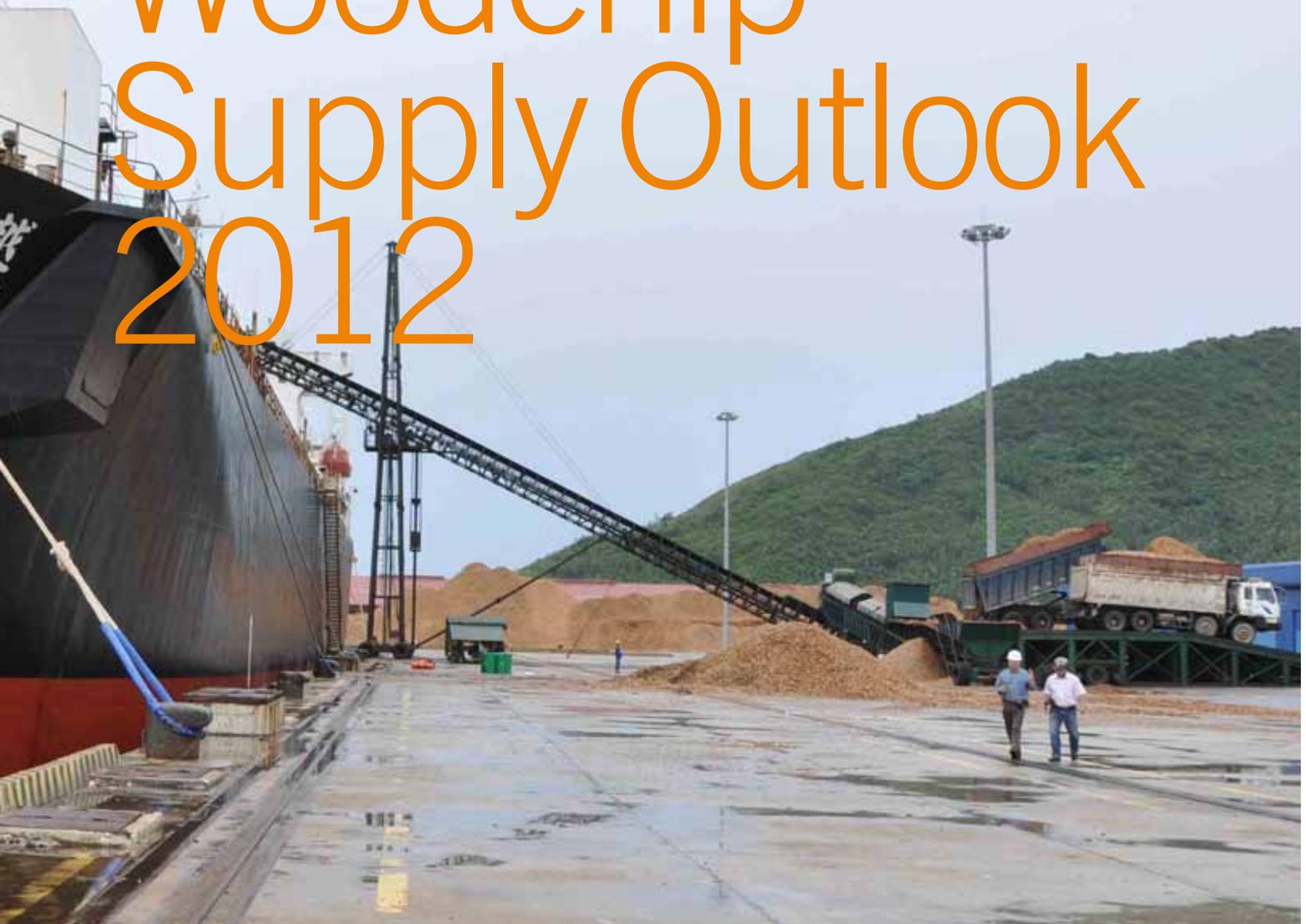
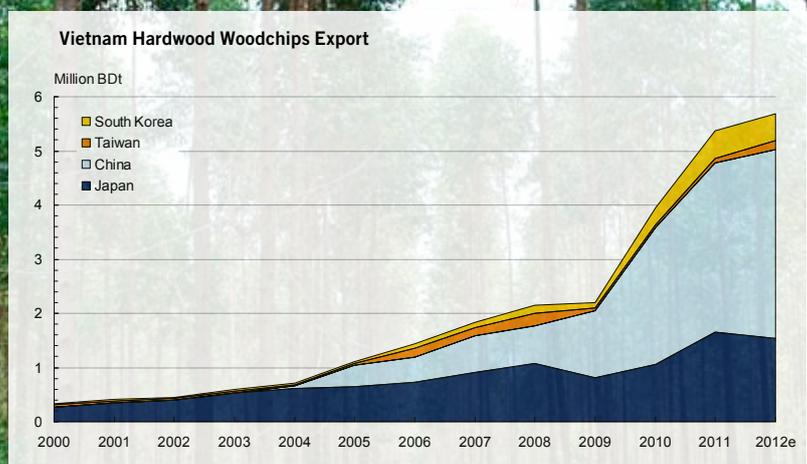
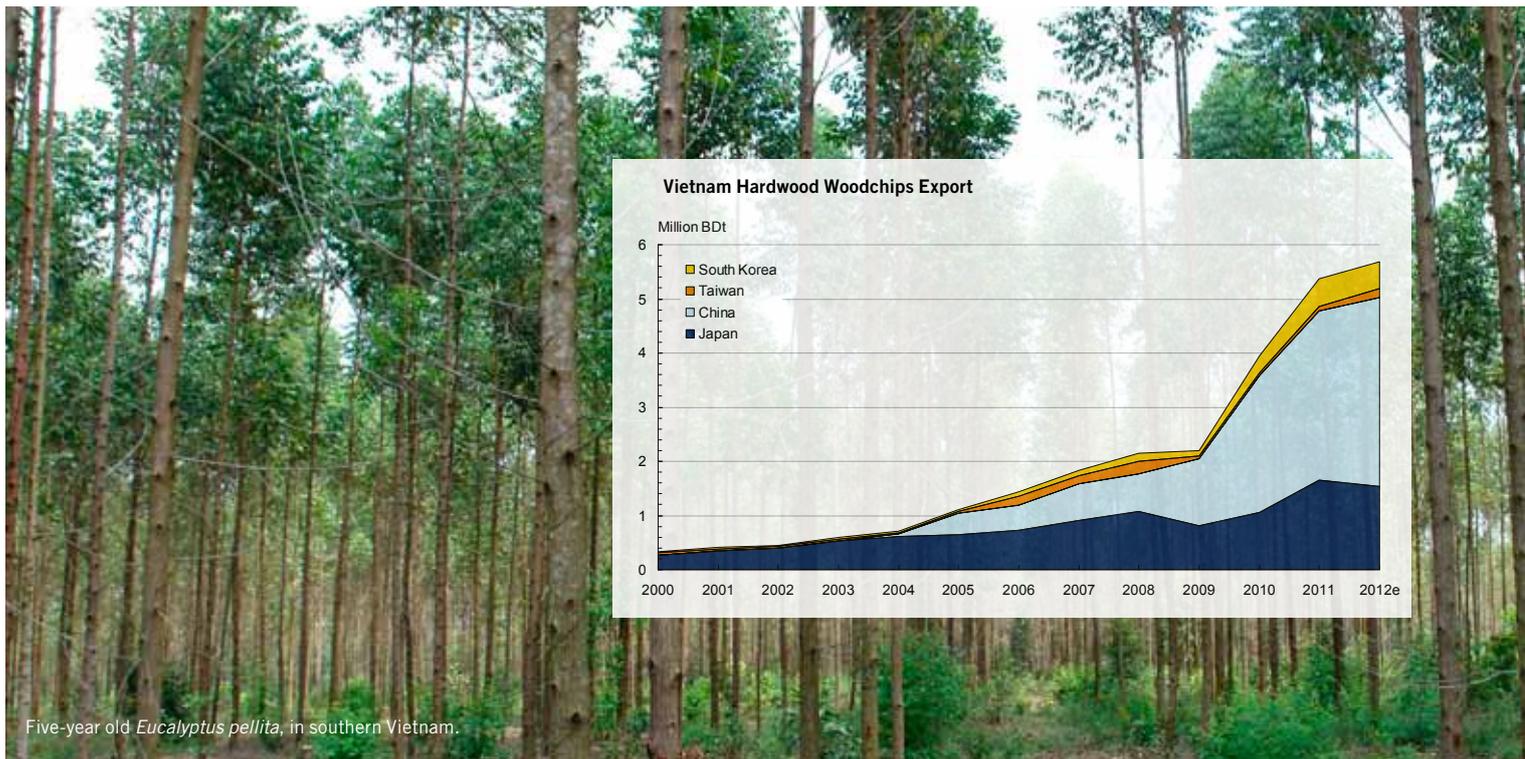


**PÖYRY VIEWPOINT
VIETNAM WOODCHIP:**

Vietnam Hardwood Woodchip Supply Outlook 2012



Introduction



Five-year old *Eucalyptus pellita*, in southern Vietnam.

Vietnam is emerging as a significant and competitive regional hardwood woodchip supplier. The country is strategically located in close proximity to the highest-paying fibre markets in Asia (Japan and South Korea) as well as the high-demand market of southern China.

Since 2007, export volumes have more than doubled. Some argue that the country's impact on the Asia-Pacific hardwood woodchip market may have been underestimated, both in terms of potential supply capability and competitive fibre cost. Factors contributing to the uncertainty

surrounding Vietnam's fibre supply potential include:

- Forest ownership in Vietnam is highly fragmented and there is a lack of identifiable plantation "projects" which means difficulty in collating reliable statistics
 - Multiple 'ad hoc' ports developed without "formal" woodchip handling equipment.
- The area of established tree plantations may be as large as 1 million ha. Consequently, even at conservative yield estimates, Vietnam may still have significant upside supply potential beyond the 2011 peak export levels.

PÖYRY PROPOSAL

Pöyry is proposing to undertake an in-depth study of the Vietnam hardwood plantation resources in 2012. The study will clarify the woodchip supply outlook from that country. The report will be a valuable source of reliable information for those with an interest in this rapidly-developing resource, including:

- Pulp and paper producers sourcing fibre
- Woodchip producers and traders
- Shipping companies
- Companies considering development of processing facilities in Vietnam.

KEY STUDY QUESTIONS

The proposed study will develop an understanding of Vietnam's woodchip supply and value chain by seeking to address the following questions:

- How did the existing plantations develop and what motivated the initial plantings ?
- What are the economics of trees versus alternative land uses and what will it take to keep the land under trees?
- Who has captured the export role and what are the likely margins in this business?
- Is consolidation occurring or likely to occur? What domestic uses for this fibre exist? Are there plans to increase domestic processing?
- What is the role of adjacent countries (Laos, Cambodia) as potential incremental sources of fibre export?
- What are the limitations on foreign investment in Vietnam?

KEY POINTS ABOUT THE VIETNAM CHIP EXPORTS:

- Export volumes increased ten-fold over the past decade
- Statistics on existing hardwood plantation areas (approximately 1 million ha) are difficult to validate
- Even at conservative yield estimates, Vietnam may be able to export volumes significantly beyond 2011 levels.



APPROACH

A regional fibre supply description will be developed and verified using information available to Pöyry, combined with independent 'on-the-ground' inspections of the fibre resources and processing facilities. The investigation will focus on the areas within a transport distance of 150 km of the main woodchip export ports, and will include meetings with producers, growers, contractors and relevant government institutions. Pöyry will present results based on three wood supply catchments; northern, central and southern.

The 'on-the-ground' investigation work will be combined with a detailed remote sensing analysis. Pöyry proposes to independently verify the eucalyptus and acacia plantation areas within economic catchments of the main export woodchip ports in Vietnam. The areas will be mapped using a combination of medium- and high- resolution satellite imagery.

The fibre supply analysis will focus on wood supply catchments within 150 km of the main export ports.



Yields will be forecast using a combination of data collected during Pöyry's field inspections and in-house databases. Yield estimates will be based on a high-level assessment, limited to key regions and species combinations. A yield model will be developed, estimating fibre availability over the next 4-5 years.

Vietnam's growing furniture and wood-working industry is producing considerable volumes of wood residues which are also potentially available for hardwood woodchip exports. Pöyry will survey a number of the main wood processors and manufacturers in the region to develop an estimate of wood residue availability and contribution to future woodchip supply volumes.

Cost information will be collected based on interviews with growers, contractors, processors and other industry participants.

INDICATIVE STUDY CONTENT

Introduction

Overview of Plantation Forest in Vietnam

Forest Policy
Forest and Land Ownership
Historic Plantation Development
Alternative Land Uses

Plantation Resource Description (by Region)

Plantation Area
Plantation Soils, Topography and Climate
Species Distribution
Age-class Distribution
Harvest Ages and Regimes
Forecast Yields

Processing Industry Structure

Key Players
Current Facilities
Planned Facilities
Wood Residue Availability
Resource Competition
Future Consolidation and Scale Potential

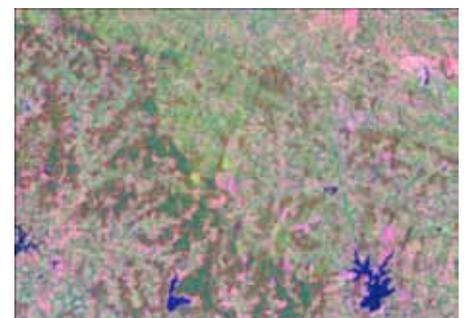
Wood Chip Supply Forecast

Wood Flow Model
Supply Forecast by Region
Wood to Chip Conversion Rates
Supply Risks

Value Chain Analysis

Stumpage Costs
Harvest and Haulage Costs
Processing/Conversion Costs
Regulatory Costs
Competitive Wood Fibre End Uses

Tree plantations (dark green) in Vietnam as identified using satellite imagery analysis





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