

REGULATORY ENVIRONMENT FOR HEAT PUMP TECHNOLOGY IN THE EUROPEAN UNION AND ITS INFLUENCE ON THE MARKET

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Abstract: This paper aims to present the regulatory trends directly affecting market conditions for the take up and expansion of heat pump technology in the European Union. The most important developments are singled out (Renewable Energy Sources Directive (RES), Energy using Products Directive (EuP), Energy Performance of Buildings Directive (EPBD)) and their influence on the regulatory environment for heat pumps is discussed with a special focus on the RES Directive. Additionally, the lobbying efforts of the European Heat Pump Association aimed at setting the most favourable conditions for heat pumps are presented. The paper concludes with a short analysis of the main regulatory trends on the heat pump market, research and development and situation of heat pumps vis a vis other technologies.

Key Words: *heat pumps, European Union, RES Directive, Energy Performance of Buildings Directive, Energy using Products Directive*

1 INTRODUCTION

Lowering CO₂ emissions and decreasing dependency on fossil fuels are currently two important policy goals that shape the way energy policy is formulated in Europe. EU decision makers are trying to use all measures at their disposal to change energy production and consumption patterns.

In light of this, EU Heads of State and Government on 8-9 March 2007 agreed on an integrated climate and energy policy with several targets. They decided that by 2020, the EU's Member States should reduce greenhouse gas emissions by at least 20 percent compared to 1990 levels. Heads of State also set a binding target of a 20 percent share of renewable energies in the overall energy mix, and confirmed 20 percent savings on EU energy consumption.

These overall policy goals are now being translated into concrete operational policy instruments (Directives) that will harmonize the implementation of legislation across the EU.

1.1 RES Directive – window of opportunity for heat pump technology

In order to achieve the abovementioned ambitious goals, on 23 January 2008 the European Commission proposed a set of policy measures to be adopted on the EU level by all 27 EU Member States. In the context of setting up the regulatory environment for heat pump technology, a directive on Renewable Energy Sources (RES) is of utmost importance as it defines the sources of energy that count as renewables (*EC Promotion of the use of energy from renewable sources COM(2008) 19*).

The RES Directive also establishes national renewable energy targets that allow each Member State to determine the mix of contributions from each renewable sources in achieving their national targets. By 31 March 2010, Member States will have to submit their National Action Plans to the Commission specifying which actions they plan to take to reach their targets.

Thanks to an intensive lobbying campaign, heat pumps are included in the proposal for the RES Directive. This is, however, only a point of departure as the Directive has to go through the normal adoption process and can be significantly changed. Already at this stage it is clear that the Directive will be subject to aggressive lobbying, especially from boiler manufacturers and other renewable technologies, which see heat pumps as a competing product.

Moreover, the directive as it looks now makes unnecessary distinction between different heat pump technologies. Energy used by air source heat pumps is only considered renewable once the heat pump fulfils eco-label criteria. This means that air source heat pumps need to meet stricter energy efficiency requirements than ground source and water source heat pumps.

The European Eco-label scheme came into operation in late 1992 and was designed to identify products that are less harmful to the environment (recyclable products, those not depleting the ozone layer and/or energy efficient products). The labels are awarded on the basis of environmental criteria set by the European Union. In April 2007, the Commission approved the first environmental criteria for awarding eco-labels to heat pumps. This eco-label will apply to electric, gas and gas-absorption pumps with a maximum capacity of 100 kilowatts. It should be highlighted that the eco-label for heat pumps is the only available European eco-label for heat sources and this can have tremendous influence on the heating market in Europe.

1.1.1 RES adoption process

The proposal presented by the Commission will become legally binding once adopted by the European Parliament and the Council of Ministers. The timeline for the adoption of the Directive is the following:

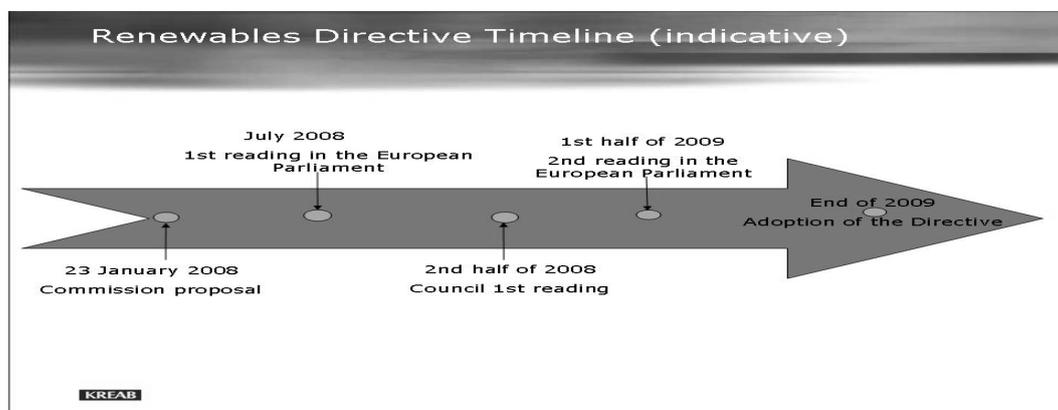


Figure 1: RES Directive timeline

As presented, the adoption process starts with a first reading in the European Parliament and continues throughout the upcoming months. The timetable for the weeks to come is the following:

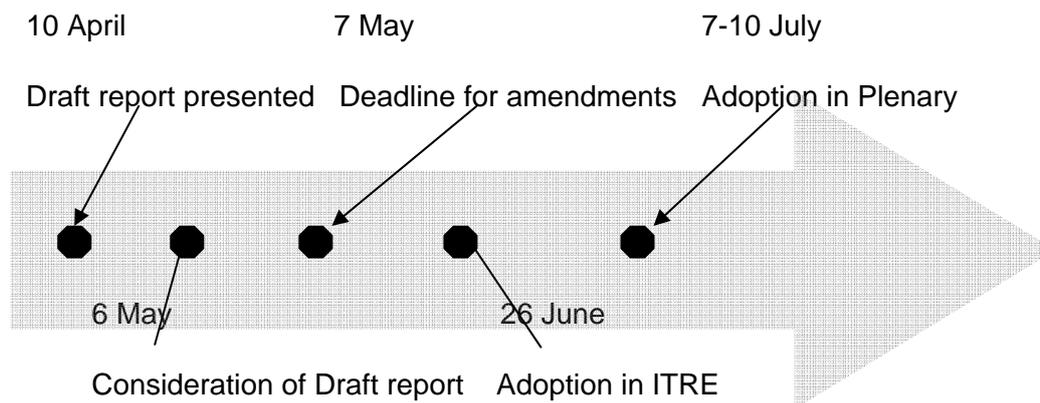


Figure 2: RES Directive Timeline in the 1st reading (can be still subject to changes)

1.1.2 EHPA activities towards RES Directive

EHPA is currently concentrating its efforts on communicating its messages to the Committee for Industry, Research and Energy of the European Parliament (ITRE) which is leading the work on the RES Directive. It should be highlighted that there are also other committees that have a say in the adoption of the Directive (i.e. the Environment Committee, etc). Kreab currently assists EHPA in identifying key Members of the European Parliament, helps to formulate messages for Members of European Parliament, and organises a series of meetings to raise the profile of heat pumps and propose relevant amendments to the RES Directive so that heat pumps are better positioned in the legislation. This is the only way real impact can be made on the Parliamentary decision making process.

EHPA's lobbying campaign in the European Parliament aims at clarifying the issues affecting heat pump technology that stem from unclear wording in the RES Directive. In order to achieve clarity, EHPA proposes to MEPs several amendments that would:

- Eradicate unnecessary differentiation of different types of heat pumps
- Clarify calculation of energy share from renewable resources (less stringent requirements for calculating contribution for the renewable share)
- Set efficiency criteria for heat pumps that will be just and fair towards other renewable sources of energy (eco label as a benchmark for promotion)
- Make sure that necessary information and training is provided for heat pump installers and requirements put on installers and training providers are not burdensome

The Directive on Renewable Energy Sources will also be discussed by EU Member State ministers who will have a final say on what the Directive will include. Therefore, meeting relevant Member State officials in their Permanent Representations in Brussels is of the utmost importance to shaping the RES Directive. These officials receive information and necessary input for their Ministries in the national capitals. Communicating support for heat pumps can be decisive when it comes to the attitudes of different Member States on heat pump technology.

2 EuP – SETTING BENCHMARKS FOR ENERGY EFFICIENCY

The Energy using Products (EuP) Directive will introduce minimum energy efficiency requirements and energy labelling schemes for selected products (i.e. boilers, water heaters, heat pumps, etc). These requirements may become law and alter the competitive landscape of energy using products in Europe and beyond.

The process of developing these standards includes a number of studies carried out on key products by external independent consultants for the European Commission. These products are grouped in study lots. Based on the studies, the Commission will decide whether to proceed with a legislative act on a particular product.

Relevant EuP studies for heat pump technology include: Lot 1 (study on boilers), Lot 2 (study on water heaters), and Lot 10 (study on residential air conditioning appliances). In the near future, the European Commission could select 25 additional products to be studied and heat pumps could be shortlisted.

EHPA monitors all legislative developments related to EuP developments. The representatives of the association attend EuP Consultation Forums for the relevant lots where, together with other stakeholders, they can present their input to the study. In addition, bilateral meetings with officials from the European Commission responsible for the EuP process are held on a regular basis.

The outcome of each study will be an implementing measure setting minimum energy efficiency requirements. It is expected that the implementing measure for Lots 1 and 2 (boilers and water heaters) will be published in October 2008. The European Commission is currently drafting a legislative proposal, which could include the following:

- Minimum energy efficiency requirements
- Labelling scheme
- Financial incentives

In the study on boilers, ground source heat pumps and solar panels are considered as one of the best available technologies outperforming gas heated boilers (VHK Van Holstein en Kemna BV 2007) and they correspond to the A+++ label. (See figure below)



Figure 3: Example of Labelling Scheme Source: VHK Van Holstein en Kemna BV 2007

It is difficult to overestimate the value of such a labelling scheme where heat pumps are compared vis a vis boilers and are actually treated as the first class heating solution that outperforms boilers. Bearing in mind that the labelling scheme could be tied to an incentive scheme, one expects that such a labelling scheme will produce a profound change in the heating market.

3 THE ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE

In the context of reducing energy consumption, the EU is reviewing its Directive on Energy Performance of Buildings.

The First presentation of the review took place at the Sustainable Energy Week in Brussels in February 2008. Now impact assessment and stakeholder consultation are expected in April/May 2008 so that legislative proposal could be presented at the beginning of 2009. The review will look at following possible options:

- expand the Directive's scope to buildings under 1000 m² incorporating residential buildings
- limit overall energy usage
- establish common definitions of a "passive house", "low energy house" and "zero carbon house".
- strengthen the role and requirements of building energy performance certificates will be strengthened and they will be linked to financial incentives (i.e. tax breaks, etc).

The review of EPBD can bring about huge opportunities for heat pumps that are indispensable to putting a "passive house" or "zero carbon houses" into practice. Once the potential is communicated to policy makers, heat pumps are expected to benefit from possible financial incentives.

4 IMPACT OF THE REGULATORY TRENDS

Policies designed at the European level have a strong impact on the market situation of the sector concerned. They can also provide direction for research and development efforts, as well as set conditions for development of the renewables market.

4.1 Impact on the heating sector

The RES Directive, when adopted and implemented across EU Member States, will constitute a milestone for the heating market in Europe. As it sets a clear goal of achieving an EU wide 20 percent share of renewable energy sources in the overall EU energy mix, it will delimit a big portion of the heating market simply that is not available for conventional gas boilers. This can potentially bring about a paradigm shift in the heating market. In order for heat pumps to participate in this delimited portion of the market, all efforts should be undertaken now to keep them in the directive.

When it comes to the possible dynamics of the heat pump market, one can draw a conclusion that if the current differentiation between different types of heat pumps remains as it is now, it will distort the heat pump market. Until now the decision of using different types of heat pump technology depended solely on certain local conditions. If this unnecessary differentiation of water, ground source and air heat pumps prevail, customers will base their choice of the technology on possible incentives schemes that might come from national governments. This is yet another reason why the heat pump sector should get engaged in lobbying actions toward the European Parliament and Member States.

4.2 Impact on research and development

It is quite clear that energy efficiency requirements put on heat pumps by the RES Directive will require manufacturers to put more effort into using already existing technologies to make their products consume less electricity.

However, there is no doubt that heat pumps are efficient heat sources as such, and their performance levels largely depend on the other parts of heating systems (like heat distribution systems etc.). Therefore, cross-technology research on the interception of the actual heat source and heat distribution is needed. As effects requirements for reducing heat distribution temperature, better insulation, etc. could follow.

A review of the EPBD Directive that looks at houses as systems will be a perfect policy driver encouraging research on better performance of the elements of the heating system other than heat sources. In order to achieve that, an involvement from the heat pump sector into the upcoming consultation on the EPBD review is crucial.

4.3 Impact on heat pump situation towards other technologies

As pointed out before, with the RES Directive and in the context of EuP Lots 1 and 2, stringent market access requirements will be put in place on conventional heating sources. This is already acknowledged by major boiler manufacturers as most of them are also taking on board heat pump technology and entering this market.

When it comes to other renewables technologies, one can point out that if the current definition in the RES Directive (or with suggested changes) remains it will only put heat pumps on an equal footing with other technologies and enable heat pumps to contribute to fulfilling the 20 percent goal. Then it will depend on lobbying efforts towards Member States on how big a proportion of the renewable market can be absorbed by heat pumps. The heat pump sector has an undeniable advantage of having proven and well established technology at its disposal (which was mentioned in the context of EuP Lots 1 and 2). However, a tremendous effort is still needed to communicate these facts to decision makers at both the supranational and national levels.

Looking at current intensive lobbying from other renewables technologies (such as biomass or solar), one can point out that the struggle will remain intensive.

5 CONCLUSIONS

Current discussions on climate change and potential energy shortages resulting from finite fossil fuels set a perfect political and legislative context for the promotion of heat pumps. Heat pump technology can help slash greenhouse gas emissions and decrease the EU's dependence on external energy supplies. It should be noted, however, that this window of opportunity in setting policy has a limited time frame. The upcoming months will be decisive when it comes to the way heat pumps will be treated in the discussion on renewable energy sources, and will hence set the environment for heat pumps for many years to come. If a favourable regulatory environment is created, it will also strengthen certainty and encourage substantial investments in the heat pump sector.

As such, lobbying efforts targeted towards the European Parliament and Member State representatives in Brussels are strongly advised. If appropriate action is not taken now, this opportunity could be wasted.

The stakes for the future of the heat pump sector are extremely high. Therefore, the industry should become engaged in the policy-making process in order to ensure that the right regulatory framework is set, and the right conditions for the development of the heat pump market in Europe is secured.

6 REFERENCES

E.C Promotion of the use of energy from renewable sources COM (2008) 19
VHK Van Holstein en Kemna BV 2007