Christopher Lippard, Tonbridge School

How do we satisfy our need for energy, and sustain the environment?

Having enough energy available is one of the most essential requirements for man kind in the twenty-first century. With the earth's existing methods of procuring energy near to exhaustion, and energy consumption increasing with the proliferating global population, the question of guaranteeing our energy supply is becoming ever more important. The availability of world energy is determined by two factors: the quantity demanded by us, the consumers, and the quantity supplied by various sources of energy. It is common for governments to address the latter point, and therefore think the solution is to increase supply to counter growing consumption. Billions of pounds are being channelled into research to find new ways of harnessing the earth's energy, with particular focus on environmentally-friendly renewable energy sources such as wind, geothermal and hydroelectric. Significant progress has been made in recent years, but there is still no consensus on which method is the best. Most governments have however paid little or no attention to reducing the other factor which drives energy consumption: the overall demand for energy. If we could reduce our overall demand for energy from what we think we want down to what we actually need, governments would not have to invest so heavily in new sources of energy. I therefore think the solution to the energy problem lies with being more careful in how we use the energy that we already have.

Reducing energy demand depends on persuading people to change their habits. For this adjustment to happen, the public must be provided with a clear incentive to do so. An obvious incentive to cite is global warming. Most people accept that global warming is a very real threat to the earth which could lead to a catastrophe in as little as twenty-five years. Although the case for global warming is convincing and does provide an incentive to be more careful, many potential climate protectors feel demoralised when they see the USA and China's industries marching onwards in what they believe is the wrong direction. Many of these people are reluctant to join organisations such as Greenpeace or Friends of the Earth for fear that they are too radical and politicised. The public are less inclined to act when they cannot see any immediate benefit. If a direct benefit from reducing energy consumption could be found for the individual, then I think it would be much more likely that people would adopt the policy.

An electricity bill is sent to every business and home in the country. It is the simplest method of checking how much electricity we have used. In essence, it provides a summary of the number of units used, cost per unit and the total amount to be paid. How can the electricity bill persuade people to change energy habits? At the moment I feel it is very difficult; the bill provides an unhelpful total without any explanation. If householders were told which appliance was the most power-hungry in their houses, I am sure they would be likely to reduce their usage of the product. In order to present this information, householders could be given a mini-electricity meter for each of the major electrical appliances in their house. The meter would act as an intermediary between the plug socket and the plug, and contain a resettable digital display so measurements can be taken from the start to end of each quarterly bill. Currently several retailers sell the product for about £30, but the high price eliminates many of the savings, and thus they remain unpopular.

The plug-in-meter idea could be significantly improved in three ways. Firstly, for electrical devices with displays the equivalent energy efficiency monitors could be integrated into the appliances so that they have the ability to tally power consumption. An ideal solution for a television would be if the power consumption could be displayed as a separate television channel. An added advantage is that the screen makes the information more accessible if the plug is in a cramped corner of a room. Secondly, the cost of the meters needs to be reduced to stimulate purchases. A government scheme could be established to subsidise the mini-meter, whereby a manufacturer could be sourced after winning a design competition to further improve the meter for the mass-market. Thirdly, it might even be an economic proposition to give the meters away for free. If the consequent savings achieved by consumers outweighed the cost of building a new power plant, the government should carry out the proposal.

Reducing domestic energy consumption can easily be extended into areas other than day-to-day appliances if the cost incentive remains strong. A very important step would be to halt the considerable increase in heating bills. One idea would be a state-supported scheme to fund general energy surveys of properties. Recently, infra-red images of major London landmarks appeared in the press detailing where heat was being lost unnecessarily.

The idea could be applied to domestic houses as a quick way to enable the owner to prioritise where insulation is need most. If the owner wanted more help, he or she could be referred to a consumer energy website, equivalent to moneysavingsupermarket.com, but with the intention of providing tips on how to reduce energy consumption. Access to insulation grants could also be improved so that finding the initial capital is easier.

Schools could reduce energy consumption not just with the mini- electricity meter idea, which is primary for individuals, but with regional competitions. A successful energy competition was held at my school where the house which curtailed its energy use the most in six months (as a percentage of the house's initial consumption) was given a grant to buy recreational resources. Competitions like this could be established in other schools and educational establishments. Schools and more generally community groups, like retirement clubs, could also be informed of the most important steps to reduce energy spending through seminars.

Businesses would require the strongest legislation to force wasteful energy habits to change. Here, the incentive is weaker for the office workers as they will not be rewarded for cutting consumption, so the government must work harder. A simple example of energy wastage is when diurnal businesses leave lights and computers on overnight. It may be important to leave a few on for security reasons and to enable cleaners to do their duty, but why do the majority need to be on for twenty-four hours? A solution would be to compel offices to use timer switches which are in effect for the majority of the night. Perhaps such a heavy handed would not be required if company directors were alerted to the extra cash available from being more careful.

Empowering individuals and organisations to reduce energy consumption can only succeed by a fixed amount, unless legislation is incorporated to help them. For householders, legislation by the EU to label the energy credentials of appliances such as ovens, dish-washers and washing machines does not go far enough in demonstrating the cost advantage to the consumer. Instead of letters, a relative price saving should be shown. The improved energy labels could be added to smaller frequently-used devices such as kettles and computers. For householders and businesses, the government could force changes in the hardware configuration of electrical appliances so that unnecessary energy consumption by, for example, leaving a computer on would be made impossible. Many computer users are unlikely to know how to alter the default power settings because the settings are hidden away in the operating system. Also, monitors often remain in standby mode permanently because people forget to turn them off. It would not be difficult for the government to implement changes so that a computer would automatically hibernate after ten minutes of inactivity, and a monitor would switch itself off automatically with the computer, unless the user specified for these actions not to happen.

While electricity is a major user of energy, petrol plays an important role as well. Recent research from the US Department of Transport has shown that drivers can reduce petrol consumption significantly by travelling at a near to constant forty-five miles per hour as possible. The advantages of a constant speed and other styles of driving could be demonstrated by including a fuel efficiency calculator (in miles per gallon) on the dashboard of cars. The driver could record and store average values for routine journeys, and compare which driving techniques are best. Once more the ability to save money provides the individual with the incentive to cut energy consumption.

My essay has been devoted to explaining the importance of reducing our demand for energy as opposed to increasing its production to 'satisfy our need for energy, and sustain the environment'. I think the current approach by governments to invest in new sources of energy is not entirely wrong, as even if we significantly reduce our energy consumption, it is certain that the existing energy sources will run out and need replacing. However, accepting the idea that energy use has to increase should be challenged. I believe we could better manage our current energy supply through the methods I have outlined, with reducing cost being the main incentive to change people's habits.