 181 – 194.
[27] Lally, M., 2008, The weighted average cost of capital for gas pipeline businesses, NZ Commerce Commission website.



Data Source: website of Yahoo Finance

Damodaran (2008)[28] argues there are two ways this increase in volatility may be viewed. The current heightened volatility is of relatively short duration only and once the credit crisis passes market volatility will return to long-run levels. On the other hand the sheer size and economic disruption caused by the current global credit crisis may cause a structural change (increase) in the market volatility until such time as investors perceive the global credit crisis has passed. This would suggest an increase in the *MRP*, at least over a short-to-medium term time horizon, would be justified.

- A decrease in interest rates on Treasury securities and Government bonds.

  There is some evidence to suggest that the *MRP* is negatively related to short-term interest rates, e.g. Scruggs (1998),[29] Harris and Marston (1992).[30] That is when short-term interest rates are low (as present now for Government bond and Treasury yields), the *MRP* is high and visa versa.

[28] Damodaran, A., 2008, Equity risk premiums (EPR): Determinants, estimation and implications, Sept 2008. Website: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/

[29] Scruggs, J., 1998, Resolving the puzzling intertemporal relation between the market risk premium and conditional market variances. A two-factor approach, Journal of Finance 53, p575 – 603.

[30] Harris, R., and F. Marston, 1992, Estimating shareholder risk premium using analysts' growth forecasts, Financial Management, p63 – 70.

Conclusion on MRP

47 The CAPM is a one period model and the investors' time horizon is unclear. The different approaches to estimate the *MRP* can lead to wide variation in the estimates.

48 There are also many unique and unexpected economic events that can impact on stock returns. Estimates based on the historical *MRP* reflect both positive and negative unexpected economic shocks and it is arguable the market risk premium reflects expected returns to investors to compensate for negative unexpected events.

49 Ibbotson (2008)[31] also notes that if investors become more comfortable with the market and investing in stocks, the increase in demand for stocks from the influx of funds may ultimately increase the *MRP*. By implication if investors become less willing to invest in stocks and withdraw money from the market the *MRP* may ultimately decrease.

50 In summary there is considerable uncertainty on how to adjust the *MRP* to reflect time varying market conditions. An estimate based on arithmetic average of the *MRP* treats historical observations as an independent draw from a past historical series.

51 In our view given the significant market disruption that has resulted from the current global credit crisis and uncertainty as to how the crisis will evolve, over a short-to-medium term time horizon (0 – 5years) an increase of between 0.5% and 1.00% in *MRP* is warranted.

52 Over a longer term time horizon (> 5 years) we consider the *MRP* will convert to its longer-term historical average and no change in the risk premium is warranted.

5.2.4 Beta

53 Beta is a measure of the systematic risk of an entity (i.e., non-diversifiable risk or that part of the risk of an asset that cannot be diversified away). Beta is a relative risk measure and measures the sensitivity of returns on a stock relative to market returns (e.g., in response to macroeconomic shocks to GDP, interest rates, taxes etc.).

54 Only systematic risks are properly included in the CAPM and beta. Other unique and undiversifiable risks must be taken into account in the cashflows.

55 Beta also depends on the leverage (debt to equity ratio) of the entity. The more debt an entity has in its capital structure, the higher the levered or equity beta of the entity. A common formula in the presence of debt tax shields to convert between an equity beta and an asset beta (and vice versa) is.[32]

$$\beta_L = \beta_A\left[1+\frac{D}{E}(1-t_c)\right] \qquad (3)$$

[31] Ibbotson, R., 2008, Market results for stocks, bonds, bills and inflation 1926 – 2007, 2008 Valuation Yearbook, Morningstar Inc.

[32] A number of alternative beta degearing formulas are, however, possible depending on the assumptions with respect to leverage policy, the tax advantage to debt (if any) and the beta of debt.

where:

β_L = levered or geared beta

β_A = asset or unlevered beta

and other terms as previously defined.

Fundamental factors that impact on beta

56 Factors that impact on the sensitivity of returns to real economic / GNP shocks and hence the estimate of an entity's or company's beta include:[33]

- Nature of the industry. Companies that produce products that are essential commodities or supply essential services should have less sensitivity to real Gross Domestic Product shocks compared to companies that produce discretionary commodities or services.
- Duration of contracts. Companies with fixed price contracts will have lower risk and beta as returns will be less sensitive to economic shocks or broad market movements.
- The type of customer. Companies producing products or providing services to the private sector should be more sensitive to economic shocks than companies producing products or services for the public sector.
- Degree and type of regulation. As a general rule companies that supply monopoly services subject to regulation will have lower sensitivity to real GDP shocks. Regulation, however, that prevents companies responding to economic shocks may increase risk and beta.
- Presence of real options. The presence of expansion options (exercised in an economic upturn) should increase the company's sensitivity to economic shocks. By contrast options that permit the company to contract its operations should reduce the company's sensitivity to economic shocks.
- Operating leverage. Companies with high operating leverage (high fixed costs to operating costs) will be more sensitive to real GDP shocks, as returns will be more sensitive to changes in demand for the company's goods or services.
- Market weight. An increase in an industry weight in the market proxy will tend to draw the company's beta towards one.
- Shocks to the discount rate.[34]

57 The global credit crisis has impacted on wood demand and led to a worldwide disruption of timber markets. [35] The global price of timber normally traded in USD has fallen in recent months as the global credit crisis has impacted on timber demand in both developed and emerging economies. The increase in the value of the USD has

[33] See Lally, M., 2000, The cost of equity capital and its estimation, McGraw-Hill series in Advanced Finance.

[34] The level of systematic risk attributable to shocks to the discount rate can be significant. See Campbell, J. and J. Mei, 1993, Where do betas come from? Asset pricing dynamics and the sources of systematic risk, Review of Financial Studies 6, 567-92.

[35] See for example The Journal of Southern Timber Market News, 2008, A quarterly report of market conditions for timber products of the Southeast US, 2nd quarter, Vol 12, No 2 and Random Lengths International, October 22, 2008, Volume 41, Issue20.

also impacted on US- based timber exporters into the European markets, albeit shipping costs have dramatically reduced in recent times. [36]

58 This suggests the beta for a forest entity is positively associated with macro-economic shocks that impact of the demand for timber.

59 In our view the impact of the global credit crisis on the cost of capital and beta for a pure forest owning entity that has minimal or no debt will be limited. We understand this class of forest owners has a long-term investment time horizon (>5 years) and typically retains flexibility on the timing of any timber harvest. The ability to contract forest operations and delay timber harvesting until demand and prices improve will reduce the sensitivity of a forest entity's cashflows to macro-economic shocks and hence reduce the risks of forest ownership.

Empirical estimates of Beta for forest entities

60 Table 3 provides Value Line beta estimates sourced from the website of Damodaran (2008)[37] for paper and forest product companies for the US market over the years 2000 - 2008.

Table 3: US Betas - Data from Value Line

Industry classification	Year	Number of Firms	Average Equity Beta	Market D/E Ratio	Tax Rate	Unlevered Asset Beta
Paper/Forest Products	2008	39	0.93	40.9%	14.3%	0.69
Paper/Forest Products	2007	40	0.84	56.5%	15.7%	0.60
Paper/Forest Products	2006	40	0.82	77.3%	16.6%	0.53
Paper/Forest Products	2005	39	0.86	65.8%	14.2%	0.57
Paper/Forest Products	2004	40	0.86	65.5%	15.8%	0.56
Paper/Forest Products	2003	40	0.84	71.9%	47.1%	0.61
Paper/Forest Products	2002	44	0.84	72.2%	30.3%	0.56
Paper/Forest Products	2001	48	0.83	74.1%	27.0%	0.54
Paper/Forest Products	2000	48	0.78	61.1%	32.4%	0.55
	Average	**42**	**0.84**	**65.0%**	**23.7%**	**0.58**

61 The empirical evidence suggests that over time beta estimates have been relatively stable, albeit there is some possible evidence of an upward trend for the 2007 and 2008 years. Table 3 must, however, be interpreted with some caution as the data is as at January for each year (prior to the recent deepening of the credit crisis). In addition there is often wide variation in empirical estimates of beta and estimates can be influenced by factors such as choice of market index, the sampling period, and the trading frequency to measure returns.

Impact of the global credit crisis on beta

62 The global credit crisis has led to significant falls in share prices and the market index. Where market leverage has increased we would expect the average market

[36] See Random Lengths International, November 5, 2008, Volume 41, Issue21.

[37] Data sourced from Damodaran (2008). Damodaran, A., 2008, http://pages.stern.nyu.edu/~adamodar/New_Home_Page/.

asset beta to fall (i.e. move inversely with market leverage). This is to ensure the market equity remains unchanged (by definition the market equity beta must equal one).

63 For a particular sector of the market such as the forest industry, changes in the industry equity beta may depend upon relative shifts in the leverage for this industry relative to shifts in overall market leverage.

64 In our view, the beta for the forestry industry will change if there is a significant shift in the fundamental factors that impact on the beta for a forest company relative to the market beta. For example, if there is change in the pattern of consumer demand for timber pursuant to the global credit crisis, or there are changes in the degree of operating leverage for forest entities relative to market changes, then the asset and equity betas of forest companies may change over time.

65 At this stage we are not aware of any strong evidence to suggest that the current global credit crisis has led to structural change in demand for timber products relative to the demand for other goods and services in the market.

Conclusion on beta

66 We conclude that in the absence of any strong empirical evidence of changes in consumer demand, or preferences for forestry products relative to shifts in changes in demand for other services, goods or commodities, the global credit crisis will not significantly impact on the asset beta for a generic forestry company relative to the market asset beta.

67 The equity beta for a forest entity will depend on the optimal leverage for the entity as calculated in accordance with equation (3), or a variation of this equation that converts an asset beta to an equity beta.

5.2.5 Leverage or capital structure

68 To determine the WACC an estimate of the optimal (target) capital structure of the entity must be made. Theories on the optimal capital structure for a company are mostly based on trade-offs between a tax advantage to debt (if any), agency costs and wasteful investment and bankruptcy.

69 Agency costs focus on the conflicts of interest between debtholders, shareholders and managers. Bankruptcy costs and in particular indirect costs of financial distress (eg. lost sales) must also be considered in determining an optimal leverage ratio.

Impact of global credit crisis on leverage

70 The global credit crisis has resulted in asset price deflation, increased difficulty for companies to access debt capital markets and a greater focus by investors on bankruptcy risk and the risks of financial distress. In addition the possibility of asset impairment and write-downs under the new International Financial Reporting

Standards rules have focused many companies on de-leveraging their balance sheets to avoid any breach of debt covenants.

71 The impact on the WACC under equations 1 and 3 will depend on the tax environment faced by the company.

72 Under a classical tax system, a decrease in leverage (all things equal) will increase the WACC where debt is tax deductible and the after-corporate tax cost of equity exceeds the after-corporate tax cost of debt. Under a dividend imputation system, however, leverage will have a relatively small impact on the WACC or cost of capital.

73 Leverage will, however, impact on the cost of debt under both a classical tax system and an imputation tax system. Companies that have high leverage will incur higher debt margins to refinance debt in the current economic environment.

5.2.6 Corporate tax rate

74 The corporate tax rate in equation (1) should reflect the marginal tax rate applied to one extra dollar of debt finance. Common practice for companies that are expected to have positive taxable income (with no carry forward tax losses) is to assume the corporate tax rate equals the statutory corporate tax rate.

Impact of the global credit crisis on the corporate tax rate

75 Long term the global credit crisis may lead to more regulation and potentially higher taxes as Governments seek to balance budget deficits. This is because larger Government fiscal deficits are likely to result from the stimulus packages introduced in response to the crisis.

5.2.7 Conversion to a real post-tax WACC

76 In our report to Pöyry we have recommended the following formula,[38] to convert a nominal post-tax WACC to a real post-tax WACC:

$$1 + WACC_{nominal} = (1 + WACC_{real}) \times (1 + i)$$

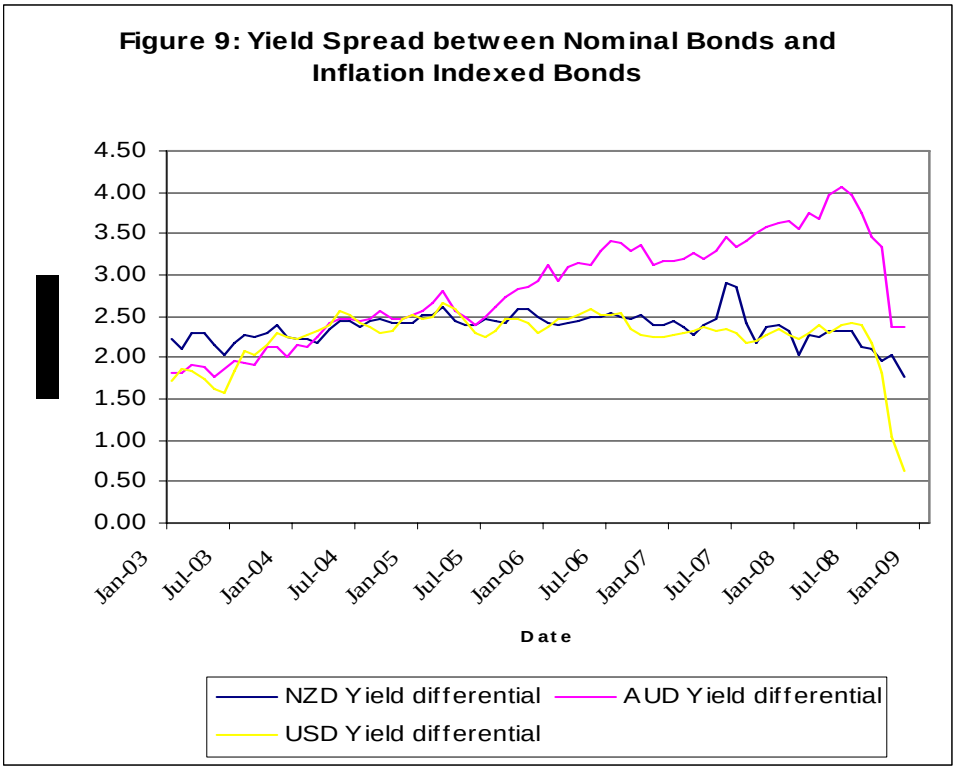
where i = inflation rate.

Impact of the global credit crisis on the real post-tax WACC.

77 Figure 9 plots the implied inflation rate based on the spread between long-term nominal bonds and long-term inflation indexed bonds for the US, Australian and New Zealand markets.

[38] This formula assumes no significant errors arise due to tax depreciation being based on historical cost.

Figure 9: Yield Spread between Nominal Bonds and Inflation Indexed Bonds



78 The evidence in Figure 9 suggests long-term inflation expectations have fallen in the latter half of 2008 as the global credit crisis has become more widespread and deepened. The drop in the expected inflation rate reflects weaker commodity prices and lower economic growth expectations.

79 A fall in the long-term inflation rate will narrow the differential between the nominal and real WACC.

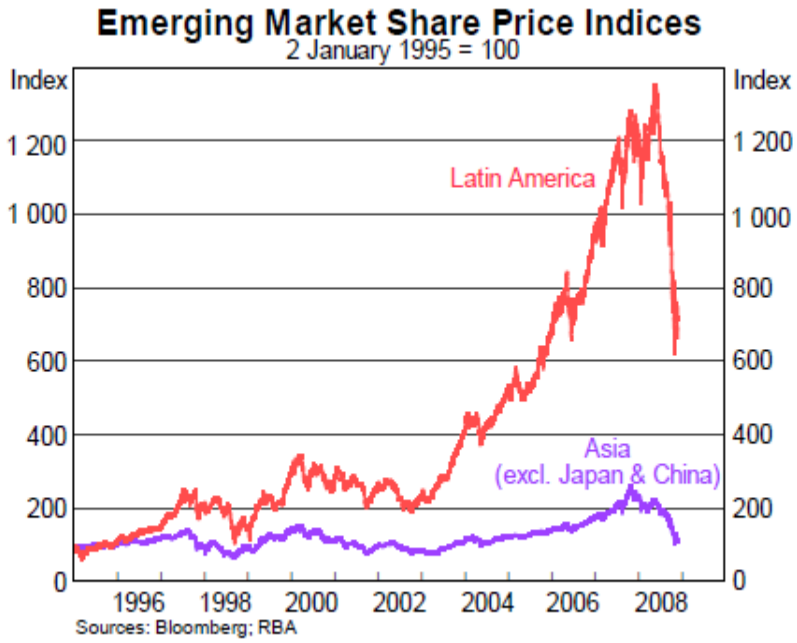
6 Regional Differences between Countries

80 The systematic nature of the global credit crisis means all world economies have been affected to some degree.

81 For emerging and developing countries, the IMF November 2008 World Economic Outlook Update[39] notes:

- Downward provisions for real GDP growth in 2009 are larger than for developed countries by an average of 1% (see Table 1). Downward revisions also vary considerably across regions, albeit most emerging economies growth forecasts still remain positive.
- Many emerging equity markets have lost about a third of their value in local currency terms since the onset of the crisis.

Figure 10

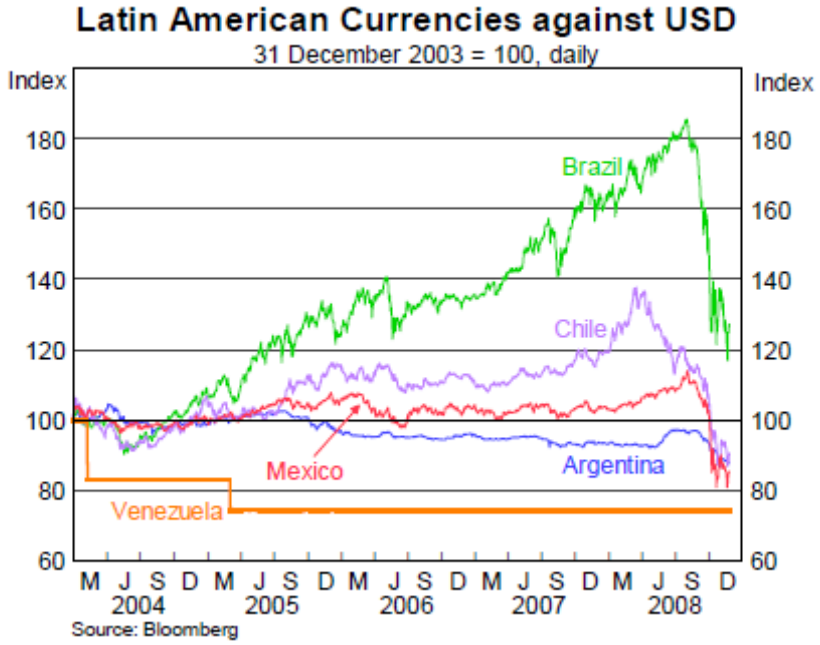


Source: RBA http://www.rba.gov.au/ChartPack/index.html

82 The decline in equity values for emerging economies is even larger in USD terms due to widespread currency depreciation (see Figures 11 and 12).

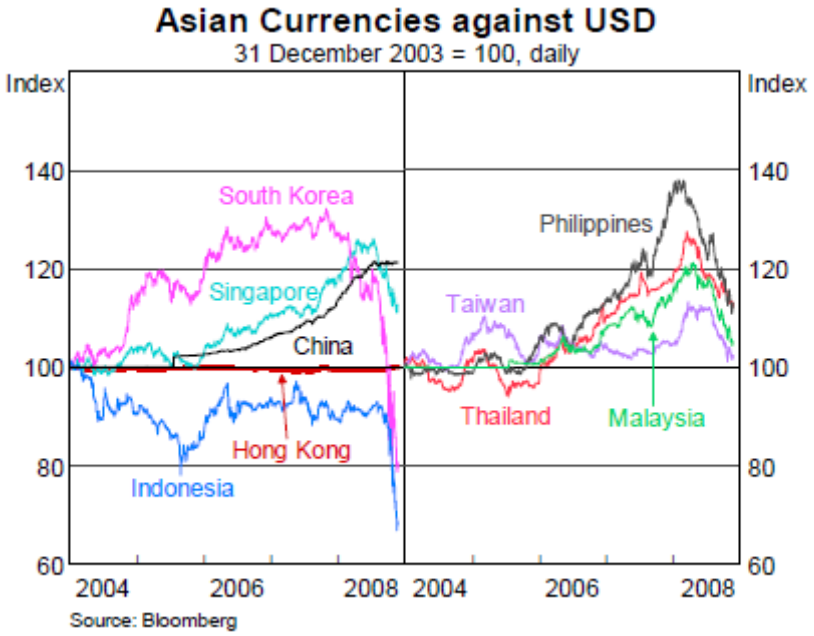
[39] International Monetary Fund, 2008, World Economic Outlook. An update of Key WEO Projections, Nov 6, 2008.

Figure 11



Source: RBA http://www.rba.gov.au/ChartPack/index.html

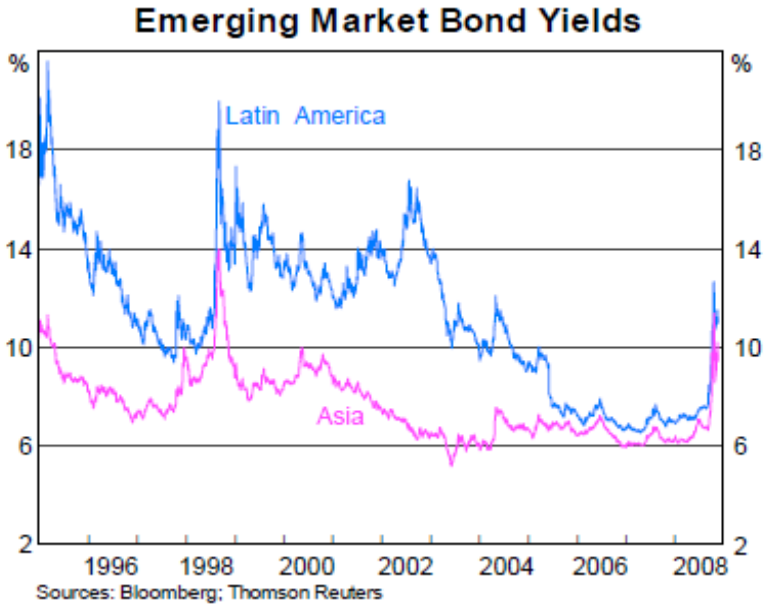
Figure 12



Source: RBA http://www.rba.gov.au/ChartPack/index.html

83 In addition many Latin American and Asian country USD bonds relative to USD Treasuries have widened to 500 basis points or more. This represents a return to 2002 levels (see Figure 13).

Figure 13



Source: RBA http://www.rba.gov.au/ChartPack/index.html

84 In our view these factors will result in an increase in the country risk premium and the USD cost of capital for many Asian (including potentially New Zealand and Australia) and Latin American countries. This is because a global investor who sets prices based on USD returns and a USD cost of capital will price risks of:

- Exchange rate fluctuations into their cost of capital;
- The reliance that many emerging economies have on commodity prices and the growth prospects of more developed countries; and
- High inflation and high wage demand expectations that are still present in some emerging countries.

85 For a forest company in an emerging economy the impact on cost of capital may also depend on the entity's reliance on export or domestic demand patterns and risks associated with changes in relative price competitiveness due to exchange and inflation rate changes.

7 The Investors' Time Horizon

86 Financial crises have occurred with regular frequency in the past. For example the US and world economy has experienced the Great Depression in the 1930s and the world oil price shock in the mid 1970s. The US also experienced the Savings and Loans crisis in the 1980s and early 1990s and the Tech Bubble Crash in the early 2000s.

87 Other markets to experience crashes include Asian economies during the Asian Financial crisis of the late 1990s and Japan's lost decade of growth in the 1990s.

88 The CAPM is a one-period model and the investors' time horizon is not specified (i.e., any period of time may be considered). Despite this most valuers and practitioners that use the CAPM assume investors have a relatively long-term time horizon.

89 In our view the impact of the global credit crisis on the cost of capital will depend on both the assumed investors' time horizon and the length of period that markets are likely to be disrupted as a result of the crisis.

90 In this respect of the expected time to market recovery, Cogman and Dobbs (2008)[40] estimate the credit losses in the US from the global credit crisis are substantial by historical standards. Cogman and Dobbs (2008) note that how long it takes for an economy to emerge from a downturn depends upon the policy response by Government and the stimulus packages they adopt. On average countries have needed two years to recover from banking crises and up to four years to return to normal growth levels.[41]

91 In our view where investors have a relatively short time horizon (0 - 5 years) we conclude an increase in the market risk premium may be warranted. Debt premiums for bonds have also increased.

92 On a longer-term time horizon (>5 years) the impact on the market risk premium is less clear and despite uncertainty around the evolution of the current crisis, we consider it reasonable to assume the long-run market returns and the market risk premium will return to its historical average.

[40] Cogman, D. and R. Dobbs, 2008, Financial crises, past and present, The McKinsey Quarterly, December 2008, 1 – 7.
[41] Also see International Monetary Fund, 2008, Financial Stress and Economic Downturns, World Economic Outlook, Oct 2008: Financial Stress, Downturns and Recoveries.

8 Impact on Forest Values from Capital Rationing and Alternative Investment Opportunities

93 In perfect markets capital rationing never occurs because companies can always raise money for attractive investments. Investors are willing to provide funds for all positive net present value investments and all assets are correctly priced to offer a normal competitive rate of return.

94 However, in the presence of market imperfections and transactions costs capital rationing may occur. Capital markets can also impose capital rationing where investors (both shareholders and debt holders) refuse or are unable to provide capital beyond a certain point.

Impact of the Global Credit Crisis

95 The global credit crisis has impacted on wood demand and led to a worldwide disruption of timber markets.[42] The price of timber has fallen in recent months as the crisis has impacted on timber demand in both developed and emerging economies. Timber is normally traded in USD and the increase in the value of the USD, as investor risk aversion has increased, has adversely impacted on US based timber exporters into the European markets, albeit shipping costs have dramatically reduced.[43]

96 The severity of the current global credit crisis that has:

- Been associated with reduced US housing demand;[44] and
- Resulted in substantial losses by banks and other financial institutions;

suggests markets may take longer than normal to recover from the current crisis.

97 Rhodes et al (2008)[45] conclude that based on global financial institution losses of $1.5 trillion and a 12.5 to 1.0 capital ratio, the loss in credit capacity would total $19 trillion. This represents about a 7% decline in current global credit levels.

98 This level of loss in global credit capacity has resulted in many banks hoarding cash and being unwilling to lend in the inter-bank market or to corporate clients. The widespread investor loss of wealth in equity and property markets has also meant rasing new equity capital is difficult.

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[42] See for example The Journal of Southern Timber Market News, 2008, A quarterly report of market conditions for timber products of the Southeast US, 2nd quarter, Vol 12, No 2 and Random Lengths International, October 22, 2008, Volume 41, Issue20.

[43] See Random Lengths International, November 5, 2008, Volume 41, Issue21.

[44] See Belsky, E., Drew, R. and D. McCue, 2007, Projecting the underlying demand for new housing units. Inferences from the past, assumptions about the future. Joint Center for Housing Studies,- Harvard University: November 2007, http://www.jchs.harvard.edu/publications/markets/w07-7.pdf

[45] Rhodes, D., Stelter, D., Sawuya, S. and A. Kronimus, 2008, Collateral Damages: What the crisis in the credit markets means for everyone else, The Boston Consulting Group.

99 In our view, where access to new debt and equity capital is scarce, investors will be less willing to commit their capital to risky investments when there is:

- A possibility that a more attractive investment on a risk-adjusted basis may present itself in the future; and
- Ongoing uncertainty as to how the current credit crisis will evolve in the future and the potential that the crisis may become more severe.

100 In summary we consider the current dislocation in the financial markets is likely to result in some capital assets being miss-priced due to investor behavioural characteristics, higher than usual information asymmetries and other market frictions or imperfections.

101 If alternative assets (other than forest assets) are priced below their fair value or offer a higher risk-adjusted return above their normal expected rate of return, then investors with limited access to equity and debt markets will have incentives to purchase these alternative assets. This is in lieu of forest assets, where the forest asset is priced to provide a normal expected rate of return only.

102 Accordingly where markets are disrupted and access to capital is scarce, forest asset values may fall below their fundamental underlying value until such time as market conditions return to normal.

103 One countervailing factor may be that an investment in forest assets represents ‘hard” or “tangible” assets. Forest owners that have minimum or no debt can continue to hold forest assets and/or delay harvesting timber until market conditions improve. The forest owner may also have the ability to conserve cash resources by delaying forest maintenance costs. These factors may mitigate any downward pressure in forest asset prices attributable to the global credit crisis.

9 Current Investors in Timber Assets have Low Leverage

104 As noted, the global credit crisis has resulted in a substantial reduction in the availability of credit and the willingness of financial institutions to provide debt finance.

105 We understand many pure forest owning entity have minimal debt funding and a long-term investment time horizon. These investors have the abiliy to withstand short to medium term fluctuations in asset prices and often retain flexibility on the timing of any timber harvest.

106 Access to the debt markets for companies that are, however, weak credits and have high leverage is severely limited. Financial institutions are also less willing to lend to entities that have high operating leverage or where demand for the company's goods or services is highly sensitive to economic shocks.

107 Forest companies that have sustainable ongoing cash flows and low leverage should still be able to access debt finance, albeit yield spreads over Government or Treasury bonds have significantly increased even for high grade credits.

108 In summary low leverage will mean:

- The forestry company is not a forced seller of an asset where re-finance of debt is not possible or "impairment values" of assets would lead to a breach of debt covenants. In a forced sale situation a buyer may seek to take advantage of the seller's financial distress by offering a low price;

- The financial strength to delay timber harvesting until demand and prices improve; and

- Any adverse increase in debt costs will only have a limited impact on the company's WACC.

Appendix 1

109 This appendix forms part of and should be read in conjunction with this report and our engagement letter of 8 December 2008.

Independence

110 Auckland UniServices do not have any interest in the outcome of this report. The fee proposed by Auckland UniServices in our engagement letter for the preparation of this report is solely time based, which is charged at normal professional rates plus disbursements.

Qualifications

111 Auckland UniServices is the consulting arm of The University of Auckland.

Recipients of the report and restrictions on use of this report

112 The report has been prepared solely for Pöyry Forest Industry Ltd to assist in the determination of the cost of capital for generic forest assets.

113 Because of its special nature, our report may not be suited for any purpose other than as described in this report and as such, will be restricted for use by Pöyry Forest Industry Ltd only. We will not be liable for any loss or damage to any party that may rely on our report other than Pöyry Forest Industry Ltd.

Declaration

114 This report was prepared based on information available up to 10 December 2008. The findings and opinions contained in this report are expressed as at that date, and reflect our assessment of the information provided to us, as it existed at the date of this report.

115 This exercise is based upon information that has been supplied to us and described in this report. Much of the information forms the basis of future projections and estimates. As the achievement of any prediction is dependent on future events, the outcome of which cannot be assured, the actual results achieved may vary materially from forecast. In the circumstances, no warranty of accuracy or reliability is given.

116 In preparing our valuation we have received and relied upon the information received from Pöyry Forest Industry Ltd and other sources. Therefore Auckland UniServices does not imply, and it should not be construed, that it has carried out any form of audit on the accounting or other records or information provided to us for the purposes of this report.