



coolproducts
for a cool planet

ENERGY SAVINGS IN PRACTICE

POTENTIAL AND DELIVERY OF EU ECODESIGN MEASURES

EXECUTIVE SUMMARY – DECEMBER 2010

In the European Union, residential use of energy is responsible for the emission of more than 1.5 ton of CO₂ equivalent per person per year. These emissions come from the energy use of domestic appliances such as electric equipment (televisions, fridges, washing machines, etc.) and heating and cooling products. Together these products constitute almost half of the energy use in the European Union.

The EU Ecodesign directive addresses the energy consumption of these products by setting minimum environmental energy requirements on all products put on the EU market. These minimum requirements are essential to achieve the EU 20% energy saving goals by 2020 and help consumers save on their energy bills. It is therefore necessary that they are ambitious enough to drive market change and grasp a maximum potential of the energy savings these products entail.

This study was commissioned by a group of European environmental NGOs to assess to what extent the current implementation of the Ecodesign directive can be expected to reach this objective.

The case studies

The report first assesses, according to available data, what happens to a typical EU household as it replaces its appliances with new ones. Six products are included in the assessment: boilers, water heaters, televisions, fridges, washing machines and lighting. Three different situations are studied:

1. *“Standard case”*: the household buys standard products (representative of the market average nowadays, with no specific focus on energy efficiency)
2. *“Most cost-effective case”*: it switches to the energy efficient products that will maximise their financial savings over the years (when taking into account the purchase price and the savings on the bills over the life cycle of the products).
3. *“Most efficient case”*: the household buys the most energy efficient models available on the market, a configuration in which the energy consumption and environmental impacts are minimal, disregarding the costs of the appliance.

Impact on energy consumption: up to 50% less energy use

The analysis carried out shows that by choosing to purchase the “most efficient case” instead of the “standard case” appliances, a household will on average save up to:

- 8,900 kWh of primary energy (gas for example) per year for the group boiler and water heater
- 500 kWh of electricity annually for the group TV, fridge, washing machine and lighting.

This corresponds to a 50% reduction in energy consumption compared to the “standard case” appliances.

The “most cost effective” case, leading to optimised financial gains, corresponds to a 30% saving.

Annual energy consumption of electrical appliances

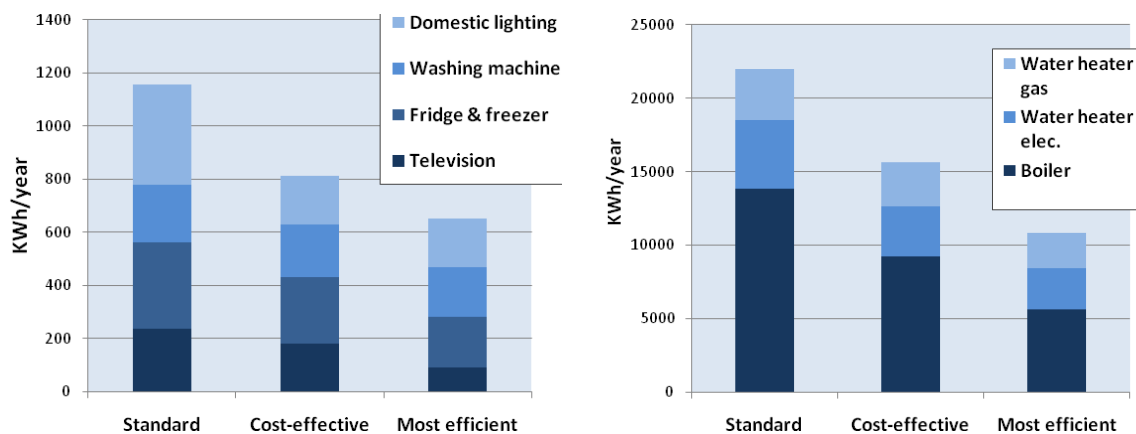
Product group	Standard case	Most cost effective case	Most efficient case
Annual electricity use	Electricity (kWh/year)	Electricity (kWh/year)	Electricity (kWh/year)
Television	236	180	89
Fridge	324	251	192
Washing machine	220	198	186
Domestic lighting	378	185	185
Total electricity	1158	814	652
Reduction of energy use	-	-30%	-44%

Annual energy consumption of heating equipment

Product group	Standard case	Most cost effective case	Most efficient case
Annual electricity use	Primary energy (kWh/year)	Primary energy (kWh/year)	Primary energy (kWh/year)
Boiler	13827	9251	5592
Gas water heater	3468	3015	2427
Total primary energy	17295	12266	8019
Reduction of energy use	-	-29%	-53%

Note: this assessment is based on gas boiler and water heater for the standard and most cost-effective cases, and heat pumps or solar-assisted products for the most efficient.

Yearly energy consumption effects for the product groups in figures



Financial savings: going for the greenest solutions does not lead to higher costs

The analysis shows that although the price of more energy efficient appliances is frequently higher than the price of standard products, the aggregate cost over the life-cycle is systematically lower in the case of the “*most cost effective*” products (which by definition are the cost-benefit optimal for the buyer).

For the “*most efficient case*” (corresponding to the greenest technologies on the market), the life-cycle cost of each product can be higher or lower depending on the product, but when adding the 6 products together, the overall figure is in the end below the “*standard case*”. This means that consumers purchasing the most energy efficient products for all 6 product categories will not only make the highest energy savings (thus the best choice for the climate), they will also spend no more over the life-cycle of the combination of their 6 products than compared to the purchase of standard products.

This contradicts usual assumptions that going radical green is in the end always costly for consumers. However, higher purchase prices remain a common barrier and show the need for financial instruments to help consumers afford the most efficient and sustainable options.

Purchase price and total life-cycle cost of household appliances

Product	Standard case		Most cost-effective case		Most efficient case	
	Product price (€)	Total life-cycle cost (€)	Product price (€)	Total life-cycle cost (€)	Product price (€)	Total life-cycle cost (€)
Boiler	2724	18971	4123	15886	9323	16884
Gas water heater	560	4833	534	3987	2790	5427
Television	369	666	369	603	579	691
Fridge	485	1144	585	1107	852	1277
Washing machine	443	1363	460	1237	546	1289
Lighting	46	654	99	398	99	398
TOTAL	4627	27631	6170	23218	14189	25966

Note: prices of a same product may of course be fluctuant, and life cycle costs depend on the usage pattern. These figures should be considered as a theoretical typical EU situation.

EU Ecodesign measures insufficient to make sure these savings happen

To put the EU policy effort in perspective with these figures, the study gives an overview of the level of ambition of the adopted (or proposed) Ecodesign implementing measures for these 6 product groups.

The analysis shows that Ecodesign requirements have usually been set somewhere between the “*standard*” and “*most cost-effective*” levels. This means consumers are not ensured to benefit from all cost-effective energy savings, and many mainstream products left on the shelves will remain very far from the greenest available options.

More precisely:

- For nearly all measures, *the first stage of requirements* (to enter into force in 2010/2011) is suspected to have very limited impacts on the market. None of these requirements are at the level of the most cost-effective option. These requirements should probably be seen as transition periods leaving time for manufacturers to get used to the regulation and for market surveillance authorities to ramp up their testing capacities.
- *The second stage of requirements* (to enter into force from 2012 to 2014) shows higher levels of ambition, not far from the cost-effective levels described in this study - except for medium-sized water heaters and clear lamps. Nevertheless, by the time these requirements enter into force technologies and prices will have evolved and an updated calculation of the most-cost effective case at that moment would probably show that the requirements are again far away from the optimal life-cycle cost and maximum energy saving potentials.

Ambitious measures are needed now!

EU policy makers are now finalising the adoption of very key Ecodesign implementing measures: on boilers, water heaters, air-conditioners, computers, together accounting for more than half of the potential of the Ecodesign directive. Additional measures are to be discussed and approved within the next years (such as kitchen appliances, tumble driers, game consoles or industrial machines).

However, the assessment of the already adopted and currently discussed measures shows that the ambition could be strengthened in order to exploit a bigger energy saving potential at hand, while not increasing the cost for consumers. The Ecodesign policy should drive manufacturers to put on the market products that are at least at the most cost-effective level (at the time of entry into force of the requirements).

Greenest available technologies, which are today sometimes more expensive, should be used to set middle-term targets showing the level of ambition for the future and giving a signal for all manufacturers to work in that direction, thus driving down the price of the best performing appliances and rewarding those companies that are on the forefront of innovation.



coolproducts for a cool planet is a campaign to set ambitious minimum requirements for energy efficiency and other environmental aspects of products sold in the European Union. It was launched in March 2009 by a group of European environmental NGOs.

For more information on the campaign and EU product policy, go to www.coolproducts.eu.