

## Renewable Energy in Heating

### Eurofuel's Comments on the Commission's Renewable Energy Roadmap, and the Potential Directive on the Use of Renewable Energy Sources in Heating

The European Heating Oil Association (Eurofuel) represents the national organisations<sup>1</sup> that promote the use of fuel for domestic heating in 10 European countries, including over 10,000 companies. Eurofuel is engaged in the development of common standards and innovative techniques for heating oil and equipment, primarily in the domestic market. Our members are committed to ensuring the competitiveness and efficiency of heating oil, while reducing its environmental footprint.

Eurofuel and its members would like to offer the following comments on the **Renewable Energy Roadmap and the potential Community measure on Renewable Energy Sources in Heating and Cooling** (the so-called "RES-H/C" directive), in addition to the views Eurofuel submitted to the Commission via DG TREN's October 2006 web-based public consultation on RES-H/C.

Eurofuel endorses the Commission's staged flexible approach to both targets and sectors in the Renewable Energy Roadmap for the three sectors of electricity, heating/ cooling and transport, defined firstly at European Union level, then at national levels according to geographical variations, and available natural and renewable resources. One example of *inter-sectoral flexibility is the huge potential for liquid biofuels in heating*, i.e., in addition to the *transport* sector.

Eurofuel emphasises its wholehearted support for policy measures which will achieve reductions in Greenhouse Gas emissions. However, the introduction of Renewable Energy Sources (RES) is only one way of fulfilling this aim; energy efficiency measures should be given priority, followed by *eco-efficient* adoption of RES. There are already three directives which promote both energy-saving and the adoption of RES in the heating sector: Energy Performance of Buildings (2002/91/EC, 16.12.2002), Boiler Efficiency (92/42/EEC, 21.5.1992) and Energy-using Products (2005/32/EC, 6.7.2005). Consequently, Eurofuel sees no need for another directive (the RES-H proposal) in this sector. Eurofuel would like to submit to the Commission the following additional views, specifically with regard to the heating sector:

1. **Energy Efficiency Measures are More "Efficient" at Reducing Greenhouse Gas and Associated Emissions than Solely Increasing the Share of Renewables**

If a new RES-H/C directive is proposed, in Eurofuel's opinion this directive must not force consumers to invest in renewable technology and/ or energy, whilst there are more cost-effective ways to save energy and to reduce associated Greenhouse Gas (GHG) emissions. The principal environmental aim behind an overall "Energy Policy for Europe", and an associated Renewable Energy Roadmap, should be to reduce greenhouse gases (GHGs), and - where possible - other associated emissions *along the whole supply chain*. The most environmentally and economically efficient way of achieving this is to increase energy efficiency, as advocated in the Commission's Energy Efficiency Action Plan (COM(2006)545 final, 19.10.2006), which emphasised the fundamentally-important concept of "Negawatts".

2. **Life Cycle "Basket" of Emissions and Use of Natural Resources Approach - Combining Higher Energy Efficiency and Increased Use of Renewables**

Rather than specific renewable energy sources (RES) introduction targets, Eurofuel would favour a combined energy efficiency and RES policy approach, where a "basket" of (a) use of natural resources and (b) emissions is considered. This policy method adopts a more holistic life cycle approach covering "well to heat production", and should aim to find the Best Appropriate Technologies (BAT) available to the heating sector, from a multi-objective stance. Technological

---

<sup>1</sup> Please see Annex 1

advances and Community policy achievements of the past decades should not be ignored, in the rush to promote RES. Specifically, Eurofuel would like to draw the Commission's attention to:

- Very high emissions of particulate matter (PM10 and PM2.5) from heating equipment which burns solid biomass, e.g., modern wood pellets equipment emits PM levels 80-110 times those of modern oil-fired heating equipment<sup>2</sup>.
- Similarly, "acid rain" emissions are much higher from heating equipment which burns solid biomass, compared to modern oil heating equipment using low sulphur heating oil. Modern pellets equipment emits 34 higher sulphur dioxide emissions; emissions of nitrogen oxides are three times higher<sup>3</sup>. Low sulphur heating oil is becoming the norm in many Member States.
- Solid biomass heating equipment also frequently emits much higher carbon monoxide (CO), which present serious consumer safety issues (CO poisoning). Emissions of CO from modern pellets equipment have been measured at 16 times those of modern oil-fired equipment<sup>4</sup>.
- The much higher energy content of liquid biofuels - up to three times greater than wood and wood pellets. This is a crucial property: (i) consumers need much greater storage space for wood/ wood pellets, and (ii) environmental supply chain transport issues of some low energy density wood pellets are now being sourced long-distance, e.g., from the Americas.
- Modern oil heating boilers have efficiency levels of over 95% (actual efficiency level, based on fuel gross calorific values, H<sub>s</sub>). By comparison, solid biomass heating boilers have much lower efficiency levels (typically 75% to 80%); this has been explicitly acknowledged in preparatory studies for the Energy-using Products (EuP) directive, where solid biomass boilers are addressed in a separate "Lot" of commissioned studies from oil- or gas-fired boilers.
- The importance of optimising whole heating system design, including installing the most modern, efficient heating equipment and system controls (saving up to 20-30 % energy per unit, compared to older, less efficient technology). Additional measures include retrofitting more effective house insulation to existing houses, and ensuring that new houses are insulated to a high standard, e.g., "Low Energy" or "Passive House" standards, as the Commission emphasised in the aforementioned October 2006 Energy Efficiency Action Plan.

### 3. ***Eco-Efficiency: Integrated Hybrid Heating Solutions Combining Oil Heating and Renewable Energy Sources - Solar Thermal, and Liquid Biofuels Technologies***

Please see the diagrammatic illustration in *Annex 2*.

- ***Solar Thermal Integration:*** Many oil heating households are now using heating systems which integrate solar thermal collectors, to provide hot water and to assist water-based room heating. Between 43% and 56% of the 329,000 households in Germany with solar thermal equipment have oil heating as their primary source of energy<sup>5</sup>. In an average year, these hybrid solar thermal/ conventional oil heating systems result in total energy consumption savings of typically between 12% and 20% (Northern Europe conditions), with commensurate reductions in Greenhouse Gas emissions. If all oil heating systems in the EU-25 (consuming some 75 million tonnes of heating oil in 2004 [EUROSTAT]) incorporated solar thermal collectors, this would conserve 9 Mt (12%) to 15 Mt (20%) of heating oil.
- ***Progressive Introduction of Liquid Biofuels:*** Mixing liquid biofuels with conventional heating oil is a comparatively economical means of promoting RES in the heating sector, because the existing "conventional energy" consumer does not have to purchase new boiler/ storage equipment, as is required for biomass heating systems. Eurofuel's member organisations are conducting exhaustive long-term laboratory and "field" tests with actual

---

<sup>2</sup> Sources: independent German consumer "Stiftung Warentest" analyses; German Umweltbundesamt; Austrian test station BLT-Wieselburg.

<sup>3</sup> Sources: as above, plus German "Blue Angel" ecolabel.

<sup>4</sup> Sources: chimney sweeps and Umweltschutzamt in Voralberg, Austria; BLT-Wieselburg.

<sup>5</sup> Sources: ZIV (German Federation of Chimney Sweeps); BDH (German House, Energy and Environmental Technology Federation); Dr Spence International.

consumers' heating installations to evaluate the feasibility and compatibility of 5% to 100% blends of "First Generation" biofuels (biodiesel and biokerosene, from oleaginous crops) with conventional heating oil. The USA oil heating industry already commonly uses 5% soya-based FAME biofuel B5 blends, and 20% soya-based FAME (B20) blends are also being sold. ***A B5 biofuel mix in all EU-27 oil heating systems would mean heating oil savings of almost 4 Mt, increasing to 15 Mt of heating oil savings once a B20 biofuel mix becomes possible.***

***Combining the above solar thermal and 1<sup>st</sup> Generation biofuels hybrid RES solutions gives potential annual heating oil savings of 13 Mt - 30 Mt for the EU-27 Member States (i.e., approximately 16% to 38% of the 80 Mtoe per annum additional RES use indicated in the 2020 Renewables Growth diagram in the Renewable Energy Road Map Annex).***

"Second Generation" Biomass to Liquid (BTL) biofuels from whole crop or other (e.g., domestic waste) sources, once economical, will have no compatibility problems with conventional heating oil/ kerosene, and could potentially be used at very high concentration levels, even up to 100%.

***Given the opportunities outlined above for liquid biofuels in the heating sector, it is surprising to note that there is no mention of the potential for liquid biofuels for RES-H in the illustrative Annex to the Renewable Energy Roadmap, especially when the competitive price range of biofuels is considered, compared to other RES heating options (Section 4.3 figures, Renewable Energy Roadmap). As oil heating comprises some 20% of the EU heating sector, liquid bio heating oil blends offer easy access to RES for all of these consumers.***

#### **4. *Liquid Heating Fuels: A Secure, Constant, Network-Free and Deregulated Energy Supply***

Liquid heating fuels offer security of supply: firstly, via the three months of stocks maintained at national level in most EU Member States, and secondly via the plethora of individual supplies maintained in consumers' own oil tanks (which can be over one year's stocks, depending on tank size). Unlike the intermittent supplies to the grid provided by RES-based electricity, mineral- or biofuel-based liquid fuels provide a constant energy source, which also promotes the concept of the "autonomous energy household", i.e., infrastructure flexibility, free from dependence on either gas pipelines or electricity grids. Liquid fuels also offer a completely deregulated and unbundled energy supply, via a large number of distributors.

In the near future, the heating sector will have a reduced overall energy demand, thanks to better insulation, more efficient heating technology, and integration of solar thermal. There will be only short peak-load periods in winter needing additional heat. Liquid fuels are the optimal economic and environmental systems solution to manage these future energy demands, as each consumer's independent individual energy storage is available, network-free, when required.

#### **5. *Financial Incentive Schemes & Potential Market Distortions***

Eurofuel's fundamental stance is that any financial incentive schemes should recognise energy savings and introduction of RES on an equal basis. In addition, all RES should be considered on an equal footing. Thorough regulatory impact assessments should be undertaken prior to the adoption of any incentive schemes at the Community level, and at national levels, to ensure that socio-economic effects on the conventional energy heating industry are taken into account.

Eurofuel welcomes financial incentive schemes such as Research & Development promotion (e.g., the 7<sup>th</sup> Research Framework Programme), some partial lead-in subsidies for innovative heating equipment, and financial links to energy savings provided by other directives, such as the Energy Services Directive (2006/32/EC, 5.4.2006).

#### **6. *Potential Conflict with Other RES Directives***

It is important that overlaps with the "RES-E" directive (Directive 2001/77/EC) be avoided. Also regarding electricity policies and RES, expansion in the use of electricity for heating purposes is often inefficient, and may be environmentally-damaging, because highly-polluting technologies, such as coal-fired electricity generation, are required to meet the marginal electricity demand increases during periods of "peak load".

**7. Outreach (Training and Certification) Schemes to Ensure Efficient Building Design, Efficient Heating System Design and Eco-Efficient Public Procurement**

Eurofuel wholeheartedly endorses the provision of more funding for training of personnel associated with the heating sector along the whole supply chain, from “well to chimney”.

**8. Legal Basis for a Community Measure on Renewable Energy Sources in Heating/ Cooling**

In Eurofuel’s opinion, any future measure on RES-H should use Article 95 as a legal base in order to explicitly avoid internal market distortions and to ensure compatibility of equipment between Member States. Using Article 175 could result in Member States unilaterally proposing certification and equipment standardisation schemes, supposedly for environmental reasons; however, there is a risk that these measures may amount to no more than national protectionism in disguise.

Eurofuel looks forward to a constructive discussion with the Commission on the Renewable Energy Roadmap and the potential Community measure on Renewable Energy Sources in Heating and Cooling, and trusts that the above comments and recommendations are helpful.

For further information, please contact Michael Bennett ([info@eurofuel.eu](mailto:info@eurofuel.eu)), Executive Director of Eurofuel, [www.eurofuel.eu](http://www.eurofuel.eu)

**Annex 1: Eurofuel’s Members**

Austria: IWO-Austria, Institute of efficient oil heating systems, [www.iwo-austria.at](http://www.iwo-austria.at)

Belgium: Informazout, [www.informazout.be](http://www.informazout.be)

Finland: The Finnish Oil and Gas Federation, [www.oil-gas.fi](http://www.oil-gas.fi)

France: Chauffage Fioul, [www.chaleurfioul.com](http://www.chaleurfioul.com)

Germany: IWO-Institute for economic oil heating, [www.iwo.de](http://www.iwo.de)

Republic of Ireland: OPFI-Oil Promotion Federation of Ireland, [www.opfi.ie](http://www.opfi.ie)

Luxembourg: Mazout-info Luxembourg ASBL (M.I.L.), [www.mazoutinfo.lu](http://www.mazoutinfo.lu)

Norway: Norwegian Petroleum Industry Association (NP), [www.np.no](http://www.np.no)

UK: OFTEC (Oil Firing Technical Association), [www.oftec.org](http://www.oftec.org)

Switzerland (Associate Member): Union Pétrolière, [www.erdoel.ch](http://www.erdoel.ch)

UPEI (Associate Member): Union Pétrolière Européenne Indépendante, [www.upei.org](http://www.upei.org)

**Annex 2: Eurofuel’s Vision for Liquid Fuels in Heating: Combining Enhanced Energy Efficiency with Progressive Introduction of Liquid Biofuels**

