Focus 01 Electricity savings versus nuclear revival?

In its report *Energy technology perspectives 2008: Scenarios and strategies to 2050*, the IEA proposes a scenario for a global relaunch of nuclear power which would allegedly enable an annual electricity output of 6,00 TWh to be achieved by 2030 compared with 2,800 TWh today, thanks to the installation of an extra 500 GW of capacity (as compared to its 'business-as-usual' scenario of nuclear stagnation), at an overall investment cost of at least €1 trillion. If extended until 2050, this programme, with an output of 9,000 TWh, would represent 6% of the minimum effort required to limit global CO_2 emissions to 14 gigatonnes per year at this point. In the same study, the IEA examines all the other possible means of reducing emissions by 2050, as shown in Table 6.

Table 6 **Contribution of the different options for reducing CO_2 emissions from the energy system by 2050**

CO_2 emission reduction activity areas	Gigatonnes of CO_2	Reduction (%)
Sequestration of CO_2 in industry	4.3	9%
Sequestration of CO_2 in electricity production	4.8	10%
Nuclear power	2.8	6%
Renewables	10.1	21%
Total for generating activities	***22.0***	***46%***
Efficiency and substitutions in electricity production	3.4	7%
Substitutions in final energy use	5.3	11%
Electricity savings	5.8	12%
Fuel savings	11.5	24%
Total for energy savings	***26.0***	***54%***
Total	**48.0**	**100%**

Source: IEA, 2008

Energy savings play the leading role with 54% of the total, followed by renewable energy at 21% and CO_2 sequestration at 19%. Nuclear power comes last of all with 6% of the total reductions, half the figure for electricity savings.

To illustrate this last point, it is worth recalling that in 2006 the IEA also published a report, *Light's labour's lost: Policies for energy-efficient lighting*, entirely devoted to a programme for electricity savings in the global lighting sector and the various consequences of this. This report states that total electricity consumption for lighting reached 2,650 TWh in 2005, or 19% of total global electricity consumption. The IEA then compares the projected consumption in a business-as-usual scenario and in a scenario in which low-energy bulbs are systematically installed wherever the annual level of use warrants it. Energy savings achieved by this means would reach 1,635 TWh a year by 2030, equivalent to half the additional nuclear electricity production proposed by the IEA.

But what would be the investment cost of this? The IEA gives cost estimates of $1 per 100W incandescent bulb with a lifespan of 1,500 hours, and $5 per low-energy bulb with a lifespan of 10,000 hours (around seven times as long). On this basis, since incandescent bulbs would have to be replaced 20 times between now and 2030, as against three times for low-energy bulbs, the cumulative investment required for this programme of supplying low-energy bulbs would reach $ 75 billion in 2030, compared with a cost of nearly $ 100 billion for the incandescent bulbs which would have had to be replaced seven times as often[24] – to say nothing of the electricity savings that would be achieved each year, of the order of $ 165 billion by 2030.[25]

[24] A total purchase of 100 billion incandescent bulbs between 2010 and 2030 compared to 15 billion low-energy bulbs over the same period.
[25] Assuming a cost of 10 cents per kilowatt hour.