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Low-energy bulbs: a not-so-bright idea.

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Rémy Prud'homme studied at the Paris Ecole des Hautes Etudes Commerciales, at the Faculty of Law and Economic Sciences at the University of Paris, at Harvard University, also at the Institute of Political Studies in Paris. He has been deputy director for the environment at the OECD and has been a consultant for most of the major international organisations, notably the World Bank. He calls into question the promotion of low-energy bulbs, for economic as well as environmental reasons.

Researchers and industrialists have invented low-energy bulbs, which give as much light as traditional filament bulbs while using five times less electricity and lasting five times longer. Thus replacing filament bulbs with low-energy bulbs would apparently lead to saving money, reducing the consumption of electricity, reducing emissions of CO^2, and saving the planet. Since consumers are not sufficiently convinced by these arguments, a law named after the Environment Round Table meeting compels people to buy the new bulbs by purely and simply forbidding the sale of filament bulbs. However we should be asking ourselves two questions: is this move good for the consumer? And does it really reduce CO^2 emissions?

The crucial point, easily verified by putting your hand near a bulb that is on, is that a bulb that produces light also produces heat. In fact it produces mostly heat: most (95%) of the kilowatt-hours consumed by a filament bulb go to producing heat and the rest to producing light. A bulb works like an electric radiator: a wire that a current passes through, a resistance.

By replacing a traditional bulb by a low-energy bulb, you will indeed consume five times less electricity, but there will also be many times fewer calories radiating into your room. In fact you will have 13 times less calories, because low-energy bulbs use most of the energy they consume for producing light and not heat. This does not matter in summertime, on the contrary; but in the winter when the heating is on, all the doctors who have been consulted say that it will have to be increased to keep the temperature of a room at the desired level, and to compensate for the calories lost by producing new calories, something a perfect thermostat would do automatically.

Higher heating bills

Thus bills for lighting will go down and bills for heating will go up. Making a prudent estimate that two-thirds of lighting is used during winter, and at the energy prices of August 2008, one can calculate that switching bulbs will make a saving of about 110 million euros per year in total.

There are 700 million electric light bulbs in France. If they are filament bulbs they are replaced on average once every 6 or 7 years. If they are low-energy bulbs, once every 50 years. Thus at 2 euros a bulb, thanks to low-energy bulbs there would be another saving of 1.4 billion euros every 6 or 7 years.

But these two savings have a cost: 7 billion euros for the immediate purchase of 700 million bulbs at 10 euros. A simple calculation, with a modest update rate of 4%, reveals that for the consumer the end result is negative. They lose about 2 billion euros on the deal; and they will lose a lot more if the next generation of bulbs, the LEDs, soon make obsolete the low-energy bulbs that are being imposed on them at such great cost today.

CO^2 emissions doubled

Is this compulsory changeover a good deal for the environment, at least? Some people are concerned about the harmful radiation that low-energy bulbs emit during their lifetime, and about the mercury that they emit at their death. Let's toss aside the precautionary principle and ignore these as yet unproven dangers so that we can concentrate of the question of CO^2 emissions.

Will these be any different after the great bulb changeover? Alas, no. To make up the shortfall in heating the French will draw on electric power for about one-third and on oil and gas for two-thirds. Switching bulbs means 3 billion kWh less of electricity, and 2 billion kWh more of oil and gas.

Unfortunately 1 kWh of oil and gas emits 4 to 5 times more CO^2 than 1 kWh of French electricity, which comes mostly from nuclear and hydroelectric sources. A simple calculation shows that changing bulbs will cause the annual total of CO^2 emissions to double, passing from 3 million tonnes with filament bulbs to more than 6 million tonnes with low-energy bulbs. Reducing purchasing power by 7 billion euros today in order to emit twice as much CO^2?!

To sum up, low-energy bulbs are what the English call a half-baked idea. Like biofuels. Like wind farms. Like the *bonus-malus* car insurance system. Like many of the measures resulting from the Environment Round Table meeting, which have been dictated by passion rather than serious thought.

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