

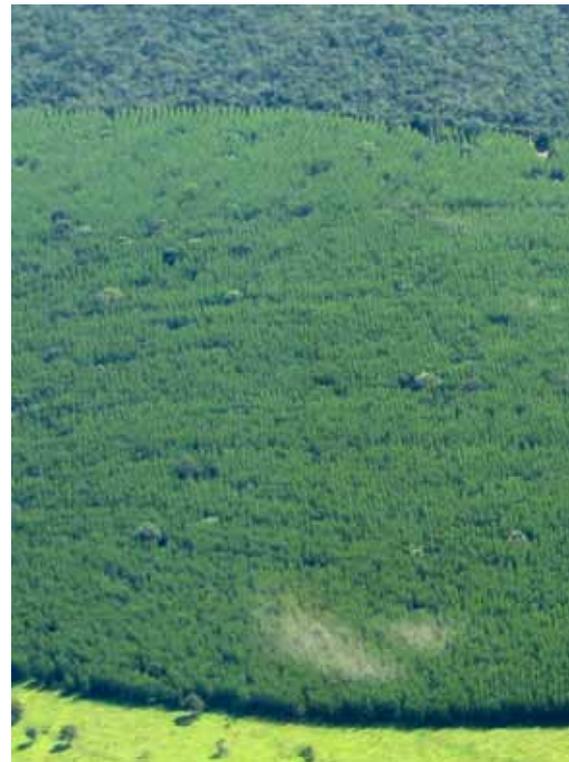
PÖYRY POINT OF VIEW:
BEING RESOURCE SMART

How must plantation forestry change to survive?



Balanced sustainability for plantation forestry

There is growing global evidence that in order to survive, plantation forestry ¹ must change. Moving beyond supplying pulp and paper producers and wood products manufacturers, global forestry players must now meet increasing demands from new bioenergy producers, compete for land and water with food growers, deal with changing societal beliefs about sustainability, and comply with complex environmental regulations.



Long held beliefs about the right and wrong way to approach forestry are being challenged as strategies rooted in the past struggle to survive. Forestry players must look to new models and new partners to compete and thrive in the new global forest sector.

As the world's population grows, so does our demand for fibre, fuel and food ². All three need land, and forestry is facing increasing competition for land and water. The increasing demand for land has led to an escalation of

land prices around the world, especially in some traditional high growth areas such as South America and Asia. Land scarcity is limiting the potential expansion of the forest industry in these traditional growth areas. While Africa still has available land, there are complex social, tribal and institutional issues that remain critical roadblocks to leveraging Africa's land opportunities.

In addition to pressures to find available, affordable land, local populations and

communities are more actively criticising the forest industry for unsustainable practices. Through challenges to land tenure and increasing pressure to mitigate environmental impacts, the global community is pushing the industry to be more accountable and responsible towards local communities and environments. As community pressure mounts, governments and regulatory agencies are looking to mandate and regulate forest businesses, adding another layer of complexity.





“As the world’s population grows, so does our demand for fibre, fuel and food. All three need land, and forestry is facing increasing competition for land and water.”

Plantations can play an important role in creating a new low-carbon world. Increasing scarcity of land and water means that we need to be able to increase productivity and produce more from less. This calls for efficient utilisation of land and biotechnologies to meet the needs of local and global markets. Plantations can also decrease the pressure on natural forests, since they often produce raw materials that would otherwise be sourced from natural forests. Combining this with sustainable agriculture can multiply the positive impact.

1) This Point of View concentrates on industrial plantation forestry in South America, Asia and Africa, the regions where plantations are expanding most rapidly.

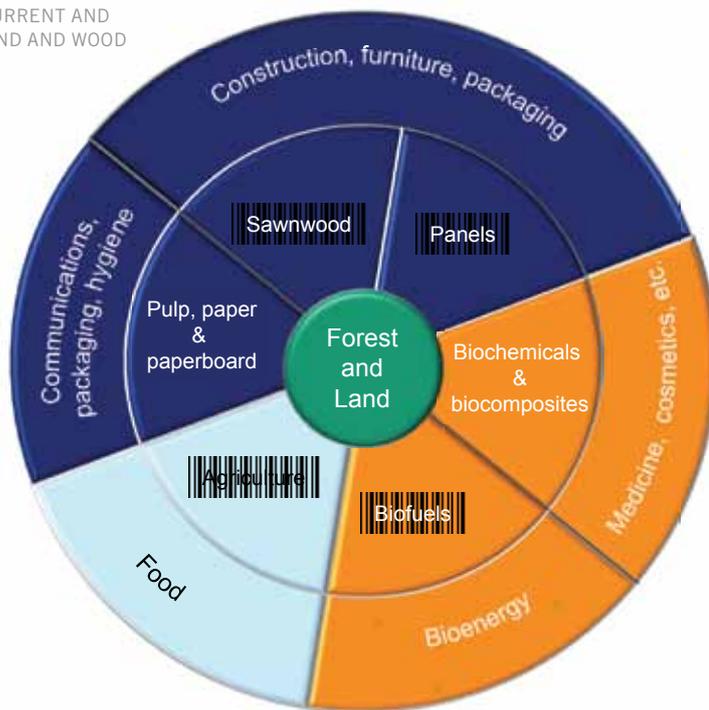
2) “Food” includes both direct and indirect (e.g. feedstock for cattle) land use; “Fibre” includes raw materials for pulp, paper and wood industries; and “Fuel” includes firewood and other biofuels.

MONOCULTURE AND MULTICULTURE
 A large share of today’s industrial forest plantation operations are monocultures, meaning simply the plantation of a single species or crop, typically for one purpose. Eucalyptus plantation for pulp is a typical example. The table below looks at some of the factors we use, in this context, to differentiate monocultures and multicultures. Mono- and multicultures should not be seen as competing, but complementary models. Monocultures are easier and economical and thus the reliance on this specific practice has continued. There are still locations with very marginal exposure to local people and no competing demand for land, where monoculture plantations can be a productive and sustainable way to produce fibre.

Monoculture	Multiculture
Single species, planted and harvested	Several or multiple species, range of plantation models (forest, agroforestry etc.)
Grown for single purpose (often pulp)	Grown for multiple purposes (fibre, fuel and food)
Company owned land, no (or limited) benefit sharing and exposure to local markets	Mixed land ownership, range of benefit sharing and market mechanisms
Land use patterns, affecting water supply, evolved without master plan resulting in conflicts	Optimised landuse plan balancing stakeholder interests
Unilateral industry cluster (pulp/forest industry)	Versatile industry cluster (including also bioenergy, food and other industries)

Moving from monocultures towards multicultures

THE MULTICULTURE APPROACH HAS A HOLISTIC VIEW OF CURRENT AND FUTURE USED OF LAND AND WOOD



TOWARDS A NEW PLANTATION FOREST PARADIGM

Monoculture continues to be a widely applied approach for large scale forest plantation operations. These operations are often contiguous and the land is owned by the operator. The operation is structured around serving a single use or product such as fibre for pulp. There tends to be limited interaction with the local community for planning and decision making, and no proactive attempts to leverage the local community for market synergy.

Although this type of operation is quite typical of plantation forestry today, it often involves lost opportunities such as sub-optimal land utilization, and nurtures conflicts with local people related to land tenure, water use and economic benefits.

Now imagine a different kind of forest plantation operation. A fully integrated future forestry operation will:

- Grow a bio-diverse mix of wood, food and fuel sources optimising the use and maximising the productivity of land and water supply
- Integrate industry development with the economic success of local people and communities, providing opportunities and improving living conditions while preserving environmental values. Waste materials and by-products are used to create bioenergy or other bioproducts
- Mitigate climate change through creating new carbon stocks, and substitute locally produced renewable materials and energy for non-renewables

Advanced players have recognised the issues and started to develop new integrated and sustainable models. Versatile industry clusters can be found in some South American softwood plantation regions. Also, some industry players have developed cooperative plantation models with farmers. However, the overall progress has been slow.



The imperative of the forest industry is to accelerate the change to new approaches, and gain competitive advantage and future success.

COOPERATION PARTNERSHIPS AND BENEFIT SHARING

In order to shift from monocultures to multicultures, forestry operations must be truly based on a more holistic and comprehensive view of sustainability, the markets they serve and the communities they operate in. This shift requires operators to examine both the land use and fibre supply systems for ways to have a more



“Operators must look to cooperative plantation models where land use is based on balanced consideration of the three big F’s – food, fuel and fibre”

cooperative plantation model where land use is based on balanced consideration of all of the key dimensions of the three big F’s – food, fuel and fibre. Forest industry players must reframe how they view other land use needs and players, moving from seeing threats and competitors to opportunities and potential partners. In addition, they need to assess operations for potential new product development and find better ways to integrate the needs of local people and communities.

Bioenergy producers are a natural potential partner, and many forest operators are already investing in these opportunities. Other

potential partners such as the food industry have yet to get much traction. The potential of the food industry is something forest operators would be remiss in overlooking.

In addition to land use, new plantation models need to manage sustainable water use. Some plantation forests such as eucalypt demand a lot of water for fast growth and, when established adjacent to food plantations, are often seen as hostile (rather than complementary) production systems by local farmers. As water becomes an increasingly scarce resource, land use planning and species selection should consider how food

and fibre can be grown in better harmony. This involves the improved application of mosaic plantations approach and agroforestry with new combinations of species and growth regimes, as well as new type of benefit sharing mechanisms between the industry and local people.

This move away from the full (and exclusive) vertical integration of a plantation forest and pulp mill to a cooperation and partnership model will not be easy for many players, who have relied on tight vertical integration for success. Industry clusters, government agencies and international groups will have to lead the charge to the cooperative approach.

Plantations - part of a low carbon future

NEW IMPERATIVE OF PLANTATION FORESTRY

To begin the shift to the new paradigm of plantation forestry, organisations must begin to think in terms of how sustainability and land use optimisation can be built into their current and future strategies and operations. We see multiculture plantation forestry as an important part of a low-carbon future. Successful plantation strategies need to analyse and understand potential implications of the following:

- How does a large scale forest industry development influence traditional land use and tenure patterns, water supply, local economies and environment? Where are the potential synergies and conflicts of interest?
- How do we define optimal land use based on the current and future needs of local people and communities? How to maximise the productivity of land while ensuring economic, environmental and social sustainability?
- What ecosystem of plantations and natural vegetation preserves high value conservation areas?

- What type of plant growing systems (e.g. mosaic plantations, agroforestry) can be used to optimise the productivity of growing food, fibre and fuel plants, possibly in combination with animal husbandry? What is the trade-off between maximising the productivity and maximising the profitability?
- What are the optimum roles of industry, local people and communities in developing and managing plantations? How can we ensure a fair sharing of benefits and risks?
- For what end uses and markets are the plantations established? Given the increasing dynamism of markets, what type of management models and regimes provide adequate flexibility to cope with an uncertain future?
- What type of industry clusters and multiple production activities could be developed to enhance the welfare of local people and communities? How can we ensure investments and attract other players to develop these activities?

- How do we ensure that regulatory and policy frameworks will support the evolution of an environmentally sound multiculture plantation and industry cluster?

The competition for land and water is going to continue to increase over the coming years. As costs and risks will increase, companies must find new ways to succeed in the plantation forestry business. Players must understand the opportunities that come with a new integrated, cooperative approach and make changes to how they operate.

Pöyry is actively working with the industry and other stakeholders to develop sustainable solutions for plantation forestry. We support our clients to embrace multiculture elements into their plantation projects. We also help in opening new frontiers for plantations applying models for balanced production of fibre, fuel and food.

Telemaco Borba in Brazil is an example of a versatile industry cluster based on plantations. Local industries have implemented cooperative plantation models with farmers to enhance social sustainability, and created a mosaic of plantations and natural forests to preserve high conservation value areas.



About the Pöyry Point of View

Staying on top of your game means keeping up with the latest thinking, trends and developments. We know that this can sometimes be tough as the pace of change continues to accelerate.

At Pöyry, we encourage our global network of experts to actively contribute to the debate - generating fresh insight and challenging the status quo. The Pöyry Point of View is our practical, accessible and issues-based approach to sharing our latest thinking.

We invite you to take a look – please let us know your thoughts.



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