FORESTRY, BIOMASS & SUSTAINABILITY

New Demand Drivers and Sustainable Forestry Investment
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Changing Demand Drivers Create Threats and Opportunities

Demand

Payments for Environmental Services (+)
Climate Change Policies & Regulation (+)
Demographic Trends (+/-)
Consumer Trends and Substitution (+/-)
Economic Growth (+)
Shift Towards a Biomass-based Economy (+)

Demand-Supply Gap is Increasing but Demand Drivers and Investment Prospects Vary Greatly E.G. By Region

Supply

Reduced Forest Area for Timber Production (-)
Competing Land Uses (-)
Productivity Improvements (+)
Plantation Expansion (+)
Improved Governance (-)
We see two megatrends influencing timberland investment opportunities:

1) A **shift towards a biomass-based economy** from the traditional fossil-based society
   - driven by climate change and other environmental policies (global, EU, national), and reduced stocks of traditional energy

2) **Growing economic importance of emerging markets** with China and India at the forefront

When it comes to environmental demand drivers we see at present more potential in bioenergy demand than in carbon-credit driven business such as CDM or REDD
Replacing 1% of total primary energy consumption in EU27 would require over 90 million m3 of wood corresponding to about 1/8 of the Net Annual Increment of Europe’s forests (source: UNECE/FAO)

Achieving the RES target using (partly) wood biomass would result in a potential mismatch of about 200-260 million m³ between demand for and supply of wood in 2020 according to McKinsey and Pöyry

P & P industry will compete for same feedstock, which will have a positive impact on wood prices and timberland returns

- Floor price for pulpwood
- Increased revenue for timberland owners and diversification of revenue sources
- Increased pulp wood prices may be a problem for P&P industry but many of them are turning into biocombines creating new revenue earning models
From where will all the wood come from and who will carry the risk?

- Implementation of just those projects on the map, would require about 10 million m³ of wood, and there are others needing an additional 15-20 million tons of wood chips annually.

- Majority of wood chips must be imported

→ Opportunities for timberland investors
   - E.g. off-take agreements from Baltics
   - A great need to improve the entire supply chain and cooperation amongst all players

Selected Planned Renewable Energy Plants Using Wood Biomass in the United Kingdom:

- **Forth Energy**
  - Four RE plants (2015), total energy capacity of 500MW, imported woodchips

- **MGT Power**
  - Tyne RE Plant (2014) 300MW, imported woodchips
  - Tees RE Plant (2012/13) 300MW, imported woodchips

- **Anglesey Aluminium Metal**
  - Holyhead RE Plant (2013) 299MW, imported woodchips

- **Prenergy**
  - Port Talbot RE Plant (2013); 350MW, imported woodchips

- **Helius Energy**
  - Avonmouth RE Plant 100MW, mainly wood

- **Drax Power**
  - Heron RE Plant (2015) 300MW, wood and other biomass, mainly wood
  - Ouse RE Plant (2015) 300MW, wood and other biomass, mainly wood

- **Dong Energy**
  - Hull RE Plant (2016) 300MW, imported woodchips
Biomass Demand as a Driving Force for Wood Use in Europe

Note: Prices Are in Real Terms Deflated to 2009 Prices

Source: FAO, Metla, Dasos
Pointers to Take Home

- By 2030 about 45 -55m ha of new industrial planted forests are needed, equalling about 90 - 110bn EUR investment
- In addition incremental demand for wood biomass plantations
- Timberland investment universe is expanding and becoming more “globalised” driven by a wider range of demand factors many of them environmental
- At the same time, there is increasing demand for ensuring sustainability
  - sustainability of wood and wood biomass supply can be demonstrated through forest certification and verifying legal origin of wood by third party auditors
  - improved use of waste wood from forest and processing
  - 2nd generation biofuels: will not compete for land needed for food production

New opportunities for timberland investment:
- More diversified revenue sources due to bioenergy and env. services
- Timberland investments increasing outside the traditional US market (in Europe, Latin America, Asia and even Africa)