International Wood Energy Market Developments

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Subjects

I. Overview of forest products market developments
II. Market drivers
III. Policy drivers
IV. Wood energy markets
V. Conclusions
VI. Recommendations
VII. Questions and discussion
Main sources of information

• UNECE/FAO Forest Products Annual Market Review, 2007-2008
• UNECE/FAO Forest resources assessment
• UNECE/FAO Timber database
• FAO Statistics
I. Overview of forest products market developments
“United States forest products market crash impacts UNECE region”

• In 2007, US housing construction continued its sharp decline, severely impacting world markets.
• Green building systems are a market driver, but also a constraint.
• UNECE region consumption of wood and paper products fell in 2007 for the first time in 6 years (downturn in North American overcoming a rise in European and CIS).
• Oil prices soared, stimulating wood-based biofuels and policies to mobilize more wood from both forests and other sources.
• Certified forest area rose to over 300 million hectares worldwide.
“US forest products market crash impacts UNECE region”

- Some European market sectors exceeded their North American counterparts: production of sawn softwood and consumption of panels and paper and paperboard.
- China’s trade with countries in the UNECE region continues to increase.
- In Europe, wood products prices generally rose in 2007, then fell in 2008 as markets weakened.
- In North America prices for some wood products, such as sawnwood dropped to their lowest levels since 1991.
- Russian export taxes on roundwood are disrupting supply and changing trade patterns.
II. Market drivers

- US housing market
- Energy prices
- Russian export taxes
- China’s trade
United States housing starts

- US residential housing: 2.2 million homes in 2006
- 2008: under 1 million, -40%
- Recovery beginning 2010 (NAHB)

Oil prices

- Rising fossil fuel costs driving wood energy
- Spike at $145/barrel in July 2008
- Pellet production in Europe, Canada, Russia
- Competition with wood industry
- Concern for sustainability ➔ certification
- Biofuels vs. food ➔ wood

Russian exports & taxes

- Roundwood export tax
  - 2008 €15/m³
  - 2009 €50/m³
- Log exports to Europe down 44% in early 2008
- With new Forest Code
  - Autonomy to regions
  - Attracting foreign investment
  - Value-added processing
- Illegal harvesting and exports

Source: UNECE/FAO TIMBER database, 2008
China’s forest products output impacts

- Impacting every market sector
- Roundwood imports profit UNECE region exporters
- European roundwood exports affect sawmills
- China’s exports benefit consumers
- European, American manufactures impacted
- Graph does not include furniture

Chinese furniture exports

- $22 billion 2007, total furniture exports
- $11 billion, wooden furniture exports
- $69 billion, total furniture production
- 66% of production for domestic market
- 2,322 manufacturing plants
- Most plants have some foreign investment

Source: IBISWorld, 2008 and Tan, X. et al., 2007
Chinese forest products production

Chinese forest products imports

- Roundwood
- Sawnwood
- Panels
- Woodpulp
- Waste paper
- Paper products

Chinese forest products exports

![Graph showing trends in Chinese forest products exports from 1997 to 2007. The graph illustrates the increase in exports of sawnwood, plywood, particle board, fibreboard, and paper products. The source of the data is the International Wood Markets Group, 2008.](image)

**Source:** International Wood Markets Group, 2008
Chinese forest products consumption

- Paper and paperboard
- Sawnwood
- Wood-based panels

III. Policy drivers

- Climate change
- Carbon markets
- Wood energy, biofuels vs food
- Green building
- Deforestation
- Corporate responsibility
- Illegal logging and trade
Policies can level or distort the playing field

- Laws, duties, tariffs, taxes, regulations
- Raw material costs
- Labour costs & benefits
- Manufacturing costs
- Goal: Raise standard of living → and domestic consumption of and paper wood products
Climate change

- UN Intergovernmental Panel on Climate Change: “evidence of a warming trend is unequivocal”
- Policies mitigating climate change
  - National and sub-national governments
  - International organizations
  - Trade associations
  - Non-governmental organizations
Climate change

• 17.4% of global greenhouse gas emissions caused by humans are from forestry, mainly deforestation
• Direct links between sustainable forest management and climate change
• EU targets for 2020
  – 20% renewable energy
  – 20% improved energy efficiency
Factor “X” for forests: Climate change

- Greenhouse effect on growth?
- Species substitution?
- Storms and their damage?

Source: UNECE/FAO Forest Products Annual Market Review

Modern Wood Energy Systems and Markets
16-17 September 2008, Timisoara, Romania
Storm damage in Swiss forests, 1972-2005

Source: Institute fédérale de Recherche Suisse, 2007
Carbon markets

- Active forest management reduces carbon emissions
- Following Kyoto Protocol, carbon trading established
- Pulp and paper industry included in the EU Emissions Trading Scheme
- Future in marketing carbon sequestration in forests and products of wood and paper?
Wood energy policies

• Targets for wood energy
  – European and North American
  – Must be balanced with current and future availability from forests
  – Must be balanced with wood processing industry needs

• 60% of annual growth in European forests harvested
  – 80% in North America
  – 34% in Russia
Biofuels versus food

- Food security
- Food shortages
- Production of liquid biofuels from food crops
- Wood-based biofuels do not compete with food
  - Forests, including harvesting residues
  - Wood processing residues
  - Recycling of wood and paper products
Green building systems

- New market
- New market driver

Photo: APA.
Deforestation

- Issue plaguing the forest sector
- Consumers confused between tropical deforestation and state of forests in Europe
- Strong policies in UNECE region for sustainable forest management
Change in annual forest area, 1990-2000

Source: FAO Global Forest Resources Assessment 2000
### Change in annual forest area, 1990-2000
(million hectares)

<table>
<thead>
<tr>
<th></th>
<th>Deforestation</th>
<th>Increase</th>
<th>Net change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tropics</td>
<td>-14.2</td>
<td>+1.9</td>
<td>-12.3</td>
</tr>
<tr>
<td>Temperate</td>
<td>-0.4</td>
<td>+3.3</td>
<td>+2.9</td>
</tr>
<tr>
<td>World</td>
<td>-14.6</td>
<td>+5.2</td>
<td>-9.4</td>
</tr>
</tbody>
</table>

Note: The change in annual forest area was recalculated at -7.3 million ha per year from 2000 to 2005 by the FAO Global Forest Resources Assessment in 2005.

**Source:** FAO Global Forest Resources Assessment 2000

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Causes of deforestation

- Forest conversion
  - Agricultural, including
    - Pastures for animals
    - Bioenergy plantations: palm oil, sugar cane
  - Urbanization

- Unsustainable forest management
  - Poor harvesting practices
  - Insufficient regeneration
  - Fire, insects, disease
  - Over harvest of fuelwood

- Poverty and over population
Forest resources growing stock

Source: UNECE/FAO Forest Resources Assessment 2005
Net annual growth vs. fellings

Source: UNECE/FAO Forest Resources Assessment 2005

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Forest resources in Europe*

- Only 60% of the annual growth is harvested
- Forest volume increases ~700,000 m³ daily
- Forest area growing: ~700,000 ha annually

* Europe = 42 countries for the UN Economic Commission for Europe

Source: UNECE/FAO Forest Resources Assessment
Timber Committee: corporate social responsibility

- Trade associations issuing codes of conduct
- Companies developing CSR policies to demonstrate their positive social impact
- CSR policies are a means to
  - Shape consumer perceptions
  - Gain competitive edge
  - Improve international recognition and perception
- Mutual recognition of trade associations’ CSR policies could facilitate trade.
Illegal logging and trade

• G8
  - “support existing processes to combat illegal logging”
  - “one of the most difficult obstacles to further progress in realizing sustainable forest management and thereof, in protecting forests worldwide”

• Legislation in US and EU

• Trade associations establishing and updating codes of conduct
  - UK TTF proactively made members establish “due diligence risk assessment systems”
  - Timber Trade Action Plan coordinates associations
IV. Wood energy markets
(the oldest and newest market)

Nice discovery Og, but what about global warming?
Wood energy markets

- Driven by high fossil fuel costs
- Driven by policies to promote renewable energies
  - 20% by 2020 in EU
  - 10% of transport fuels by 2020 in EU
- Driven by policies for energy security


2005 share | 2011 target | 2020 target
---|---|---
Austria | | |
Belgium | | |
Bulgaria | | |
Cyprus | | |
Czech Republic | | |
Denmark | | |
Estonia | | |
Finland | | |
France | | |
Germany | | |
Greece | | |
Hungary | | |
Ireland | | |
Italy | | |
Latvia | | |
Lithuania | | |
Luxembourg | | |
Malta | | |
Netherlands | | |
Poland | | |
Portugal | | |
Romania | | |
Slovakia | | |
Slovenia | | |
Spain | | |
Sweden | | |
United Kingdom | | |
Wood energy markets

- Similar targets in North and South America, Asia, Oceania and Africa
  - US target of 15% biofuels for transport by 2022
  - US target of 30% by 2030
- Most energy demand for space and water heating
- Wood pellet industry growing
  - Transportation costs, especially Canada to Europe
- Future: cellulosic ethanol
Pellet consumption et production

Source: Canadian Wood Pellet Association, 2007
Wood fuel production

Sources: UNECE/FAO TIMBER database, UNECE Timber Committee forecasts, October 2007

Sources: UNECE/FAO TIMBER database, and UNECE Timber Committee forecasts, October 2007
Situation today

• Record high petroleum prices
• Energy sources security problems
• Climate change policies
• Wood industries’ raw material needs increasing
• Wood energy production increasing
• Roundwood and residue prices increasing
Utilization of biomass in the EU

Source: EurObserv’ER, 2007
Wood for the wood-based industries

- Increasing demand forecast
- Wood raw material prices climbing
- Competition for roundwood and residues
  - Local and regional
  - Short-term intense!
  - Medium term?
Demand for wood and fibre in western Europe, *without* energy, 1960-2020

Growth in demand *without* energy

Gap = residues

WRME = Wood raw material equivalent

Source: UNECE/FAO European Forest Sector Outlook Study, 2005
Results of a UNECE/FAO study on “Wood resources availability and demands: Implications of renewable energy policies”

- Wood is the major renewable energy source in Europe
- Woodfuel consumption much greater than previously measured
- Lack precise statistics
- Increasing wood energy changes long-term forecasts for the sector’s wood needs
### Dilemma or opportunity?
(million m³)

<table>
<thead>
<tr>
<th>Year</th>
<th>Supply</th>
<th>Demand</th>
<th>“Gap”</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>775</td>
<td>821</td>
<td>-47</td>
</tr>
<tr>
<td>2010</td>
<td>791</td>
<td>976</td>
<td>-185</td>
</tr>
<tr>
<td>2020</td>
<td>825</td>
<td>1274</td>
<td>-448</td>
</tr>
</tbody>
</table>

How to fill the “gap”

• Increase harvests from European forests
  – More of annual growth
  – More standing timber

• Remove more biomass from forests
  – Tree tops
  – Branches, needles, leaves

• Harvest wood outside forests (urban, hedgerows)

• Increase wood recycling and residue reuse

• Import biomass, wood fuels

• Improve energy use efficiency
Possible consequences of a future gap

- Renewable energy targets not achieved
- Goals achieved, but not only with wood
  - Other sources of biomass
  - Other renewable energy sources
- Wood industry growth slowed
  - Raw material unavailable
  - Price of raw material too expensive
Import more fibre? From Russia??

Source: UNECE/FAO Forest Resources Assessment
Import more fibre? From Russia??
Annual growth vs. annual harvests

**ATTENTION!**
New Russian export taxes
- April 2008: € 15/m³ conifers
- Jan. 2009: € 50/m³ conifers
- Jan. 2011: € 50/m³ birch

Source: UNECE/FAO Forest Resources Assessment
Mobilize more wood

• Remember ~40% of annual growth remains in Europe’s forests each year

• Confederation of European Forest Owners estimates on private forest lands
  - 150 million m$^3$ more harvest possible (~half of surplus 40%)
  - 25% more production through better silviculture

• How many billion cubic metres of standing timber are enough?
V. Conclusions
UNECE Timber Committee on “Energy”

• Entire forest sector being transformed by increased wood energy in the UNECE region
  – Forest owners and managers
  – Wood industry and markets
  – Bioenergy industry

• Growing wood energy is both a challenge and an opportunity

• Government policies must consider
  – Needs of the forest sector, especially the wood industry
  – Needs for bioenergy
UNECE Timber Committee on “Energy”

- Interaction of policies and markets is complex
- Policies promoting bioenergy
  - Strongly increase wood energy consumption
  - Open important markets
  - Create new trade
Swedish imports of wood fuels

Source: UNECE/FAO
Forest Products Annual Market Review

- Unrefined woodfuels (e.g. chips)
- Tall oil
- Refined woodfuels (e.g. pellets)
- Recovered wood chips
- Olive seeds
- Refuse derived pellets
- Peat
UNECE Timber Committee on “Energy”

- Pellet demand at record level
- Pellet prices peaked in 2007, except Sweden
- Increasing pellet trade
  - Especially strong in Germany, Sweden, Austria
  - 80% of N. American production exported to Europe
- Consumption of wood energy much greater than previously known
Future of the forest sector

• Integrated production of wood & paper products with energy production

• Greater value of energy production by integrated plants than by “primary wood & paper” products?!

• Profitability of the sector linked to wood energy
  - Challenge for certain industries, e.g. panels
  - Opportunity for forest owners, sawmills, energy suppliers
VI. Recommendations

• Know the provenance of your wood, for products and energy
  – Be sure it’s sustainable and legal
  – Not only for your company today, and for your company tomorrow
  – But for the sake of the entire sector's reputation

• Work together to increase wood demand through effective promotion

• Promote *modern* wood energy systems

• Use wood efficiently, with highest values first, and eventually recycle for new products and energy
VII. Discussion & questions