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International Network for Sustainable Energy - Europe

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**Preliminary comments from ECOS, EEB, CAN-Europe,  
INFORSE-Europe, Greenpeace and WWF**

**on the EC Working Document  
on possible Ecodesign, Energy labelling and Installation requirements  
for Boilers and Water Heaters**

*In the context of Directive 2005/32/EC establishing a framework for the setting of ecodesign requirements for energy using products.*

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**on the EC Working Document  
on possible Ecodesign, Energy labelling and Installation requirements  
for Boilers and Water Heaters**

ECOS, EEB, CAN-Europe, INFORSE-Europe, Greenpeace and WWF (hereafter “Environmental NGOs”) **welcome and support the quick introduction of minimum energy efficiency requirements and an energy labelling scheme for boilers and water heaters.**

*These product groups are by far the most promising in terms of energy savings within the Ecodesign of EuP policy process. They should be the top priority for the European institutions.*

We also welcome the fact that the proposal is based on a full analysis of the heating system and its annual variations and that it considers provisions on installation requirements.

Our comments are split in 2 parts:

- first those concerning the Working Document itself and the Ecodesign requirements,
- then those regarding the methodology and consultant’s model for calculating the energy efficiency performance and labelling classes.

**I- COMMENTS ON THE POSSIBLE ECODESIGN REQUIREMENTS**

**1. Scope of the Implementing Measure (IM)**

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- **Environmental NGOs do not see the rationale to set a minimum threshold on boilers covered** by this IM. It would be surprising that low output boilers used for instance in passive eco-friendly houses do not comply with any minimum efficiency requirement!
- Environmental NGOs are not certain about the need to establish a new classification for boilers and water heaters based on letters (S, L, XL...) rather than rely on the more commonly used nominal output. In particular it is important to clarify that in paragraph 9 (p. 7) the “Minimum heat output” is the minimum of the sum of the nominal heat output of the heat sources (sum of nominal heat output of boilers, heat pump and electricity back-up).
- **Environmental NGOs support the proposal to cover Combined Heat and Power (CHP) in the future** under this Ecodesign Implementation Measure. However, given the little use of small CHP plants today and the urgency to have an IM in place as soon as possible for the commonly used boilers and water heater, we propose that this provision is considered not before 2013.

**2. Comments on the energy efficiency requirements**

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Environmental NGOs believe that **some of the requirements suggested in the Working Document are not ambitious enough.**

It is not acceptable that the least efficient products (class G) are still tolerated until 2011.

It is also insufficient that the requirements for small boilers (up to 30.6 kW heating power) only become in 2013 more stringent than those already set in the 1992 directive on boilers (92/42/EC)<sup>1</sup>;

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<sup>1</sup> The existing requirements from the 1992 directive set a minimum efficiency around 85% in full load test, which is equivalent to around 56% in annual average with a medium quality distribution system. So only the 76% requirement on efficiency in the Working Document means a real improvement.

this means 5 more years where only a business-as-usual scenario will happen.

- Environmental NGOs propose that **the requirements foreseen for 2013 for smaller boilers and water heaters are set in 2010** (i.e. one year after the IM enters into force). A revision in 2013 could then upgrade these requirements.
- For larger boilers (above 30.6 kW, class XL) **the same efficiency requirements as for smaller boilers could apply one year after the IM enters into force**. Then a revision in 2013 could raise the requirements as suggested in the WD (i.e. specific efficiency of 96%).

As some EU Member States have already introduced (or are planning to introduce) national legislation to improve the energy efficiency of boilers and water heaters on their territory, Environmental NGOs call on the European Commission to ensure that **these national policies will not be removed if they happen to be more ambitious than the EU Ecodesign scheme**. An updated benchmark of these policies would be helpful in this respect.

### **3. Comments on the requirement on air emissions**

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- **Environmental NGOs support a low level of NOx emissions**; the proposed level of 20 ppm seems justified by the Preparatory Study.
- Given the global warming impact of methane, it should also be considered to set **a limit for methane emissions** from gas boilers.

### **4. General comments on the proposed Energy Labelling scheme**

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- **Environmental NGOs strongly support a label independent of the energy source**.
- The A-G scale is a satisfying suggestion for the layout, but we express **strong concerns about introducing A+, A++ and A+++**. This is misleading for consumers who still believe that an “A” product is very (if not the most) efficient on the market.
- The label could also include extra information in addition to the energy class and load profile: for instance the nominal power, the hot water storage (in litre) and the noise level.

### **5. Comments on the Labelling scales for boilers**

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Removing more rapidly the worst classes from the shelves (as suggested before) will help simplifying the scale: A+, A++ and A+++ will not be needed if less classes are tolerated on the market when the IM and the labelling enter into force.

- In this simplified situation, we suggest **the “A” letter is reserved for solar-assisted boilers, the best heat pumps and combined heat & power** (with efficiency above 88% for space heating). The “B” letter would correspond to the highest efficiency achievable with more “usual” boilers (with an annual system efficiency of 80 - 88% for space heating). With a size of around 10% for each class, the lowest label would then be “D” corresponding to the minimum efficiency tolerated on the market in 2010 (76% for space heating).

### **6. Comments on the Labelling scales for water heaters**

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**Environmental NGOs find it totally unacceptable that small water heaters with efficiencies as low as 32% can be labelled “A”**. It is a flawed signal to consumers.

- The efficiency classes should be made more stringent so that the best non solar-assisted heaters and combi get at best a “B”, and **“A” is reserved for solar-assisted water heaters**.

- To realise this, the proposed scale should be moved **upward from 4 classes** for the smallest water heaters XXS (i.e. A+++ becomes B, etc.), **from 2-3 classes** for the larger ones from XS to 2XL (i.e. A+++ becomes A) and **from one class** for the largest ones.

## 7. Concerns for refrigerants in heat pump systems

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Heat pumps may contain refrigerants with high global warming potentials.

- In case the refrigerant has such a potential higher than 10, **it should be made mandatory to inform the user with an indication on the product** about the danger of refrigerant leakage and advice on the way to recycle the product properly.
- Environmental NGOs also suggest considering **an Ecodesign requirement on the choice of refrigerant** so that only the least damaging ones are tolerated after a certain year (if this is not settled by other international regulation).

## 8. Easy dismantling and recycling

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Even if the use phase is the most relevant when considering the environmental impact of a boiler or water heater, it should be ensured that their dismantling and recycling in end of life are facilitated through smart design options. Many pieces of a heating system are valuable and the bill of materials includes materials that may need special treatment (e.g. refrigerant).

- **Environmental NGOs suggest adding an Ecodesign requirement covering this aspect.** The design shall enable a simple and efficient way to separate all liquids and electronic parts during end-of-life treatment.

# II- COMMENTS ON THE METHODOLOGY AND CONSULTANT'S MODEL

## 9. Simplifying and explaining the methodology

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Environmental NGOs fully support a methodology that is comprehensive and as far as possible reflects the conditions of practical use of boilers and water heaters.

However, we find the consultant's methodology quite sophisticated and not easily comprehensible. This methodology could be described in a much more "user-friendly" way than it is the case in the Annex of the Working Document. The description in Annex V is mostly based on the equations for the computer model, whereas the parts of the model could be better described in simple language with explanations enabling a general understanding (without having to consult all the preparatory documents). Such clarifications are not only needed for the Consultation Forum meeting; they will also be necessary in the text of the Implementing Measure (IM) itself, as experts and organisations involved in the practical implementation of the IM (manufacturers, installers, retailers, public authorities, etc.) will probably refer to it.

## 10. Where to consider losses in the distribution system

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While Environmental NGOs support a comprehensive evaluation of boilers and water heaters in practical use, the efficiency figure indicated on the energy labelling should not include the losses as calculated for a standard distribution system used in the model. The model indeed does not include any possibility to virtually improve the distribution system as the distribution system is not covered by this Ecodesign Implementing Measure. Therefore with a more efficient distribution system (better insulated pipes, less losses outside the heated area, etc.), the real efficiency of the whole system might be far better than the computerised one through the model. But the consumer will not see it and this will be confusing and not encouraging to improve the distribution system.

However, we propose that the calculated efficiency with standard system losses be part of the calculation for setting the efficiency classes of the labels.

Of course system losses caused by the functioning of the boiler, such as the temperature cycling, should remain part of both the efficiency stated on the label and for setting the efficiency classes (as it is the case now with the proposed model).

## **11. About including regulation equipment in the efficiency calculation**

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Environmental NGOs question the inclusion of radiator valves performance in the efficiency calculations and as a basis for setting efficiency classes. In the EU half of the heating systems are already equipped with thermostatic radiator valves. With the inclusion of radiator valves in the package, a boiler might get a better label but in reality the efficiency will not be higher for half of the consumers.

However other options that increase efficiency (e.g. weather compensation) should remain in the technical regulation for the labelling, at least for systems up to 100 kW. Equipment which is not widely used in the EU could be promoted via the labelling since only very few users could be confused (by having already installed the equipment).

## **12. Methodological concerns regarding heat pumps**

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Environmental NGOs are concerned that the consultant's model will favour electrical heat pumps over efficient gas and solar-assisted boilers to the extent that it may increase EU NO<sub>x</sub> emissions (because of the higher electricity consumption needed). Even though it is estimated that the fuel switch from oil or gas to electricity would decrease overall CO<sub>2</sub> emissions, the increased electricity demand will have other well-know negative effects that are not considered here: more nuclear waste, more nuclear risks and more threats on the electricity network balance.

It seems to us that the model is favouring heat pumps in various ways:

- Given that the average load of heat sources is as low as 10% over the year (for combined systems for space heating and hot water) and that heat pumps typically have very low coefficient of performances (COP) in low-load situations, it does not seem reasonable that all heat pump operations below 50% of full load is calculated with the COP at 50% load (equation D129 in annex V-D p.50);
- The calculation of the electrical resistance heating to supplement the heat pump output is made as a monthly average load minus the maximum possible output available from the heat pump during the month (in equations D126, D127, D132, D138). In real life the load is considerably varying throughout the month, resulting in lower use of the heat pump and higher use of the electrical resistance heating (electricity back-up heating).
- The methodology uses an average of European climates, while in a large parts of Europe the winter temperatures are lower leading to lower COPs than what is assumed in the model. For these countries with colder winters a large part of the heat is demanded during the cold periods resulting in lower COPs and higher electricity consumption than calculated.

So Environmental NGOs would like to see a more realistic methodology that does not outrageously favours heat pumps.

## **13. Methodological concern regarding Water Heaters**

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The proposed test pattern for energy efficiency of water heaters allows very low temperatures for the smallest equipment. It needs to be secured that it is not possible to have a water heater that provides hot water of lower temperature during the entire test than during its intended use.