

How does climate change affect the UK?

Researchers are increasingly looking at both the physical effects of climate change and the psychological landscape of policymakers and voters...

Alister Scott, The Knowledge Bridge

RISING SEA LEVELS, HEATWAVES and bigger storms: these are the headline-grabbing effects that spring to mind when thinking of climate change. But the influence of global warming on life in Britain is wide-ranging and varied. It affects the physical environment and also our attitudes and behaviour as we respond to the changes around us.

Professor Mike Hulme, director of the Tyndall Centre for Climate Change Research, distinguishes between the direct and indirect effects of global warming. The direct effects are those we see physically, such as the upward trend in recent temperatures, and rising sea levels. Indirect effects are more subtle; policy that is shaped by concerns over climate change, or the public discourse surrounding it. Both of these can have a knock-on effect on other aspects of public life such as what goes on in the NHS.

The physical effect of 'global warming' that has received the most attention has been the increased temperature itself. The average temperature in Britain is now 10C higher than it was 100 years ago, and 0.50C warmer than it was in the 1970s. And this temperature rise is accelerating. The effects of this warming are seen more strongly in the winter. Winters are milder, with less snowfall and frost than in the past. The growing season for crops has got longer, and spring starts earlier.

Heatwaves like those in August 2003 and July 2006 are another aspect of ►



ENVIRONMENT CLIMATE CHANGE

► rising temperatures. They show how people and institutions can react to changes in the weather. In response to the 2003 heatwave, when over 2,000 people in Britain died from causes attributable to the high temperatures, the NHS implemented a national heatwave management plan to reduce the number of deaths and other adverse health effects from future hot weather.

This adaptation provides a response to the effects of climate change, and also an economic benefit for the country. It will cut down on the number of casualties and mean better treatment for those who are affected by the next heatwave.

Adapting to change

In its evidence to the Stern Review on the Economics of Climate Change, the Tyndall Centre identified 'adaptation actions' taken by individuals, groups and government as a significant response to climate change. When carried out by groups or governments, adaptation often takes the form of changes in regulation or management. It may be a conscious response to climate change, or to some effect such as flooding. Individuals can also adapt. At any level, such change can be positive, allowing us to become more resilient.

But adapting to the effects of climate change is rarely a case of forming a straightforward response to a simple situation. Other factors such as public perception of risk also influence decisions. In a country surrounded by the sea, rising sea levels are a headline-grabbing concern, and are a particular worry in the South East, where they contribute to increased flood risks.

The Thames Barrier was erected in response to the 1953 storm that killed 300 people in Essex through flooding. When the barrier became operational in 1982, it was designed to withstand and protect London from the type of extreme storm that might happen only once in every 1,000 years.

However, rising sea levels mean that the barrier is now used much more frequently than originally



Sea levels are rising in the South East of England and we are becoming more used to extreme weather in Britain as a whole.

envisaged. It may now only offer protection against a storm that scientists tell us is likely to occur once every 200 years.

There is no objective level at which the protection offered by a flood barrier is acceptable or not. This is a decision that must be made collectively. Sophisticated societies may demand more protection, or people may demand a higher rate of protection if they perceive the risk to be greater than in the past. So social perceptions interplay with science.

Perhaps the greatest indirect effect of climate change is not on the physical landscape of Britain, but on the psychological landscape of policymakers and voters. Commentators have dubbed the battle between the political parties to produce position papers on climate change a green arms race.

Work on the Thames Barrier began in 1974 and became operational in 1982. Climate change in the intervening years means it may be used more often than was initially thought.



Reporting on climate change has also shifted, with an increase in the number of news stories. News sources no longer report in a simple, reactive manner on climate change. Instead they seek to set the agenda. There can be few people in Britain who have not heard of climate change. A topic that was until recently the preserve of a few scientists has entered mainstream cultural consciousness.

However, this is not necessarily positive. The Tyndall Centre found that the combative way in which some sections of the media and campaigners are pursuing the issue of climate change causes some people to switch off. By employing aggressive rhetoric and repeated warnings of catastrophe, some campaigns and news stories run the risk of portraying the situation as hopeless. This could cause people to feel that there is no way to change the situation, and no point changing their behaviour.

Conversely, claims about the drastic negative effects of climate change make some people feel that the reported claims concerning climate change are hype. People who think this have a pretext not to make any effort to change their behaviour. They often believe that climate change is being pushed by groups with an agenda – to restrict consumption or to attack the private sector, for example.

Understanding these responses is important because it is not yet too late to prevent many of the predicted negative effects of climate change. But doing so will require a concerted effort across society. The Stern Review, published at the end of

Floods like these in Upton upon Severn, Worcestershire, are becoming more and more commonplace.

low-carbon technologies such as solar power, clean sources of heat and sustainable forms of transport. Wind power has already made huge strides over the last 20 years, to a point where it now competes on cost with most other electricity technologies.

The Tyndall Centre has also found that the net cost of these changes will depend on how soon and how successfully policies to encourage sustainable-energy innovation and investment are introduced.

Uneven rates of adaptation also need to be addressed. As the NHS heatwave strategy shows, some sectors are adapting well to protecting Britain and its people from the negative effects of adverse weather conditions. But in other sectors such as the house-building trade there are many approaches, but no overall strategy or coordination, undermining the sector's ability to adapt.

Adapting to climate change and its direct effects will increasingly mean changing the way that we live. Research by Dr Gill Seyfang at the Centre for Social and Economic Research on the Global Environment is looking at the lessons that 'Earthships' hold for the mainstream building trade and policymakers. Earthships are self-sufficient houses made of recycled materials, which generate their own power and don't need the national grid. They offer many insights into what we can do now to live sustainably, by combating water shortages, reducing carbon emissions and protecting householders from extreme weather. The question is how these insights can move from the fringe to the mainstream. ■

The government and business should make investments urgently in low-carbon technologies such as solar power

October 2006, concluded that 'the global costs of the impacts of climate change outweigh the costs of avoiding the worst impacts worldwide'. It calls for a united international effort to combat the effects of climate change and reduce carbon emissions.

The Tyndall Centre, in its evidence to the Stern Review, looked at the feasibility of two carbon-cutting scenarios, involving 60 and 90 per cent cuts in emissions. The research concluded that even a 90 per cent cut was possible, but would require us to reduce our energy demand and to transform the supply of energy. Emissions are currently rising year on year, so the problem becomes 12 months harder to change each year. These rises continue despite political and public agreement that action needs to be taken. To change this situation, according to Professor Hulme, requires strong political leadership, a receptive business audience and a population who are willing to respond to changes in the way we get and consume energy.

While individuals can have some impact on reducing the negative effects of climate change, it is government and especially businesses that need to transform their approach to sustainable energy. The Tyndall Centre recommends that the government and business should make investments urgently in





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UK energy

FUELLING THE FUTURE

PROFESSOR GORDON
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IN 1984, NIGEL LAWSON, then energy minister, declared that energy policy was dead. All that was needed was a competitive market, and energy would be supplied just like any other commodity.

Now even the Tories want an energy policy. There are two main reasons why, both heavily trailed in the government's July 2006 Energy Review.

One is the emergence of new worries about the security of Britain's energy supplies. The other, and

Both nuclear power and renewable energy offer radical reductions in carbon emissions which means nuclear power is back on the political agenda

perhaps bigger, concern is climate change.

Energy insecurity comes in many guises. Should we worry about Russian gas imports? Or that companies will under-invest in electricity generation, so that one winter in a few years' time the lights will go out? Or might a cold spell next winter leave us suddenly short of fuel, so that industry's power supplies have to be rationed? Even if all these threats are significant, their immediacy varies radically. The UK is starting to import gas, but no-one in the UK is likely to sign gas import contracts with Russia any time soon. But a threat of power cuts next winter would require instant action.

In addition, vested interests can play on the fear that surrounds security issues. The prospect of dependence on the 'Russian bear' makes good newspaper headlines. This can suit the owners of uneconomic but apparently more secure technologies or fuels. The politics of fear can be used to railroad hasty decisions in favour of expensive energy options. While energy security is important, it should not dominate the debate.

The most important greenhouse gas is carbon dioxide. In the industrialised world, the great bulk of carbon dioxide is a product of the energy system – from homes, offices, factories, cars, aeroplanes and power stations. So policies to mitigate climate change must inevitably be energy policies. They must achieve a lower-carbon energy system than we have today, which is 90 per cent dependent on oil, gas and coal.

Since 2003, the government, with a more radical vision than virtually any other in the world, has declared that Britain needs an absolute reduction in emissions by 2050 of 60 per cent.

It is also clear that action needs to be taken extremely quickly. Climate change science is now compelling us to the view that we have a window of perhaps 10 years at most to act effectively.

One 'realistic' objection to rapid action is that, being responsible for only two per cent of global emissions,

we can have no effect on the global problem. But if an advanced and technologically mature country like the UK doesn't provide a commitment and an example, how will China and India be persuaded to start reducing their much higher, mostly coal-based, emissions?

The second piece of 'realism' is that action on climate change will penalise UK exporters. But we know that this disadvantage would be small and confined to limited sectors. The 2006 Stern Review of climate change economics puts this point into perspective by suggesting that the long-term costs of failure to act decisively now will be from five to 20 times as great as the cost of taking action soon.

The first priority is to reduce energy demand. Many studies have shown how this could be done, including a design for the '40 per cent house' meeting the overall 60 per cent emissions reduction target.

But achieving reductions in energy use is not straightforward. Major emission reductions need more than the economic reaction of cutting demand in response to price increases. We need more fundamental behaviour changes, too. Intense research is being directed at this issue, but we do not yet know how the change that is called for can be fully achieved. And when energy efficiency improves, it does not always translate into reductions in energy use. Part of the increase in income that results from better energy efficiency is spent on energy-using goods or services.

Both nuclear power and renewable energy offer radical reductions in carbon emissions. For this reason and because of the benefits it might offer in security terms, nuclear power is back on the political agenda. Whether it can play a significant role in the UK's future energy mix is not yet clear.

It is over 20 years since a nuclear power station (the Sizewell B plant on the East Anglian coast) was last promoted and built, and both the politics and economics of new stations are uncertain. Many renewables have great potential and are growing rapidly from a low base. However, many are not yet fully developed and are expensive. Objection to proposed wind farms shows that some raise serious local opposition. But renewables and nuclear both offer potential security benefits. So major conflicts between security and climate change may in the end be avoided.

The biggest challenge is political. If we are to achieve a rapid and radical transition from a high-carbon to a low-carbon society, we need to move at a speed and with a commitment that are unprecedented in peacetime. At the same time, the legitimate public appetite is for greater local involvement in decisions, and in more deliberative democratic processes. How can we move fast enough to avert the most dangerous consequences of climate change, retain political legitimacy and avoid too many costly mistakes? This is the most basic challenge now facing energy policy in the UK. ■



With people being urged to eat more fruit and vegetables, the demand for healthier food could significantly boost rural economies.

HOW HEALTHIER EATING COULD CHANGE THE COUNTRYSIDE

An increase in the demand for healthy food could have a significant impact in rural areas

IF EVERYONE IN BRITAIN were to follow official guidelines for healthy eating, the amount of fruit and vegetables produced for the country would have to increase by almost half, while meat and milk consumption would fall by around 15 per cent and fat consumption by around 20 per cent. To meet these demands by changing the output of British farms would require a significant increase in the amount of land needed for fruit, vegetable and grain farming, and a reduction in the land used for livestock farming.

These are just some of the findings emerging from research within the Rural Economy and Land Use Programme that is examining the potential for sustainable food chains, systems for producing and marketing healthy food at affordable prices. The research is also studying consumers' attitudes to such developments, and their willingness to pay for healthier and local foods.

The work is topical because people are being urged to eat more fruit and vegetables and less saturated fat. Nutritional goals are moving to the front line of agricultural policy, affecting both food demand and land use. One part of the research is

studying the potential for using novel production techniques to boost the nutritional content of food. One example is the prospect of a new generation of plastic films that increase the levels of beneficial phytochemicals in lettuces and fruit. There could also be improved storage and transport systems.

In the meat sector, researchers are looking at what happens to the fat content of meat and dairy products when animals have access to a diverse range of plant species to feed on. More broadly, what might be the impact of these production systems on biodiversity, landscape, employment and incomes?

Demand for healthier foods is likely to affect the rural environment and economy in a number of ways:

- farmers could capture a greater proportion of the home market if they produced food that was perceived as being of higher quality, perhaps because it contains more nutrients
- food that is produced in rural areas can lead to significant employment gains
- new production systems will produce healthier crop and livestock products, benefiting landscapes and biodiversity. ■



THE BEST ROUTE FOR UK TRANSPORT?

With people now used to cheap air travel, can we change our habits and our expectations?

BRITAIN'S TRANSPORT SYSTEM supports 61 billion passenger journeys and 250 billion tonne-kilometres of goods moved a year. Each day there are 72,000 international air and rail passenger journeys made for work to and from the UK, and 60,000 long-distance business trips within the UK.

Sir Rod Eddington used these figures to inform his recent transport review, which reported in December 2006. In the Review, he asserts that the UK's economic productivity and competitiveness will suffer unless policymakers get Britain's transport systems under control. Much of the transport system works well, he argues. And in many places outside the peak hours, roads are relatively uncongested. But the consequences of unchecked congestion on Britain's roads will be disastrous – increasing costs to businesses and freight by over £10 billion a year, plus a further £12 billion of wasted time for households in 2025.

Added to that, overcrowding on railways is forecast to increase significantly in and around cities. Rail unreliability already costs business at least £400 million a year and will grow without action to slow it. As for airports, the Eddington review forecasts that failure to add additional capacity in line with the government's white paper on air transport will cost business £6 billion a year.

So Sir Rod calls for urgent government action and offers five broad recommendations including the introduction of road pricing. But, while advocating change, he doesn't offer all the answers as to how his modern, responsive and efficient transport system can be achieved, and without environmental costs. Allowing the government to meet its challenging environmental goals must be an integral part of a transport revolution, he insists. How may those twin objectives be achieved?

In formulating their plans, policymakers would do well to heed research by Professor John Preston and colleagues, which points out that policymakers must urgently address the rapid rise in personal air travel if they wish to reduce CO₂ emissions. They investigated greenhouse gas emissions and related climate change impacts from transport at the personal, household and local levels. "We were surprised to find that when you consider the effect of personal travel on climate change, air travel is much more damaging than we had previously thought," said Professor Preston.

After studying the travel activities of more than 450 individuals living in Oxfordshire over 12 months, researchers calculated their personal travel emissions of CO₂ and other greenhouse gases. The findings reveal that air travel is responsible

AT A GLANCE

Although much of Britain's transport network works well, city congestion is a major issue, as is the sharp increase in the number of air travellers. A cleaner and more efficient transport system will demand a change in people's expectations.

for 70 per cent of passenger transport climate change impacts at the individual level. Car travel, in contrast, accounts for 25 per cent of an individual's transport-related CO₂ impact on the environment.

"To date, many government policies to reduce travel CO₂ emissions have been focused on car travel, and rightly so," Professor Preston points out. "But, as this study shows that personal air travel is three times as damaging as car travel, then policies should address this imbalance. Instead, however, current policies are encouraging the increase in air travel through low air fares and airport schemes."

A second significant finding is the very uneven distribution across the population of the damage done to the climate through personal travel. "The startling fact is that, while a large proportion of the population produce similar travel and greenhouse gas emissions profiles, a few are responsible for a disproportionately large share of the total," he explains. In this study, the top 10 per cent of travel polluters were responsible for 43 per cent of climate change impact.

In contrast, only 0.1 per cent of emissions were generated by the 10 per cent of the population who travel mostly on foot or by bicycle. "The clear implication is that government policies should target the relatively small number of people who are responsible for the worst emissions excess, rather than apply blanket policies to everybody."

A carbon tax on aviation fuel would appear

The cost to business of city congestion is huge and policymakers are recommending road pricing to cut the number of cars in city centres at peak times.



warranted. But this would be a difficult tax to operate in practice without EU-wide support. Planes would refuel in countries with no tax and the aviation industry is bound to lobby strenuously against any potential policies to reduce the attractiveness of air travel. The main alternative to pricing is a scheme called 'personal carbon allowances'. These have attracted attention from researchers and government including the current Secretary of State for the Environment, Food and Rural Affairs, David Miliband.

Under personal carbon allowances, emissions would be limited for each person in the UK, and we could 'spend' carbon, save it and trade it as we do with money. An individual's allowance would cover all personal greenhouse gas emissions, including air and car travel, household electricity use and heating, and it would be up to us how to spend and save carbon. There are a huge range of imponderables and technical questions about the idea's feasibility. But other policy answers need to be tested against the most radical options if we are to make the progress needed to reduce our climate change impact and avoid dangerous climate change.

"I fear that in 50 to 100 years' time, people will look back on the ease with which people were able to travel by air as an example of policy madness," says Professor Preston. "But people have now got used to very cheap air travel and the opportunities it affords to fly either for business or pleasure. And it will now be extremely difficult to readjust their expectations."

So it's changing people's expectations – whether for air or car travel – which could prove the biggest obstacle of all to a cleaner, more efficient and more responsive transport system.

The biggest transport users might have the hardest travel habits to change, which is why carbon allowances might be an especially powerful tool alongside higher prices. ■



WATER WORLD

MODERN TECHNOLOGIES SUCH AS washing machines and dishwashers, and habits such as daily showering, have led to a 70 per cent increase in domestic water consumption over the last 30 years. And around a quarter of domestic energy is now used for heating water.

A study led by Dr Dale Southerton at the Centre for Research on Innovation and Competition found that water use is a tricky habit to alter. There seems to be no set pattern of water use in the home, or even in the ways in which consumers now use the kitchen and bathroom, the main places where water is used. The number of bathrooms is increasing, to allow more than one person to use their facilities at once, and separate bathrooms for guests are growing in popularity to allow privacy.

The key to sustainable consumption is to prevent resource-intensive homes being the norm. Tackling this via the bathroom industry is difficult because it is fragmented. Bathrooms are sold in parts to be assembled by the consumer, and different regulations apply to the international supply chain in different countries.

Consumers can make a difference by opting for more sustainable technology and habits.

Research shows that the best time to change behaviour is when consumers are experiencing other life changes, such as changing careers or moving home. This is when people are more open to new ideas, and find it easier to switch to more sustainable routines. ■

AT A GLANCE

With household water consumption increasing by 70 per cent in the past 30 years, and modern houses containing more bath and shower rooms, studies suggest it is going to be extremely difficult to change the habits of consumers.





CHOOSING GREEN

What can UK consumers do to tackle climate change?

ASK SOMEONE TO MOVE your kitchen bin to another part of the room, and then see how long it takes you to stop going to the place it used to be. This is not a memory game; it is a suggestion made by Professor Tim Jackson of the Sustainable Technologies Research Programme to illustrate the difficulty of changing even the most simple of routines.

Consumer behaviours – from which products we buy to how we choose to live – are key to the impact that our society has on the environment, but these behaviours are often complex and built up over years. So if simple habits are hard to change, how can we learn to change complex behaviours? The answer is especially important when we consider ways to move towards more sustainable behaviour.

Recycling household goods, buying sustainable products, using energy efficient appliances and changing travel behaviour are all examples of pro-environment choices that the government wishes to encourage. But simplistic policy approaches to consumer and lifestyle choices risk alienating consumers instead of changing their behaviour.

Policymakers and campaign groups often take approaches to sustainable consumption based on 'consumer sovereignty'. This assumes that

AT A GLANCE

Consumers can all play a large part in tackling climate change but research suggests that one of the most difficult aspects of encouraging people to 'go green' is that changing living and buying habits is a complex and ongoing process.

anyone acting as a consumer has the knowledge and ability to weigh up the options and make an informed decision in their own (and possibly the community's) best interests. But this fails to take into account the many influences that act on anyone when making a decision. Social, psychological and institutional influences all serve to exert pressure on us, and we are often 'locked in' to patterns of unsustainable consumption by the influences and social structures that surround us in day-to-day life.

Changing behaviour is a complicated process, but it happens all the time. The swift uptake of mobile phones and the internet are only two examples

The swift uptake of mobile phones and the internet are only two examples where many people have changed their routines rapidly

where many people have changed their routines incredibly rapidly. Studies of such changes suggest that people learn new behaviour through trial and error, persuasion and social learning. We learn from our friends and colleagues as much as from 'the book'.

Research by Dr William Young and colleagues suggests that there is no such thing as a totally green

consumer. All of us are 'grey' consumers in some aspects of our lives. Consumers are inconsistent in their decision-making and the criteria they use from one purchase to the next. The researchers identified three ways of being an ethical consumer:

Translators are green in some aspects of their lives, and are driven by the desire to do what they see to be the right thing. They are open to change but do not deliberately seek it.

Exceptors are driven by a philosophy about consumption that gives sustainability a high priority. Many aspects of their lives are informed by this perspective, including their political views and involvement.

Selectors are probably the largest group. They tend to be green in one aspect of their lives but not in any others. For example, they may be avid recyclers or pay a premium for green energy or sponsor a child in Africa, but otherwise lead consumption-oriented lives. They do not see these behaviours as contradictory.

The existence of these different types may explain why marketers have found it so hard over the years to identify the 'green consumer'. What can firms and government policymakers do in the face of such complexity?

When trying to persuade people to change their behaviour, it is important that the source of information be credible. Government needs to be a role model for any changes it wishes to see. Not doing so will undermine the policy message and any information campaigns. If it leads by example, the government can send out a strong message about what is achievable and about how serious it is about wanting to achieve it.

It also seems that too much information can be overwhelming and alienating. Imagine trying to convince your neighbour to recycle. Anyone who has tried this will recognise that it is usually better not to constantly harangue them about why they should recycle, but instead to lead by example and provide information when it is asked for.

Many of our actions that have an influence on the environment, such as driving to work and buying food, are habits which are seen as routine and normal by society. Any attempt to convince people to change to more sustainable methods of transport, or to buy ethically traded food, has to deal with the ease and comfort of habitual behaviour. One answer is to set up opportunities for discussing potential changes, so that options are explored at a group or community level, rather than one individual trying to change alone. Getting involved with a community-based environmental group – or even having less formal discussions among a group of friends – is an effective precursor to changing your own habits and helping other people to do the same.

Tactics based on personal contact work well on a small scale, but policymakers also have to work on what motivates and inspires people on a larger scale. Here, they will need to take into account that individual choice is tempered by social constraints, institutions and infrastructures in addition to habits, social norms, attitudes and values. ■

FUEL CELLS

BRITAIN NEEDS a 'clear guiding vision and political will' to go beyond fuel-cell demonstrations to the creation of 'a fuel infrastructure that can be used by the automotive industry to support the development of fuel-cell cars'. "Fuel cells are a genuine clean technology," says Professor Chris Hendry of the Sustainable Technologies Research Programme, who conducted interviews in 70 companies involved with fuel cells in the UK, Germany, North America and Japan.

In the long term, fuel cells have the potential to be a 'disruptive innovation' – one that overturns and replaces existing products, like digital cameras, mobile phones, compact discs and DVDs in the recent past. Fuel cells offer a radically different form of reliable energy that does not threaten the environment in any way.

However, more support from industry and government is needed because profits from fuel cells are some way off. The investment needed to make fuel cells competitive is likely to be squeezed out by nuclear power and other alternatives. Firms with an interest in existing technologies will also tend to resist the introduction of fuel cells.

Although British university research into fuel cells has led to the establishment of several new firms, the industry remains undeveloped. Governments have done little to support the creation of a market. This compares unfavourably with the policies being pursued in Japan and Germany. Buses are potentially a promising test-bed for fuel cells, but using them in this way requires overcoming the economic and institutional inertia of the transport system.

Active government incentives, including the use of its own large procurement budgets, could help to overcome these problems and create a sustainable fuel infrastructure. ■

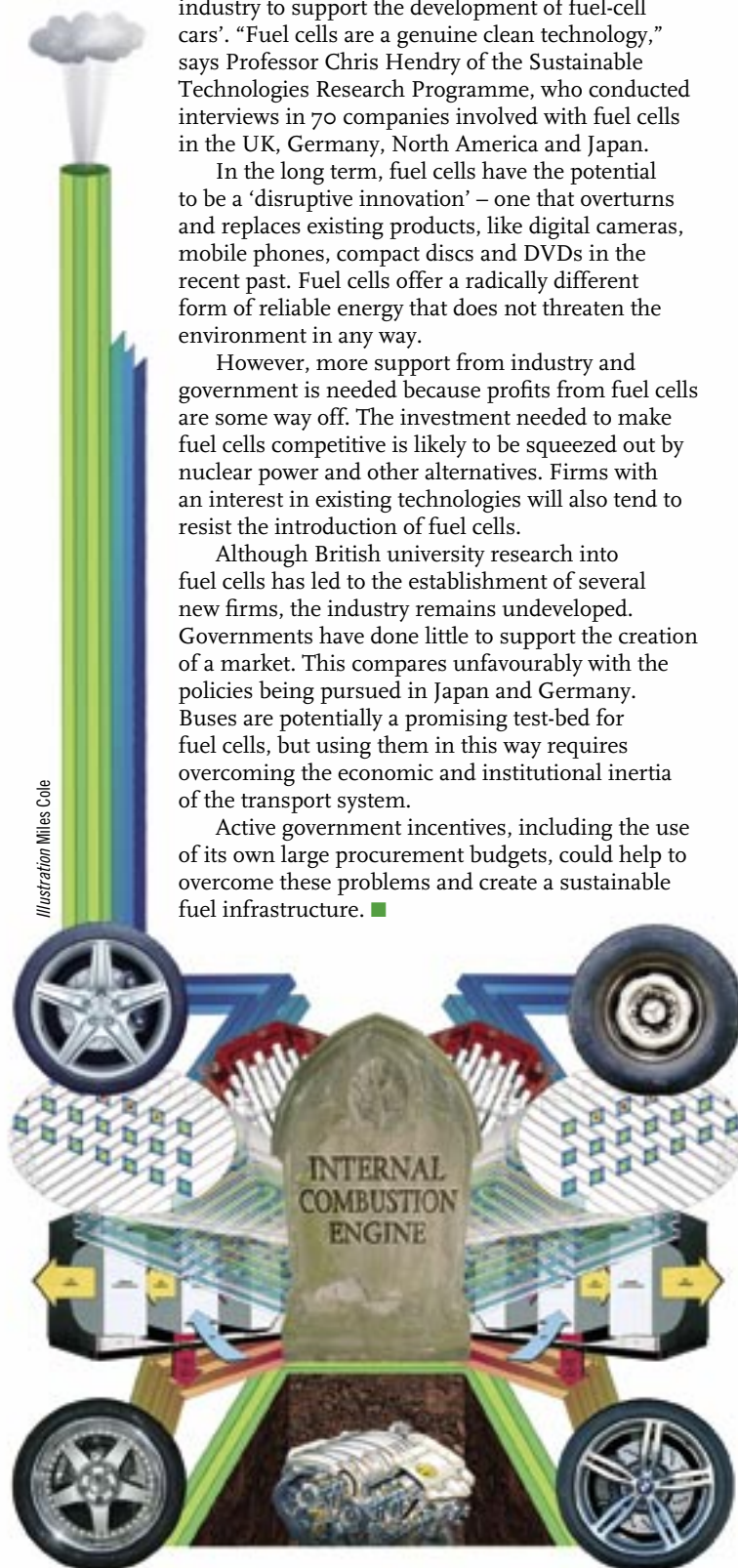


Illustration Miles Cole

Rural development

IS IT SUSTAINABLE?

PROFESSOR
PHILIP LOWE OBE,
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TELEVISION PROGRAMMES ROMANTICISE *The Good Life* – the ideal of self-sufficient country living. But that's not the way rural lifestyles are viewed by planners and decision makers. In their plans and strategies, rural living is regarded as unsustainable. Apart from a few farmers, rural areas are presented as being populated largely by ex-urban commuters and pensioners, groups critically short of economic and social dynamism. Rural areas are cast as comfortable but backward places that are the passive beneficiaries of urban growth.

But this image is an inaccurate one. In fact, rural-urban commuting is a minor feature of most rural labour markets. There are enough jobs in rural districts (which include many small towns and villages as well as open countryside) to employ four-fifths of their economically active residents. Moreover, employment growth in rural

The explosion of rural home-working is an important trend towards sustainable rural and regional development

districts has been double that in urban areas. And only around 10 per cent of those migrating to the country are retired. Much more numerous are the younger people in their 30s and 40s moving to rural localities. This group is typically very dynamic and is behind the growth in part-time and self-employment, the setting up of new businesses and the creation of community enterprises that are characteristic of rural areas. International evidence suggests that accessible rural areas attract what Richard Florida calls the 'creative classes', who may be particularly important to economic development.

For the past 15 years or so, public investment has been pumped into cities. Meanwhile the rural economy has boomed, with no fanfares and little assistance. The annual report from the Commission for Rural Communities finds that the rural districts of England host 4.5 million employees working in 700,000 offices, shops, factories, hospitals, schools, farms, hotels and other workplaces. In the growth of jobs, businesses and sales from firms, rural areas outperform urban ones.

Most rural jobs are in distribution and retailing, business and financial services, public administration, education, training and health, and manufacturing. Growth in these four sectors is far outstripping the decline in the primary sector. Agriculture accounts for only two to three per cent of rural employment.

This convergence of rural and urban economies should not be surprising. Heightened labour mobility and interconnectedness undermine old notions of rural and urban as distinct spheres. But this economic convergence unsettles powerful interests. In different ways, farming interests and urban technocrats each fear loss of influence and control, while environmentalists fear the loss of the traditional countryside. Economic planners are also

inclined to dismiss rural economies. In the past they disparaged 'dormitory villages' and 'costa geriatricas'. Now they fear such supposed problems as 'reverse commuting' (urban to rural travel to work) and downplay the importance of so-called lifestyle businesses. Physical planners, though, hold the trump card. They regard rural development as fundamentally unsustainable. They often want either to restrict development to larger settlements with a full checklist of services, or to minimise car travel. Planners seem transfixed by the notion of re-engineering the settlement pattern in favour of 'compact cities' to help reduce Britain's contribution to global warming.

Two examples illustrate more sustainable approaches to rural development.

The first concerns market towns. Small rural towns are the fastest growing settlement type and are the most popular choice when people are asked where they would like to move. But many rural residents bypass their nearest town and opt for services and employment in more distant urban centres. For their own viability and in pursuit of broader sustainability objectives, market towns need to renew their functions for their surrounding rural areas. The Market Towns Initiative, promoted by the Countryside Agency, built up a body of knowledge about the regeneration of market towns and their contribution to the development of their rural hinterlands. More than 200 market towns in England conducted health checks, which engaged the local community including nearby rural residents. The principal concerns uncovered were: inadequate leisure and recreational facilities, especially for young people, poor range and quality of shops, insufficient support for local businesses, poor quality of employment, healthcare services, and housing affordability.

The second example is rural home-working. In many rural areas the population is growing by the in-migration of wealthier, better skilled, middle-aged and older people who are making lifestyle decisions and choosing to live in the country. They are an important source of new business activity, and are creating and supporting jobs in their locality. Many are choosing to start or relocate a business in their new community. Using their home as a work base is a relatively low risk strategy that also reduces the need for private transport, cutting congestion and pollution. There has been an explosion of home-working in rural areas. There are now more people working from home in rural England than the entire employment base of the cities of Birmingham and Glasgow combined. This phenomenal development has been unplanned and unaided by government or business support agencies. It is largely ignored, and certainly not encouraged, by the planning system. Yet it is clearly a very important trend towards sustainable rural and regional development.

Rural areas, including small towns, are dynamic economically, despite the indifference and hostility of planners. With more official recognition and support they might be able to achieve even more. ■