



Distr.
GENERAL

TIM/SEM.1/2003/R.11
20 February 2003
Original: ENGLISH

Seminar on
STRATEGIES FOR THE SOUND USE OF WOOD
Poiana Brasov, Romania
24-27 March 2003

Impacts of the EU energy policy on the woodworking industries
The sound use of wood from an industries perspective

Session I

Paper by Mr. Chris Van Riet,
Environmental Adviser, European Confederation of Woodworking Industries (CEI-Bois), Brussels

ABSTRACT

The study "EU Energy Policy Impact on the Forest-Based Industries" carried out by consultants reporting to a joint DG Enterprise/Industry (CEPI/CEI-Bois) Steering Committee revealed that the measures set out in the 1997 White Paper on renewable energy, if implemented, would have a significant impact on the timber and wood residues market. The EU objective is to double the current contribution of renewables to gross energy production to a level of 12% by the year 2010. Biomass including wood, used for energy generation is targeted to triple its contribution.

Although the White Paper did not specify exact quantities for the increased use of fuelled wood, its likely contribution has been calculated for various energy consumption scenarios as an extra 27Mtoe, which would imply an extra demand for wood to the tune of 163 million m³. This would come either directly as fuel wood, used for domestic heating, or indirectly as industrially used wood residues, which would otherwise be available for the manufacturing of wood-based products. Meanwhile, national and regional authorities transformed the White Paper policy into legislative and subsidy regulations, encouraging mainly the intensified use of wood as a fuel. Actual price evolutions of raw materials for the woodworking industries fully confirm the results of the 2000 Impact Study and competitiveness of the industry is jeopardised.

This illustrates how a regulatory text legitimately intending to mitigate greenhouse gas emissions and promoting the production and use of renewable energy sources is likely to have an adverse impact on the sustainable use of natural resources, in particular woody biomass, by:

- leading to a potential shortage of wood raw material for the wood-based industries, whose environmental credentials have been improving since decades;
- leading to the likely use of other materials and products which are
 - not renewable;
 - sometimes recyclable and
 - always less energy-efficientso, in general, **less eco-efficient** as compared to wood and wood-based products;
- leading to an increased pressure on the forest resource, thereby further endangering notably the biological diversity.

The Woodworking Industries insist on avoiding that wood, suitable for the production of wood-based products, would be used directly for energy generation. Firstly, the energy markets should be governed by free market principles, which is actually not the case. Furthermore, from a material efficiency point of view, the carbon cycle and wood value chain should be respected, so that wooden products over their lifetime are functionally cascading from a primary product, preferentially re-used, perhaps recycled and eventually used as a source of energy. This would largely help maximising the carbon retention efficiency of wood and wood-based products and optimally support climate change mitigation.

Keywords: (EU) energy policy, renewable energy sources (RES), wood value chain, wood-products as carbon sink, wood availability for woodworking industries.

INTRODUCTION

The European (EU15) woodworking industry (WWI) stands for well over 42,000 companies, two million employees and an annual turnover of 165 billion EUR. Sustainable availability of wood is crucial for the sector.

The need for an enhanced use of renewable energy sources (RES) as a significant means of meeting the Kyoto targets on the reduction of greenhouse gas emissions, is fully acknowledged and supported by the WWIs and has historically yet led to a substantial increase in the use of biomass in the sector. So, for instance, about 65% of process energy needed for drying and heating in saw-mills and wood-based panel plants is generated by wood-residues, unsuitable for the manufacturing of products. CEI-Bois wishes to stress that the WWIs are and have been for many years contributing to a sustainable use of energy and natural resources by:

- Important energy savings: modern heating and CHP (combined heat and power generation) installations generate the major part of the energy required for our industrial processes from woody biomass unsuitable for recycling;
- Active involvement in sustainable forest management: the European forests are expanding [1];
- Continuously improving recycling rates of wood and wood products through considerable investments in modern technologies.

All these efforts represent a vital contribution to the mitigation of climate change.

ENERGY POLICY IMPACT STUDY 2000

In 2000 a study “EU Energy Policy Impact on the Forest-Based Industries” was carried out by consultants reporting to a joint DG Enterprise/Industry (CEPI/CEI-Bois) Steering Committee [1]. This study revealed that the measures set out in the 1997 White Paper on renewable energy, if implemented, would have a significant impact on the timber and wood residues market. The target set by the White Paper is to double the current contribution of renewables to gross energy production to a level of 12% by the year 2010. Biomass, mainly wood, used for energy generation is targeted to triple its contribution.

Market inter-action between the traditional Forest-Based Industries and the renewable energy industry has been simulated until 2010 based on four scenarios: “Business-as-Usual”, “White Paper”, “Foresters” and “Minimum Pain”.

The “Business as Usual” scenario was a benchmark scenario against which all alternatives were compared. The “White Paper” scenario is based on the EU White Paper policy’s strategy and action plan aiming at doubling the share of renewable sources for energy which calls for an additional demand of 163 million m³ of wood, or 27 Mtoe, on top of the “Business as Usual” scenario. A “Foresters” scenario was introduced as the next logical step after the “White Paper” scenario demand shift. With higher prices, new volumes of wood, even new types of raw material (e.g. green chips from forest residues), were envisaged to enter the market place. A “Minimum Pain” scenario was elaborated as a third and final alternative to the “Business as Usual” scenario. On top of the forest residues of the “Foresters” scenario, industrial residues and post-consumer wood residues were considered to be recovered, as part of the future wood supply. The impacts on the Forest-Based Industries differ according to the assumptions used in these scenarios as depicted in Figure 1.

The calculation results fortunately also showed how improving the supply of wood from different sources could reduce the negative impact on the Forest-Based Industries. The EU’s dependency on forest resources from outside Europe is though estimated to rise sharply. Even in the situation where all the available resources were to be used in an efficient way, the European Forest-Based Industries will still severely suffer. Volumes of raw materials available for the production of sawn wood, wood-based panels and pulp and paper were namely estimated to decrease with up to 17%, 9%, 28% and 12% respectively.

The effect of the White Paper policy was also predicted to have a significant influence on price levels. In the EU, round wood prices were calculated to increase in an order of magnitude ranging from 75% in the worst case to 18-26% in the “Minimum Pain” scenario (see Figure 2). Prices forest of products in general would also increase. Under the most favourable conditions sawn wood, wood-based panels and pulp prices would rise with 11%, 5% and 13% above the “Business as Usual” price levels respectively.

It is not surprising that the study concludes with:

The industry “will hardly, if not at all” be able to absorb the shift which will be induced by the White Paper “without detrimental effects on their competition for wood and hence their overall competitiveness”, and: “A reduced target for wood “could be compensated by increased targets for other bio fuels, whose production would even have beneficial effects on agriculture”.

So, the major problem for the Forest-Based Industries on a long-term basis will be the availability of wood at a competitive price level.

OBSERVED IMPACT ON THE WOODWORKING INDUSTRIES BY THE END OF 2002

The Impact Study clearly demonstrates how a regulatory text legitimately intending to mitigate greenhouse gas emissions and promoting the production and use of renewable energy sources is likely to have an adverse impact on the sustainable use of natural resources, in particular woody biomass, by:

- leading to a potential shortage of wood raw material for the wood-based industries, whose environmental credentials have been improving since decades;
- leading to the likely use of other materials and products which are
 - not renewable;
 - sometimes recyclable and
 - always less energy-efficientso which are, in general, **less eco-efficient** as compared to wood and wood-based products;
- leading to an increased pressure on the forest resource, thereby further endangering notably the biological diversity.

Directive 2001/77/EC, on the promotion of electricity produced from RES, was the first initiative to execute the 1997 White Paper on Renewable Energy. Many European countries thereupon choose for the easiest way of implementing this Directive: **burn more wood and stimulate this evolution by subsidising green energy**. Some actual and simple facts illustrate the already visible consequences of the increased use of woody biomass for the generation of electricity [3]:

- In the first semester of 2002, prices of sawdust and wood chips imported from Austria into Italy, for the production of wood-based panels, increased with an amount of 15 to up to 50% as compared to 2001;
- Prices of coniferous logs increased with 23% with a tendency to grow towards 35%;
- Woodworking plants in Italy and France declared to have lost raw material suppliers to electricity producers.
- In Denmark a particleboard plant had to close the doors, because of loss of competitiveness, following tremendous raw material price raises;
- In Austria, a country rich in wood resources, certain biomass fractions such as bark and saw-dust are hard to buy on the open market due to the increased demand. Prices also went up significantly;
- An increasing amount of more noble wood fractions (forest thinnings, wood chips = raw material for particle board and MDF-panels) are burnt, because subsidies (e.g. feed-in tariffs) allow the energy sector to pay more for this raw material.

SUSTAINABLE MANAGEMENT OF RESOURCES & RESPECT FOR THE CARBON CYCLE

Contrary to the management and use of non-renewable resources, Sustainable Forest Management has proven not to be detrimental to the increase of the European forest resource [1,4]. Moreover, both because of the substitution effect (replacing amongst others non-renewable materials that are requesting a lot more energy for manufacturing) and the life-cycle approach (respecting the carbon cycle), using wood extracted from the forest for manufacturing products contributes to sustainable development.

However, at present the value chain of the wood resource is not respected, since material that is suitable for the production of wood-based products, is being used directly for energy generation. This is especially the case because the energy market is not governed by free market principles, for the moment. Furthermore, from a material efficiency point of view, the carbon cycle and wood life and value chain should be respected, so that wooden products over their lifetime are functionally cascading from a primary product, preferentially re-used, perhaps recycled and eventually used as a source of energy (Figure 3). This would largely help maximising the carbon retention efficiency of wood and wood-based products and optimally support climate change mitigation.

The WWIs nevertheless see means of improving the situation. The efficiency of harvesting can be promoted by more intensified usage of wood residues, currently left behind in the forests and

generating CO₂ and CH₄ during their subsequent decomposition. Techniques for growing forests might be further improved to increase the yield per hectare of forest and to enhance the quality of harvested wood towards final applications in paper, timber or wood-based products. Within the EU(15-25) agricultural land is recurrently becoming available for alternative functions. Additional forestation could be a valuable solution to give this land a new environmentally friendly destination.

Recycling and reuse of wood and wood-based products deserve further attention. The forest-based industries will continue to improve the quality of their processes in order to further reduce the use of primary raw materials, per unit end product. On the other hand government policies for biomass energy need to be revised or counterbalanced with additional supplies of wood, as mentioned above.

As an example we can cite a recently published study on the evolution of biomass power stations, based on the combustion of recycled wood in Germany [5]. If all investments planned are also realised as announced, Germany will soon be confronted with scarcity of recycled wood for energy purposes and the power stations will have to turn towards other wood sources. The study collected data for 60 wood power stations from which already 9 are in operation, while the others are in different phases of realisation. It estimates the available amount of recycled wood in Germany at 3.5 Million Tonnes. This number takes into account the 700,000 Tonnes already used for combustion, as well as exported wood. Plants under construction or in a permitted stage will consume about 2.5 Million Tonnes, whereas planned power stations would consume another 2 Million Tonnes of recycled wood. This means that a huge deficiency of 1 Million Tonnes, representing 1/6 of the actual annual consumption need of the German wood-based panels industry, will be created when all plans are completed. The study concludes that this will lead to a battle on the market of recycled wood, which causes already today prices to rise drastically, with each announcement of a new power plant. This in turn will cause uncertainty for investors, who will be urged to secure their energy resource feed on the market of other wood-based products.

Finally, sustainability contains also socio-economic aspects. During the last Forest-Based Industries Forum some relevant numbers were published on these items. Even without taking into account the energy content of wood-based materials at the end of their lifecycle, the added value of carpentry products was calculated to be 1044 EUR/tonne dry wood, as compared to 118 EUR/tonne for fuel use. Moreover, carpentry generates 54 manhours/tonne of dry wood, whereas energy use generates only 2 manhours/tonne. These numbers illustrate how valuable the sound use of wood-based materials can be, largely outweighing futile burning.

CONCLUSIONS AND RECOMMENDATIONS

The European WWI recommends sincere and visionary thinking about the chosen long-term strategies for sustainable use of forest resources, at a (enlarged) European level with a realistic consideration of all three pillars of sustainable development: environment, economy and social benefits, treated in an equal way.

From a sustainability point of view, the European Woodworking Industry will continue to promote the enhanced use of wood products, to increase recycling of used wood and wood-based materials and to incessantly improve processes extending the life of these products. The final decision for sustainable use of resources and products though is in the hands of the consumer. Once a concluding European strategy for the sustainable use of resources, based on sound equilibrating of all arguments, has been defined it is recommended to disseminate this view strongly and on a wide basis towards the national governments, to industry, to traders and distributors and to the general public. All stakeholders involved should be convinced of sound sustainability practices and consequently apply them.

CEI-Bois though insists on ensuring the continuous availability of wood raw materials on a sustainable basis, the safeguarding of the competitiveness of Europe's woodworking sector and resulting job safekeeping.

Therefore:

- Avoid massive burning of wood for purely energetic reasons;
- Respect the value chain of wood and wood-based products, as these have been proven to be long-lasting pools of carbon (sinks), hence substantially contributing to climate change mitigation...and isn't that what it's all about?
- Do not "subsidise away" wood as a raw material for durable applications by favouring the firing of trees, unless locally socio-economic and environmental considerations necessitate other solutions;
- Recognise the superior eco-efficiency of wood-based products and their supreme properties in recycling with minimal energy use, as compared to other materials;
- Focus future EU and member states research policies on efficient recovery of forest residues and development of biomass sources specifically grown for energy generation;
- Reconsider and adapt the "163 million m³ fuelwood-for-energy" target to a realistic volume:

only burn wood after it has been fully and soundly used

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Figure 1: Wood availability in 2010, following various scenarios

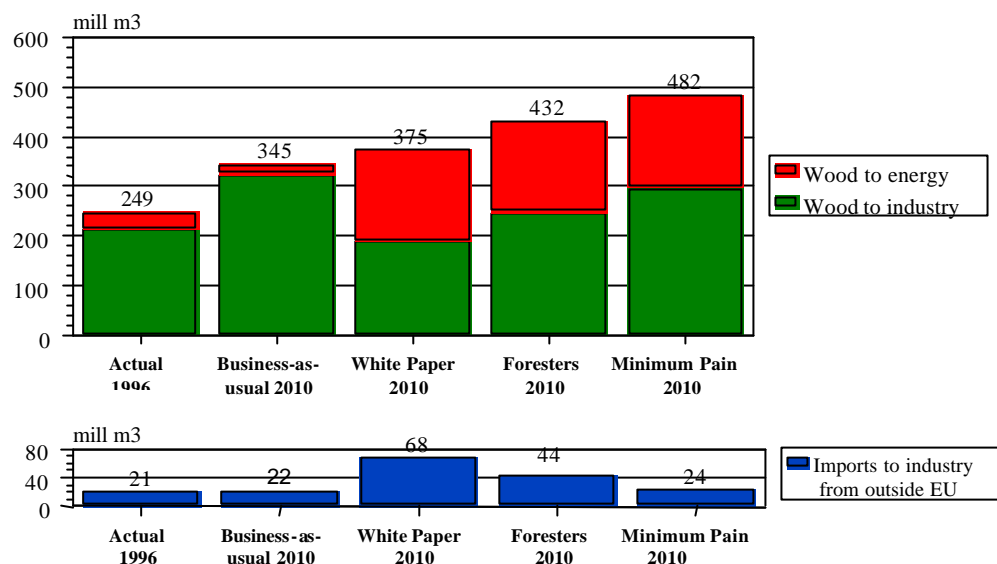


Figure 2: RES – Impact on wood prices

% Price changes 1996-2010 in real terms		
Supply/scenario	Low wood supply (inelastic)	High wood supply (elastic)
<i>Business as usual</i>	+ 18%	0%
White Paper = Additional 163 Mio m ³ for energy	+ 75%	+ 39%
Foresters = Higher price, new raw material	+ 49%	+ 29%
Minimum Pain = More industrial and post-consumer residues	+ 26%	+ 18%

Figure 3: The wood-based products closed carbon cycle

