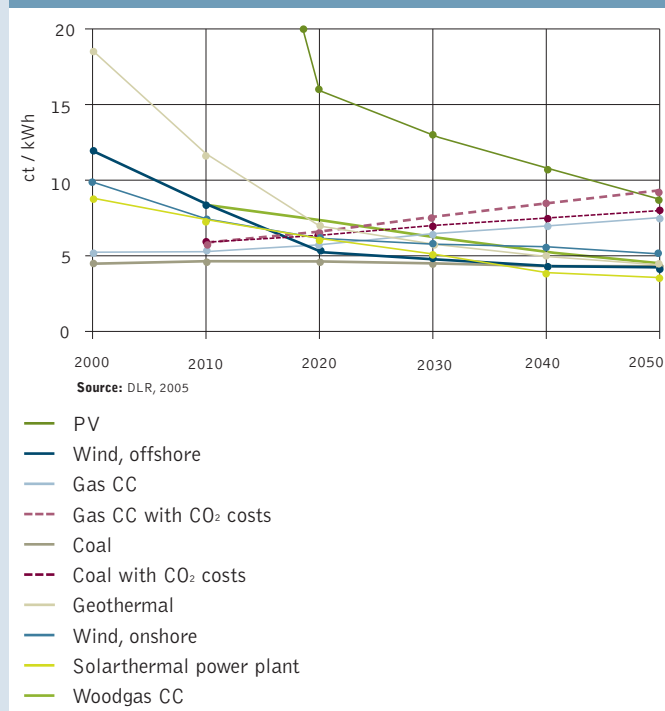


iv summary – conventional technology versus renewables

FIGURE 6: EXPECTED DEVELOPMENT OF ELECTRICITY-GENERATION COSTS FROM FOSSIL AND RENEWABLE OPTIONS



v energy efficiency – better with less

Energy efficiency often has multiple positive effects. For example, an efficient clothes washing machine or dishwasher uses less water. Efficiency also usually provides a higher level of comfort. For example, a well-insulated house will feel warmer in the winter, cooler in the summer and be healthier to live in. An efficient refrigerator will make less noise, have no frost inside, no condensation outside and will probably last longer. Efficient lighting will offer you more light where you need it. Efficiency is thus really: 'better with less'. Efficiency has an enormous potential. There are very simple steps you can take, such as putting additional insulation in your roof, using super-insulating glazing or buying a high-efficiency washing machine when the old one wears out. All of these examples will save both money and energy. But the biggest savings will not be found in such incremental steps. The real gains come from rethinking the whole concept, e.g. 'the whole house', 'the whole car' or even 'the whole transport system'. When you do this, surprisingly often energy needs can be cut back by four to ten times what is needed today. Take the example of a house: by insulating the whole outer shell (from roof to basement) properly, which requires an additional investment, the demand for heat will be so low that you can install a smaller and cheaper heating system – offsetting the cost of the extra insulation. The result is a house that only

needs one-third of the energy without being any more expensive to build. By insulating even further and installing a high-efficiency ventilation system, heating demand is reduced to one-tenth. It sounds amazing, but thousands of these super-efficient houses have been successfully built in Europe over the last ten years. This is no dream for the future, but part of everyday life for those thousands of families. Here is another example: imagine you are the manager of an office. Throughout the hot summer months, air-conditioning pumps cold air on your staff's shoulders to keep them productive. As this is fairly expensive, you could ask a clever engineer to improve the efficiency of the cooling pumps. But why not take a step back instead and look at the whole system. If we first improve the building to keep the sun from heating the office like an oven, then install more energy-efficient computers, copiers and lights (which save electricity and generate less heat), and then install passive cooling systems such as ventilation at night – you may well find that the air-conditioning system is no longer necessary. Then, of course, if the building had been properly planned and built, you would not have bought the air-conditioner.

electricity

There is a huge potential to save electricity in relatively short period of time. By simply switching off standby, and changing to energy-efficient light bulbs, etc., consumers would save electricity and money in every household. If all of the 185 million households within the EU-25 did this, several large power plants could be switched off almost immediately. The following table provides a brief overview of mid-term measures for household appliances:

TABLE 3: ELECTRICITY CONSUMPTION SAVINGS AND TRENDS IN THE RESIDENTIAL SECTOR, EU-15

	ELECTRICITY SAVINGS ACHIEVED IN THE PERIOD 1992-2003	CONSUMPTION IN 2003	CONSUMPTION IN 2010 (WITH CURRENT POLICIES)	CONSUMPTION IN 2010 (WITH AVAILABLE POTENTIAL TO 2010 (WITH ADDITIONAL POLICIES))
	[TWh/YEAR]	[TWh/YEAR]	[TWh/YEAR]	[TWh/YEAR]
Washing Machines	10-11	26	23	14
Refrigerators and Freezers	12-13	103	96	80
Electric ovens	-	17	17	15.5
Standby	1-2	44	66	46
Lighting	1-5	85	94	79
Dryers	-	13.8	15	12
DESWH ³	-	67	66	64
Air-conditioners	-	5.8	8.4	6.9
Dishwashers	0.5	16.2	16.5	15.7
Total	24.5-31.5	377.8	401.9	333.1

source: Green Paper on energy efficiency, June 2005/EWai 2004, Kem 2004.

³ Domestic Electric Storage Water Heaters (DESWH): the saving potential indicated is only related to the reduction of the thermal standby losses due to thicker insulation. Additional savings will come from control strategy (thermostat and timer). Larger electricity savings will be achieved by introducing solar thermal panels.