Customers and markets of forest biomass

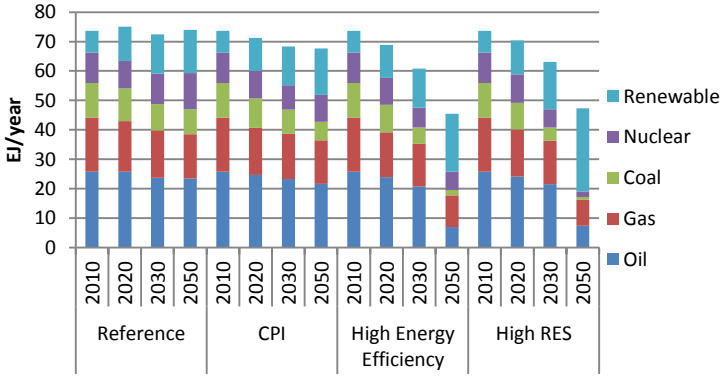
Newsletter 1 l 2013

The current role of forest biomass

There are many facets, issues, policies and stakeholders influencing the dynamic realm and path of development related to energy needs today and in the future. While past and current energy utilization has mainly come from finite fossil sources for providing energy to grow economies and improve living conditions, it has also produced negative externalities related to environmental impacts.

The increased environmental awareness related to climate change and the pursuit of energy independence at the country level in order to lessen the impact of price volatility associated with traditional fossil fuels is leading to growing reliance on alternative and renewable energy sources.

At the EU level current (2010) gross inland energy consumption is 74 EJ/year - with oil, coal and natural gas representing the biggest contributors to this energy picture with a share of approximately 35%, 16% and 24%. The share of energy consumed from renewable sources has more than doubled from under 5% prior to 2004 to over 10% in 2010, being 7 EJ/year. Currently, energy production from forest biomass represents 3.4 of the 4.7 EJ/year of total biomass and renewable waste energy production in the EU which accounts for approximately 49% of total renewable energy consumption.



Gross Inland Energy Consumption, EU27, 2010 to 2050 Source: Energy Roadmap 2050, Impact Assessment and Scenario Analysis

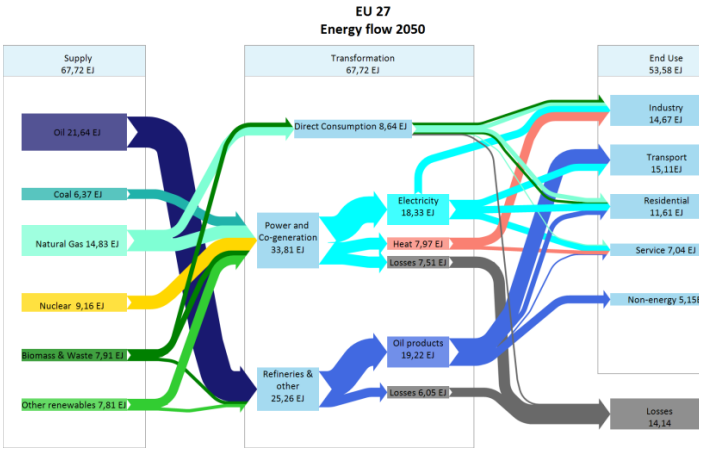
The future role of forest biomass

While total energy demand from the EU is expected to remain relatively stable or decline slightly between 2010 and 2050 (Current Policy Initiatives scenario), the amount of energy being provided by renewable sources is expected to more than double in this period. In absolute terms this means that the level of energy being provided increases from currently 7 EJ/year to over 16 EJ/year in 2050. The amount of renewable energy being provided by forest biomass is uncertain, but if it continues to represent the same proportion of renewable energy as in 2010, that would translate into 7.7 EJ/year of energy being provided by forest biomass by 2050.

EU27 Energy Pathways

The major changes expected between the EU energy pathways in 2010 and 2050 involves significant reductions in energy supplied from oil and coal sources while increasing utilization of biomass and

renewable energy, primarily through increased technological development in the transformation processes that allow greater energy transformation efficiencies with fewer energy losses. While total energy use is expected to be less, energy supplied from biomass and waste is expected to increase significantly.



Estimated EU Energy Supply, Transformation and End Use, 2010

This results in increased energy from biomass and waste in all transformation processes, but especially for power and co-generation which reduces losses from 17.15 to 7.51 EJ/year between 2010 and 2050. This is especially noteworthy given that total electrical output increases by 8.12 EJ/year and heat energy increases by 5.75 EJ/year by 2050. The direct energy consumption from biomass and waste is more evenly divided between the industry and residential sectors by 2050, and increasing amounts of biofuels from biomass and waste are expected to flow through the refinery processes to satisfy mostly transport markets

Markets and regions

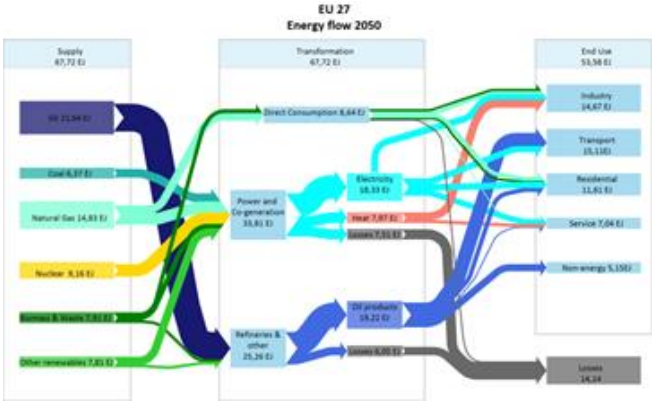
The market for future forest biomass may be differentiated into:

i. Electricity Generation
   - Co-Firing Combustion

ii. Heat/Power and Direct Heating
   - Combined Heat and Power
   - Direct Heating

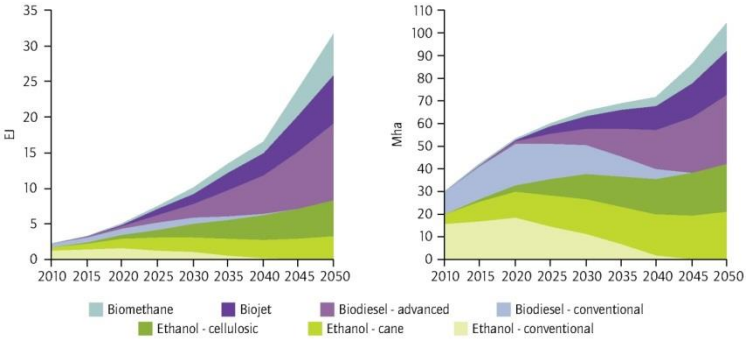
iii. Biofuels and Biochemicals
   - Transport Biofuels (freight, shipping, aviation)
   - Biochemicals
   - Industrial Biofuels

In terms of utilization, forest biomass is primarily utilized to produce heat from solids, predominately in the industry and residential sector. This trend is expected to continue to 2020, but with an increasing strategic focus on combined heat and power generation and increased development of biofuels and biochemicals.



Estimated EU Energy Supply, Transformation and End Use, 2050

The demand for all biofuels is expected to increase dramatically by 2050, following the IEA Technology roadmap for Biofuels (figure below). This is especially true for advanced biodiesel and biojet fuel.



Demand of biofuels, 2010 to 2050

For more information and sources please read the full report "*Customers and markets of forest biomass of the future*" available at www.infres.eu.

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