Report:

Changing consumer lifestyles and their possible effect on future patterns of energy consumption

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Content

Issued in 2002, this report will not be updated.

1 Summary

This report provides a summary of detailed research conducted by the Future Foundation during 2000/2001 that provided a range of insights into how consumer lifestyles may change in the future. It predicts large changes in aging population numbers, continuing increases in single person households and increasing computer literacy amongst the population due to the continuing rise in service industry employment. Combining increasing computer literacy with projected continuing increase in consumer affluence underlines the prediction that take up of consumer electronic equipment will continue to grow.

2 Introduction

Most of the work of the MTP is directed at future developments and much, to date, has concentrated on providing solutions that are underpinned by improvements in technology. These have been achieved through a variety of policies; sometimes directly through regulation and the introduction of standards for improved energy efficiency, sometimes indirectly through negotiating voluntary agreements with industry.

Creating more energy efficient products will not enable the UK to gain all the reductions in energy consumption needed to meet the targets set out in the 2003 Energy White Paper (see BNXS11). There are other factors that will have a substantial effect on energy consumption too. These include the continuing proliferation of powered appliances in UK households, changes in user habits, changes in demographics and so on.

This Briefing Note provides an insight into some of the consumer related changes that can be expected to impact on future patterns of energy consumption. It concentrates on the macro structural factors such as demographics and offers a number of predictions about future user behaviour where these might be expected to impact on energy consumption. This is not an exhaustive document. It is intended to open readers' minds to possibilities; to stimulate thinking on what to factor into models of future energy consumption and to raise awareness of where novel measures may need to be introduced to circumvent excessive new demands for energy by consumers.

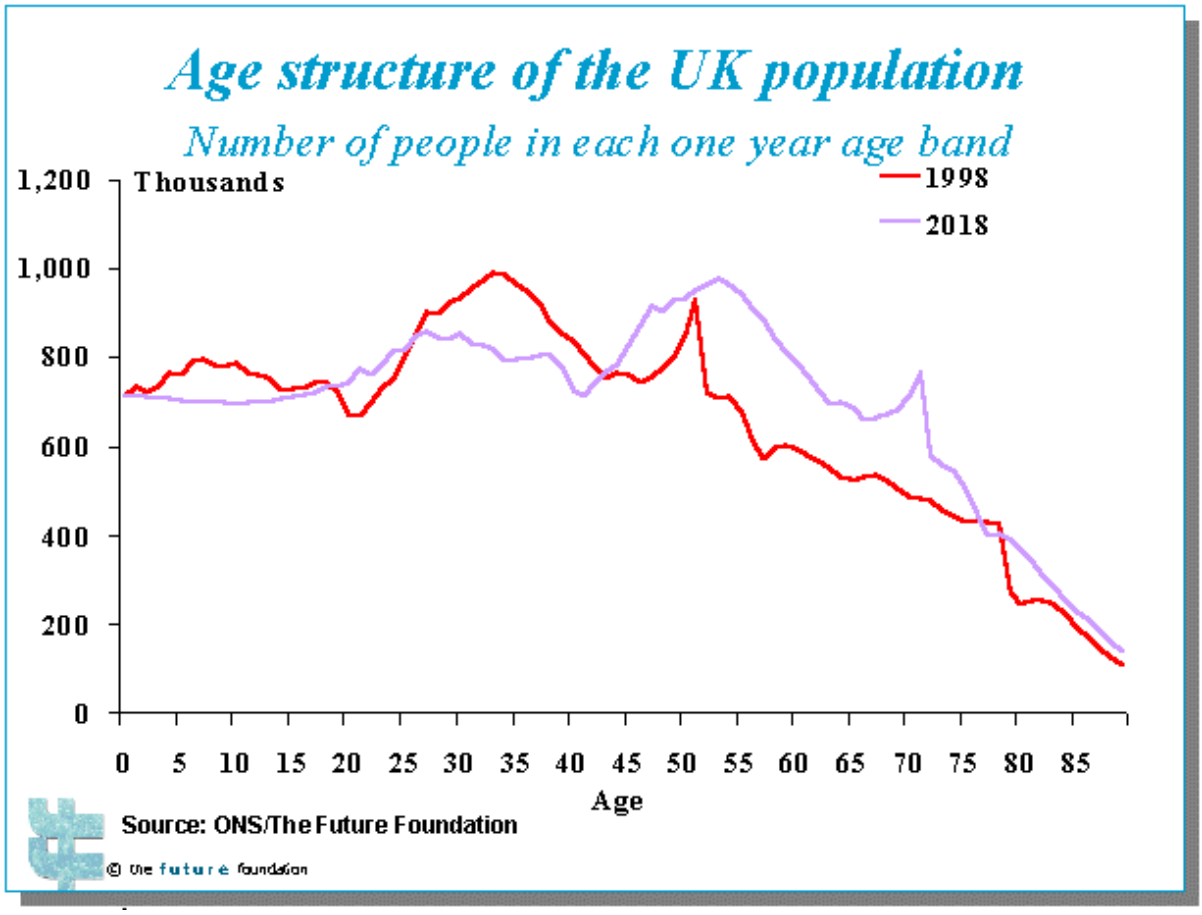
This Briefing Note is based on a substantial piece of research commissioned from the Future Foundation[1]. The basis for their commission was to attempt to cast up to 20 years ahead by reviewing the large range of statistics in the public domain e.g. those published by the Office of National Statistics. Additionally, the Future Foundation provided a range of proprietary research material and analysis. Much of detailed mathematical modelling provided by the Future Foundation is currently being reviewed for inclusion into the MTP's modelling tools.

[1] The Future of Domestic Energy Consumption" The Future Foundation 14-16 Cowcross Street London EC1M 6DG

- The Future Foundation's full report is held on file in MTP archives.

3 Demographic change

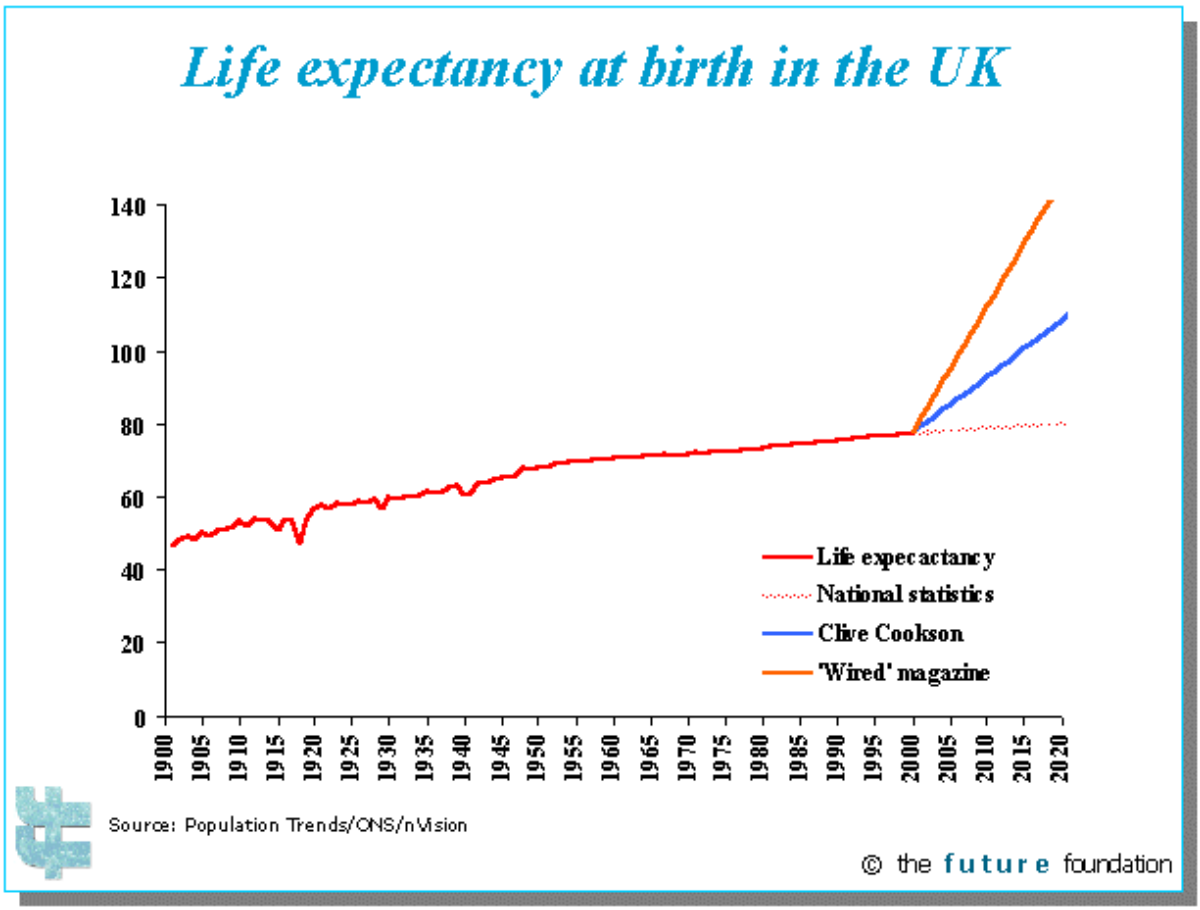
The population of the UK will become more middle-aged over the next 20 years due to the baby boom of the 1960s. There will be 3.6 million more 45-64 year olds in 2018 than in 1998 and 1 million more 65-70 year olds.



Body

4 Prospects for longevity

The prospects for longevity continue to improve; some commentators predict a dramatic improvement.



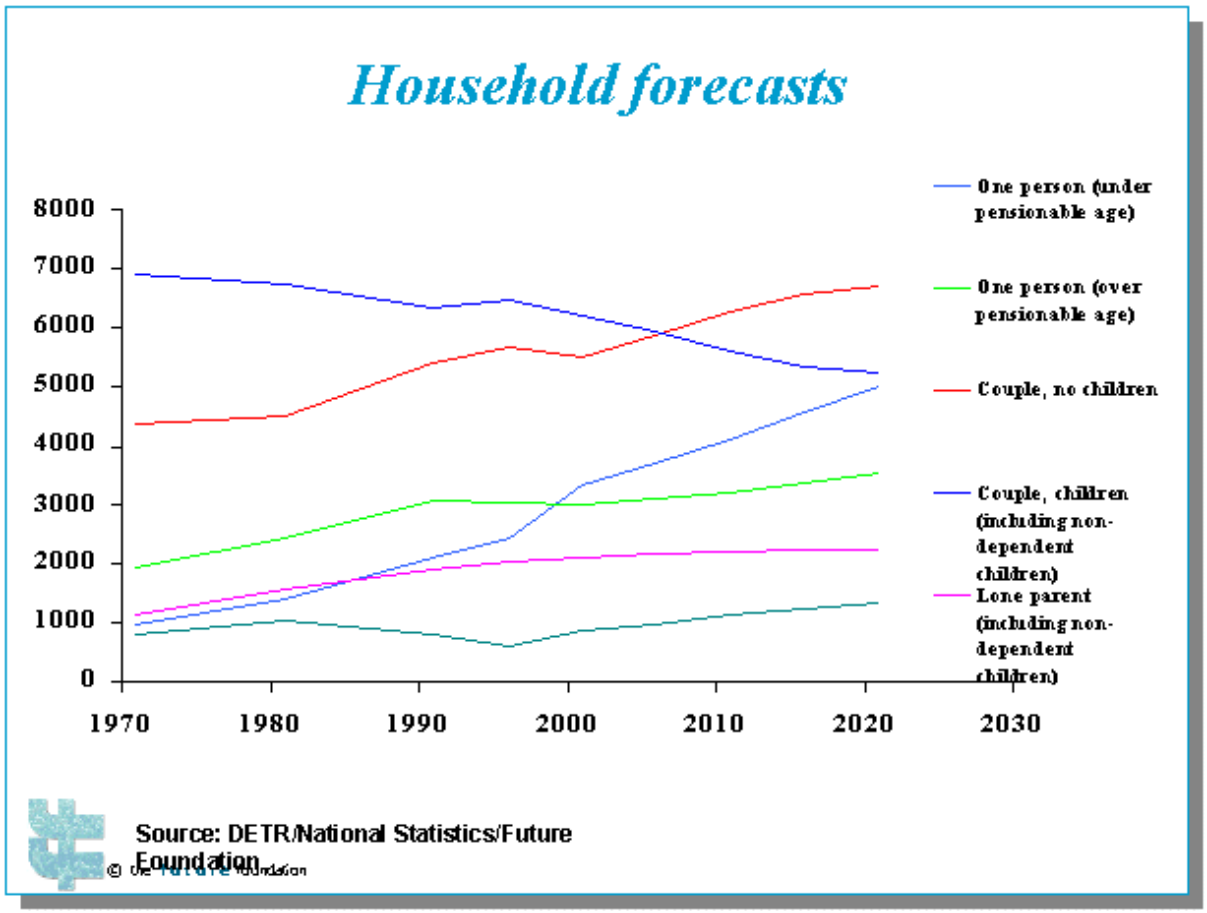
4.1 Impact on energy consumption

A number of lifestyle changes may impact here:

- A renewed focus on health and fitness as a proxy for youth and beauty – health and beauty related appliances from home gyms to solariums and massage beds could become more common.
- Products associated with the needs of the infirm may become more common: stair lifts, bath lifts and enhanced security and communications equipment.
- This elderly society is also likely to be a highly communicative one, so could be expected to invest in communications activities and equipment

5 Household structure and demographics

The absolute numbers of households is set to increase, although the numbers of households comprised of couples with children is set to decline.



5.1 Impact on energy consumption

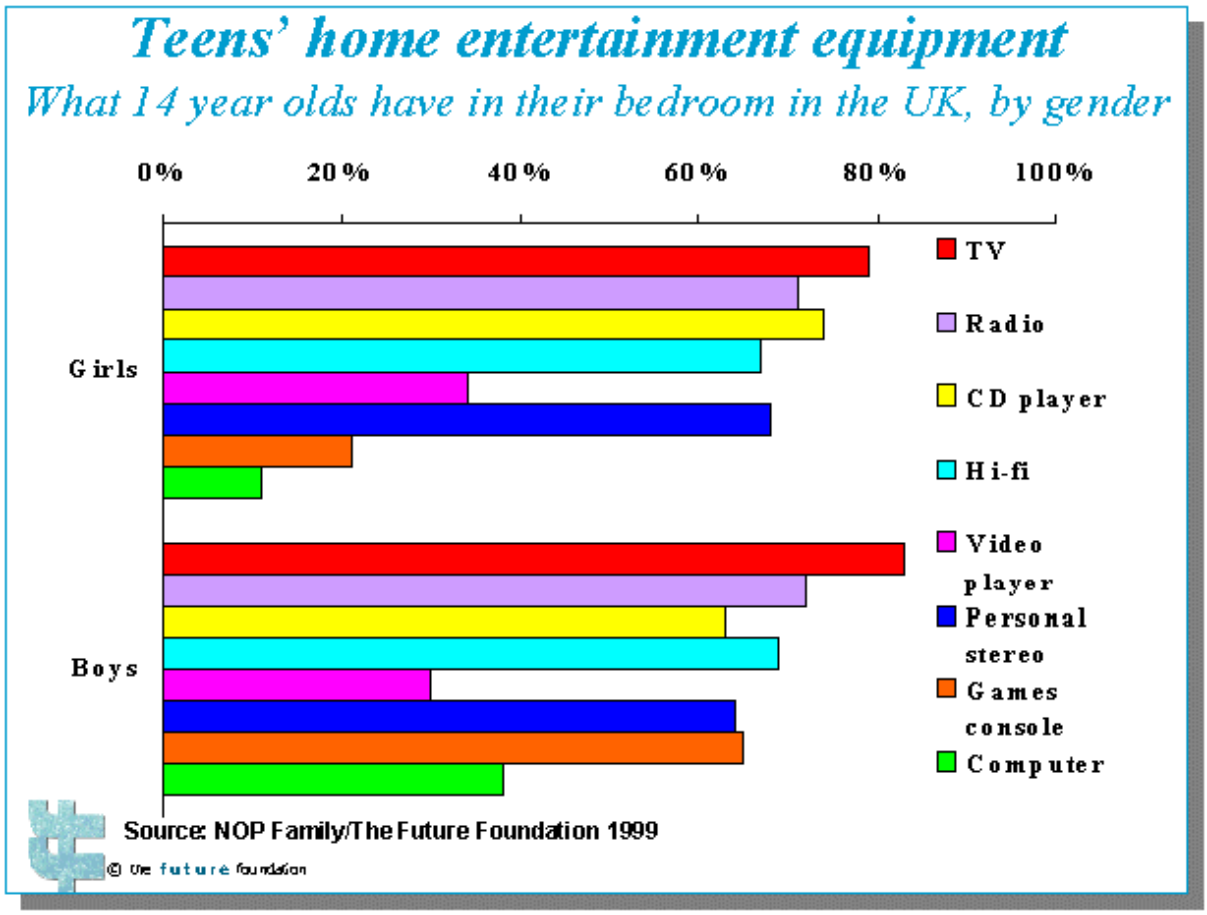
The most significant implication for energy consumption is likely to stem from smaller groups of people tending to occupy the household space designed for larger groups.

- Smaller households are less efficient in terms of their heating and lighting than larger households.
- Small households may accrue inefficient energy practices such as doing small loads of washing and drying, heating a full tank of hot water every day, keeping a whole fridge and/or freezer permanently cold
- House size may impact on the kind of appliances purchased and this may have an impact on energy consumption.
- A single person living in a small space may buy a draining board dishwasher - less energy efficient than a full-sized machine when fully stocked.
- Washer-dryers may be the only option for those with little space and no garden for drying clothes.

6 Family Dynamics

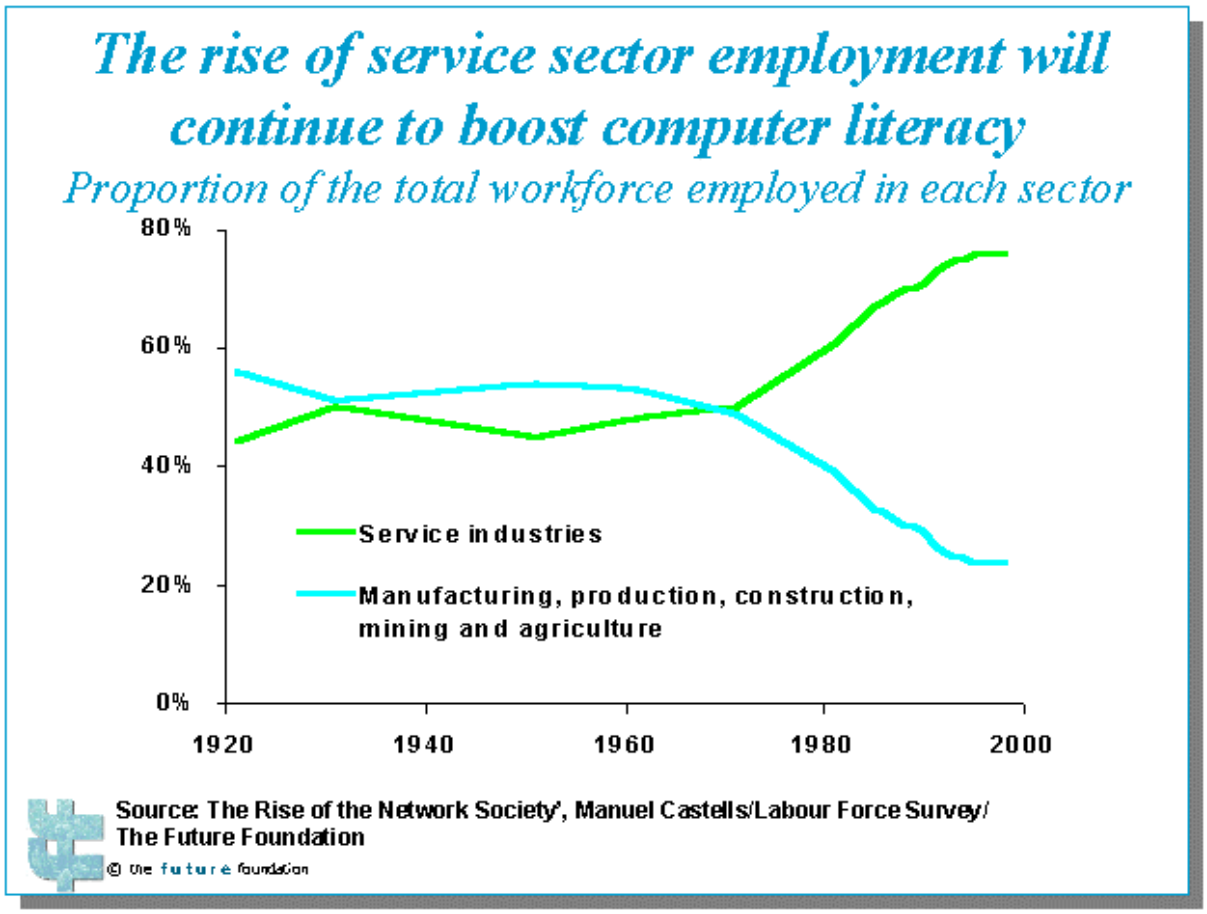
Patterns of family behaviour continue to evolve and these can have a significant impact on energy consumption. One now established pattern is the proliferation of entertainment equipment owned by children, the economic influence of the young having never been

greater (approximately 6x greater than it was of the 50s generation at the same age). An emerging pattern is the adoption of a “stockade mentality” by parents when it comes to their children’s safety – children are chauffeured more frequently, encouraged to stay at home in (previously unheated) bedrooms stocked with TVs, games consoles etc. and given their own mobile phone in order for their whereabouts to be checked. All of these increase consumption of energy.



7 The Changing nature of work

The broad trends are frequently reported in the media: job losses in the manufacturing and production industries and job gains in services; a continuing increase in the numbers of women working and so on. The modern breed of British worker is more likely these days to use a computer at work and have relatively advanced communications skills. This is bringing about an ‘upskilling’ of the workforce, and a consequent ‘middle-classing’ of the population with all that implies for equality of reward and expectation.


The rise of service sector employment will continue to boost computer literacy
Proportion of the total workforce employed in each sector
80%
60%
40%
20%
0%
1920
1940
1960
1980
2000
Service industries
Manufacturing, production, construction, mining and agriculture
Source: The Rise of the Network Society', Manuel Castells/Labour Force Survey/ The Future Foundation
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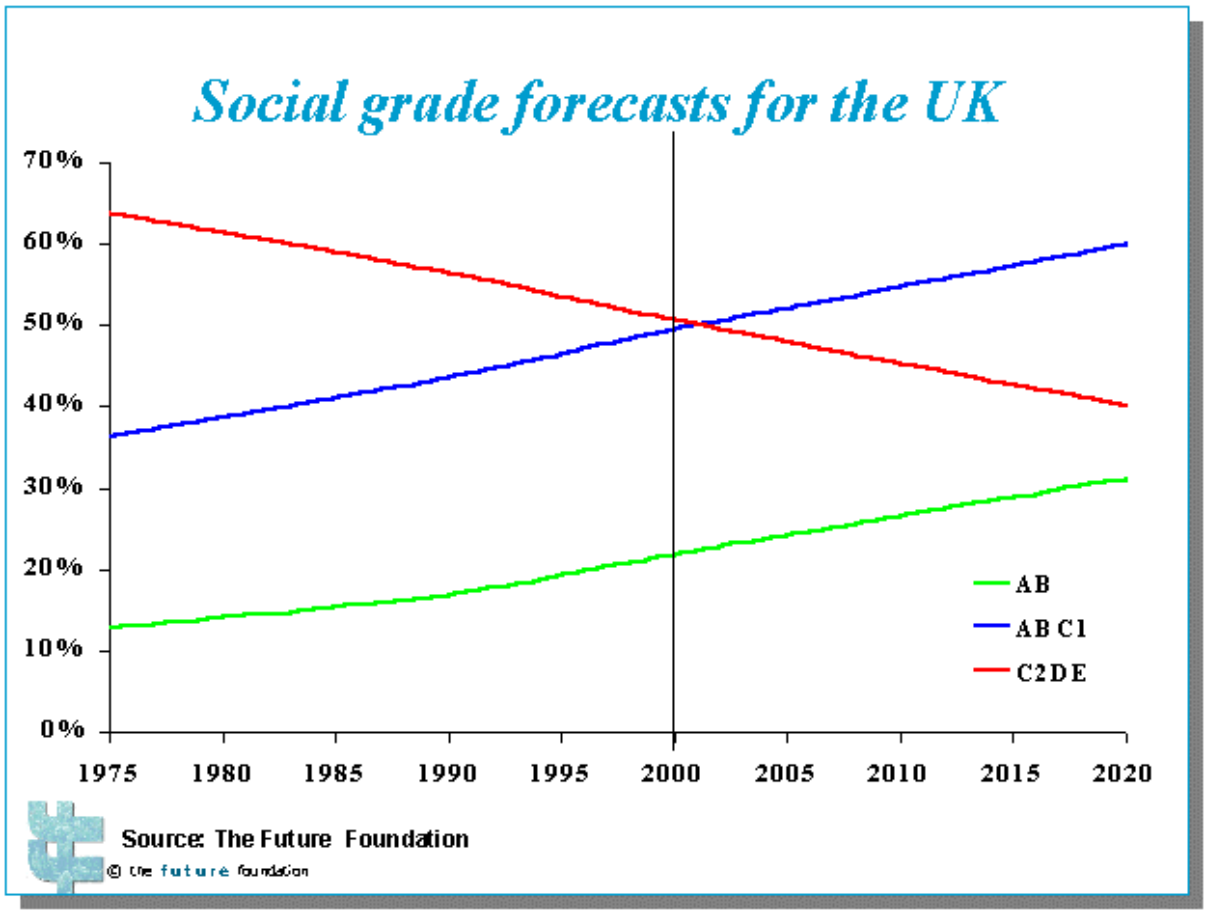


7.1 Impact on energy consumption

With increasingly skilled work comes higher remuneration and greater affluence. The Future Foundation suggests that this social shift may have important implications for domestic energy consumption:

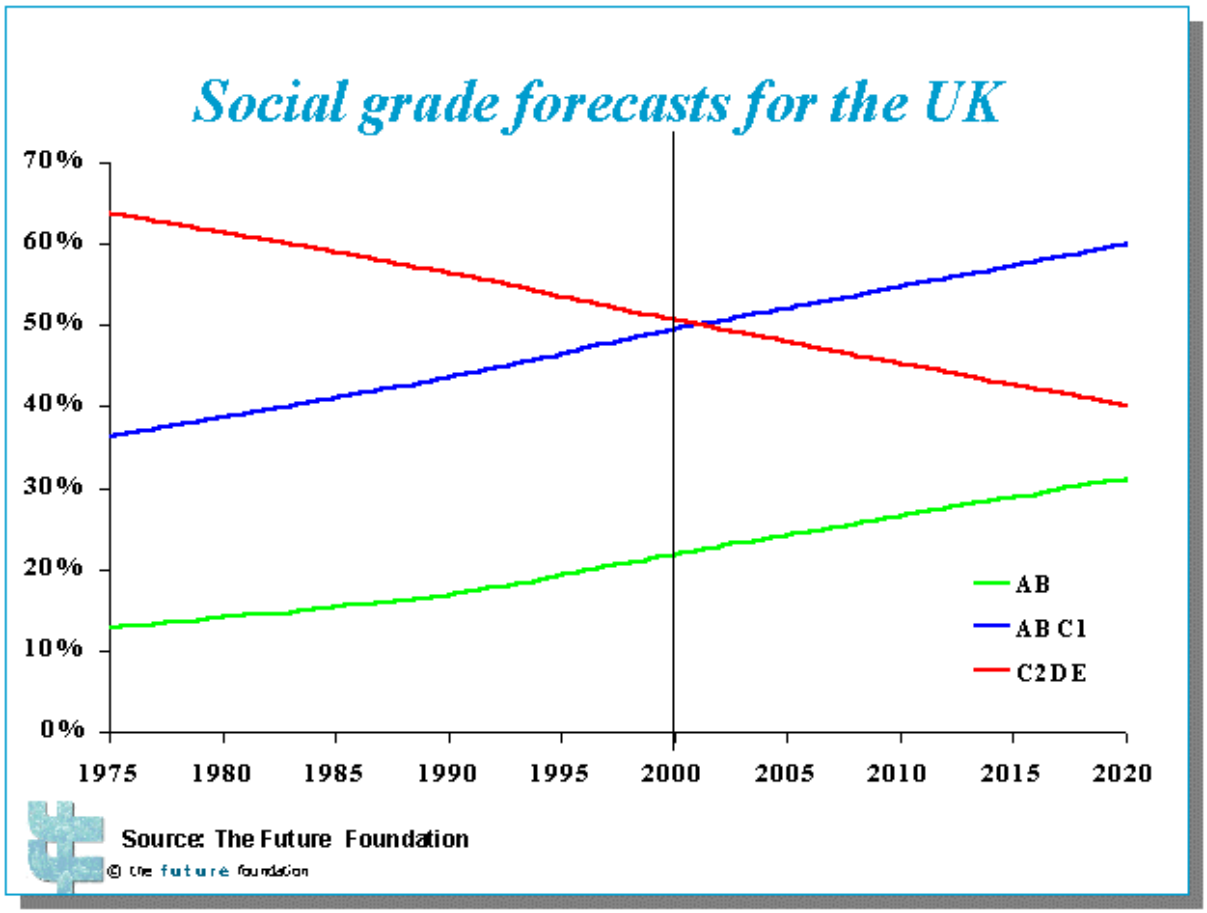
- A higher penetration of communications and entertainment technology.
- A greater disregard of cost-saving messages.
- Women do a greater proportion of the housework than men, even when they have a job outside the home. This could lead households to purchase labour-saving appliances, such as dishwashers, to cut down on the number of manual chores.

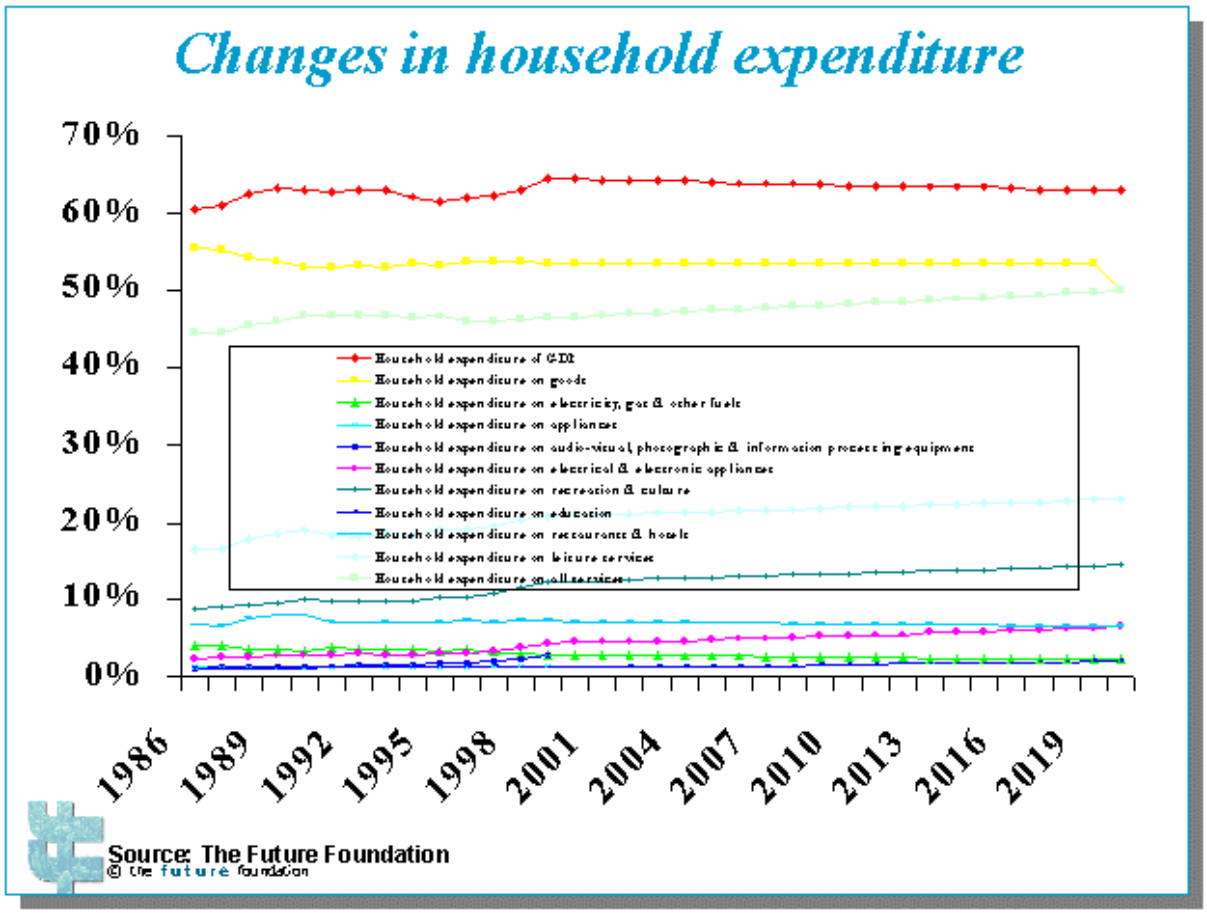
Conversely, if a woman goes to work where previously she had stayed at home, then this may lead to a reduction in domestic energy consumption:

- Less heating and lighting of the home
- Less preparation of food and hot drinks during the day
- Radio or TV no longer on at certain times.

8 Affluence and expenditure

The annual level of real household disposable income, the measure of consumer affluence most relevant to their spending on electric and electronic appliances, energy, on-line education and entertainment has grown by almost 200% over the past 4 decades. Household disposable income is forecast to continue to grow.





8.1 Impact on energy consumption

The Future Foundation's analysis is that the impact of affluence on domestic energy consumption will potentially be very high:

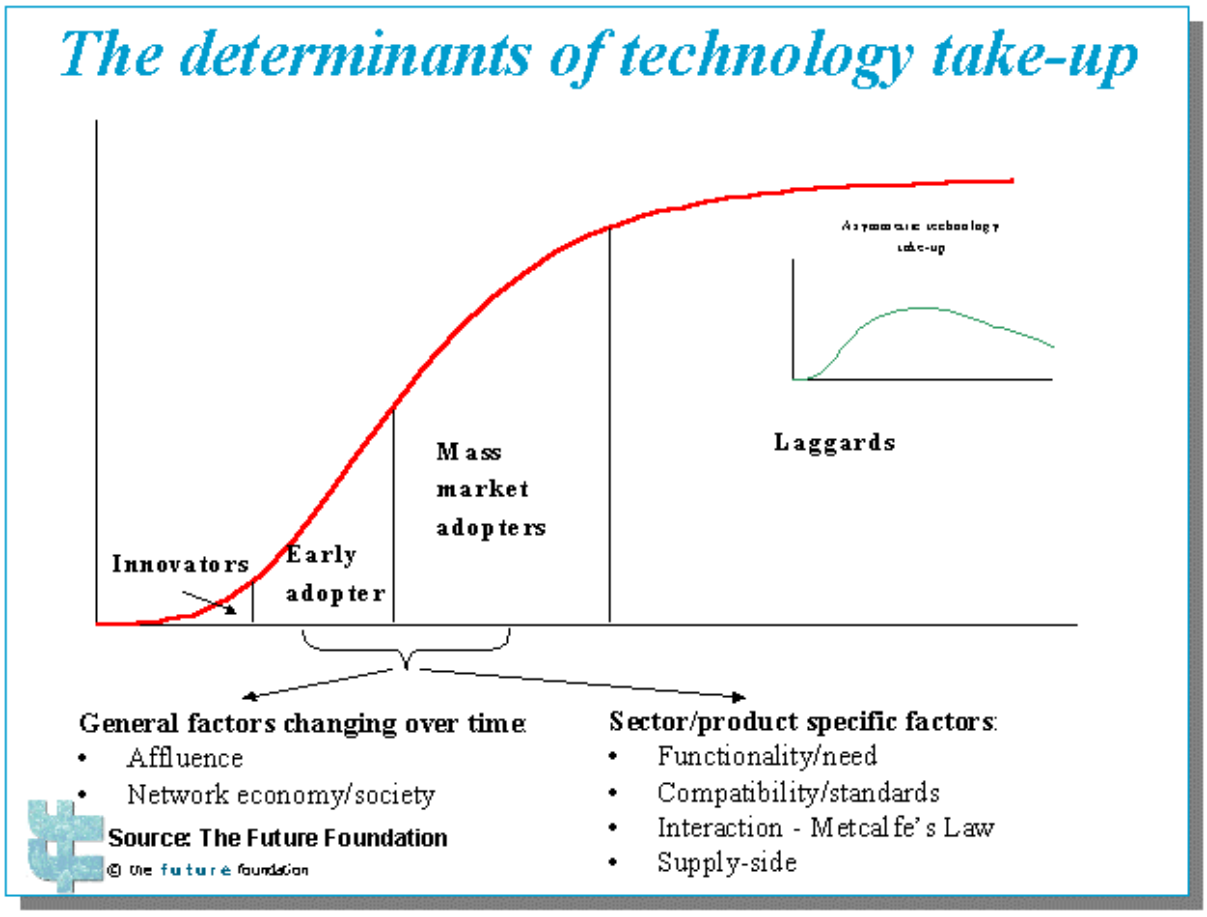
- Consumers will be able to buy domestic appliances and communications technology that they could not previously afford. These appliances will consume electricity both in use and on standby.
- Energy costs have less impact on affluent consumers.
- Increasing affluence could dull consumers' sensibilities to any cost-saving messages.
- Affluence can be used to dispel pent-up time frustrations by trading money for time (by buying time-saving appliances).

New appliances, however, tend to be more efficient than older ones, so if the replacement cycle is reduced due to affluence – upgrading when fashion or fancy dictate, rather than waiting for the machine to be on its last legs - then the net efficiency of the appliance stock could be increased.

9 The uptake of technology by consumers

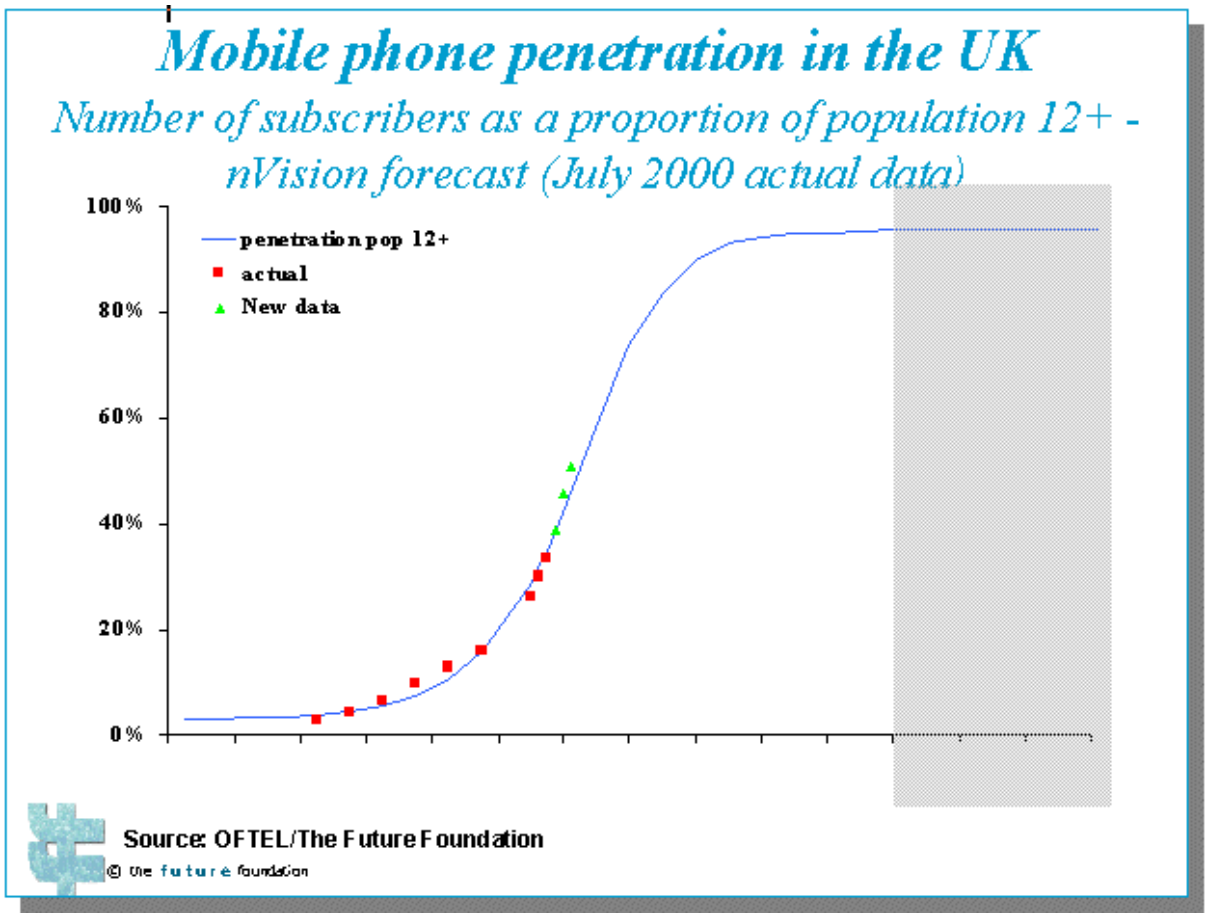
It has been suggested that there are 3 reasons for expecting the boom in technology to continue:

- Moore's Law: Moore proposed (in 1965) that the number of transistors that could fit on a chip would continue to double every year. This prediction has remained remarkably accurate up to the present day. The results to date have been astounding; computers and microprocessor controls just keep getting smaller, faster, cheaper and smarter.
- Metcalfe's Law: Metcalfe's Law is normally stated as 'the value of a network rises at a rate equal to the square of the numbers using it'. This explains the attraction, explosive growth and value of the Internet:
- Autocatalytic processes: The pace of technological change is accelerating exponentially because computers, and other technology artefacts, are now able to assist in the development of new, improved components and products - computer software is used to design better hardware, for example. In other words, the process is 'auto catalytic' – ever smarter machines are helping to build ever-smarter one



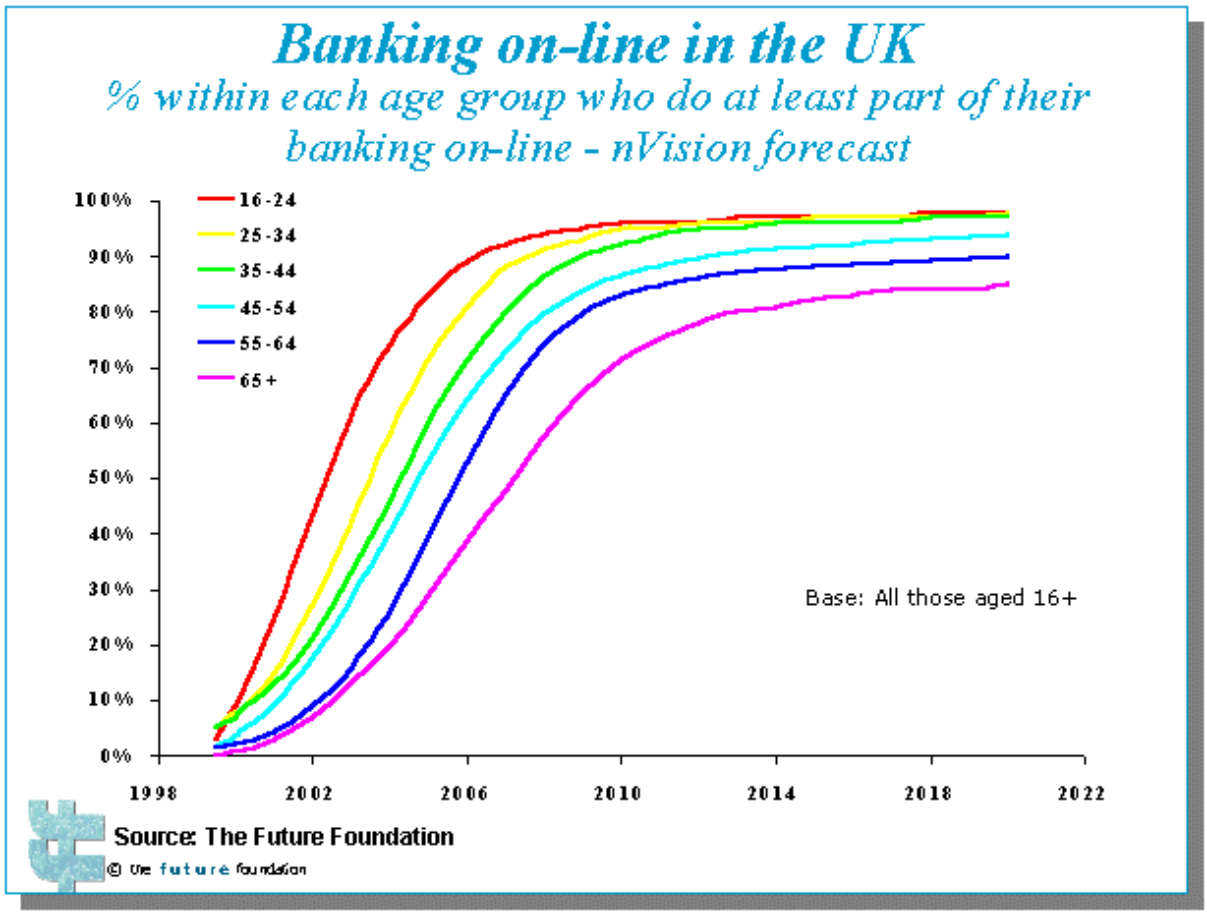
9.1 Impact on energy consumption

Certainly to be highly significant, particularly with respect to stand-by. Mobile phones are a typical example; all will need battery chargers, many of these chargers will simply be plugged into the mains for much of the time. And mobile phones are just one example of forecasted technological take-up…



10 Technology for shopping

The Internet is not expected become the default shopping medium in the UK, the sensual and social aspects of shopping are simply too powerful. Nether the less, its impact continues to grow very fast – Internet sales rose by 95% in the UK during 2002 (retail sales grew by 6% over the same period).



10.1 Impact on energy consumption

Difficult to call, time spent on-line shopping is time spent in the home – energy is required to run the equipment, heat and light the house. But less fuel will be used going to the shops. Home delivery of foodstuffs could lead to higher energy consumption, should this lead to consumers installing doorstep refrigerator devices to keep any food fresh that is delivered while there is nobody at home. One big imponderable is the not knowing what consumers will do with the time they save.

11 E-materialism

E-materialisation – the process whereby physical goods and the need to distribute them are eliminated and replaced by data transfer – will have an important impact on the markets it affects, though these will be few. The market for CDs has been affected by MP3s, which can be ordered, paid for and downloaded via the Internet. E-materialisation could also undermine the market for books newspapers, magazines, and some simple tasks, such as preparing tax returns.

11.1 Impact on energy consumption

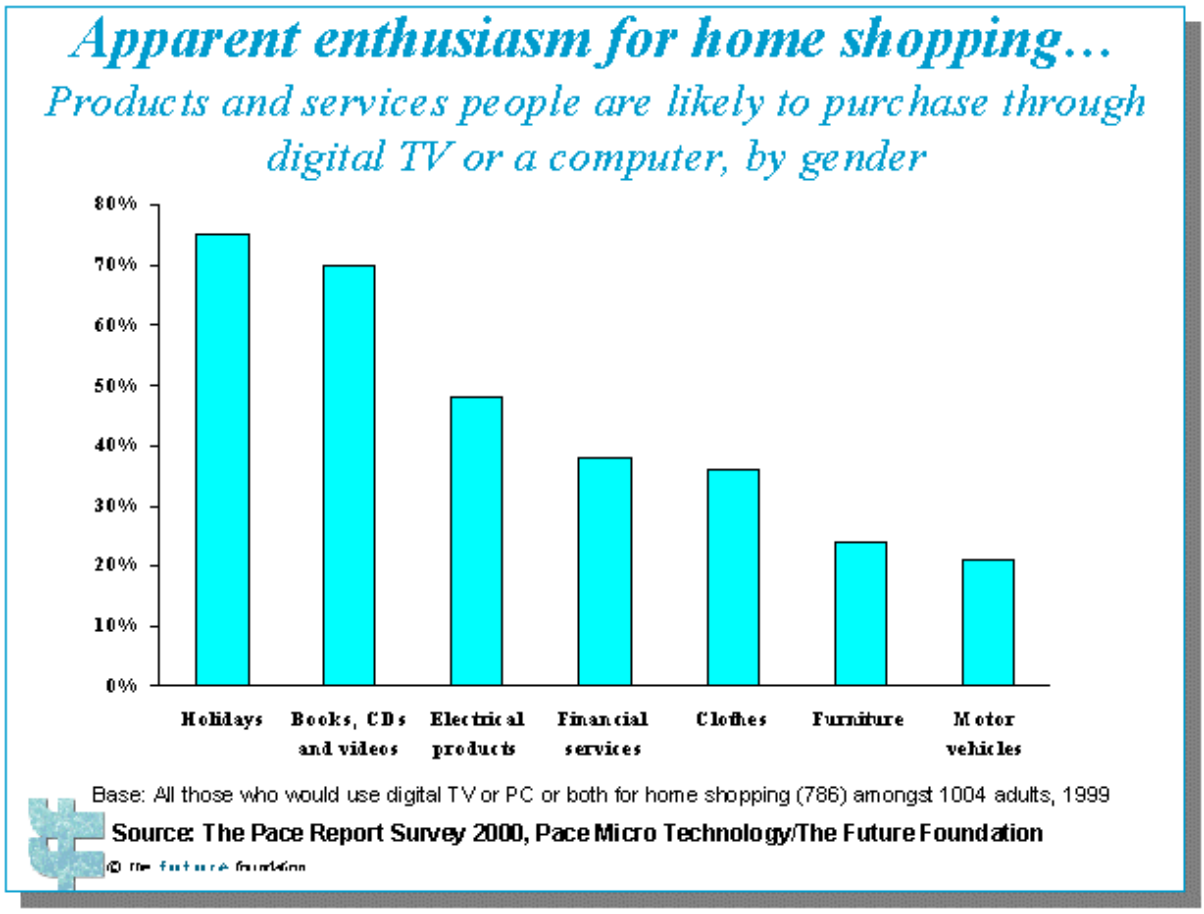
This could reduce energy use:

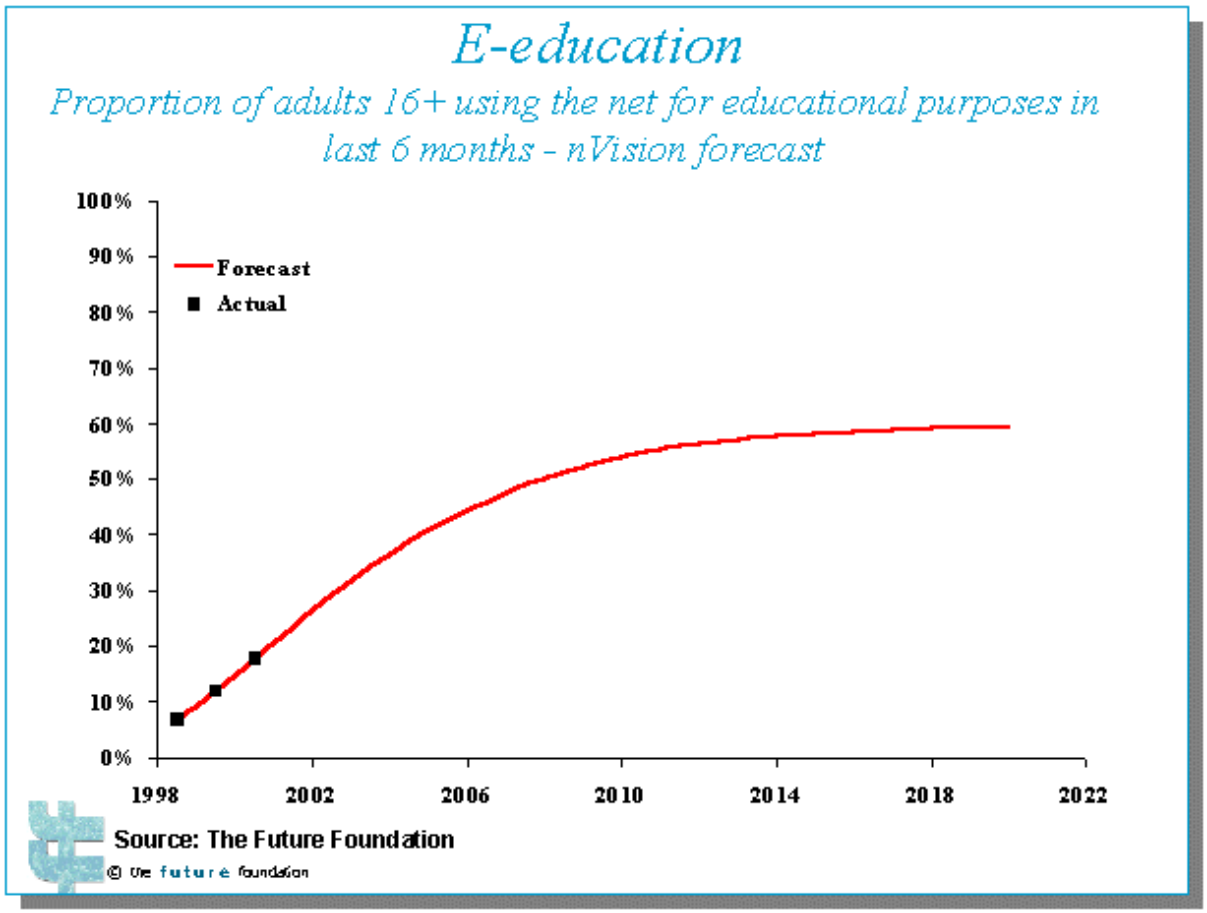
- The “always on” PC would do tasks which hitherto were performed by more specialised pieces of equipment such as TV and audio.
- Reduced transport to collect and deliver downloaded product.

12 Technology-related activities: banking, education

In banking, consumers are already being driven to remote access via the telephone, and for many the migration to on-line banking is the logical next step.

Another activity that can be partially transferred on-line is education, be it at school age or for older learners. The UK already has a government initiative to install electronic links in schools (see also http://www.ngfl.gov.uk) and an increasing number of UK universities are also insisting on students owning a PC.





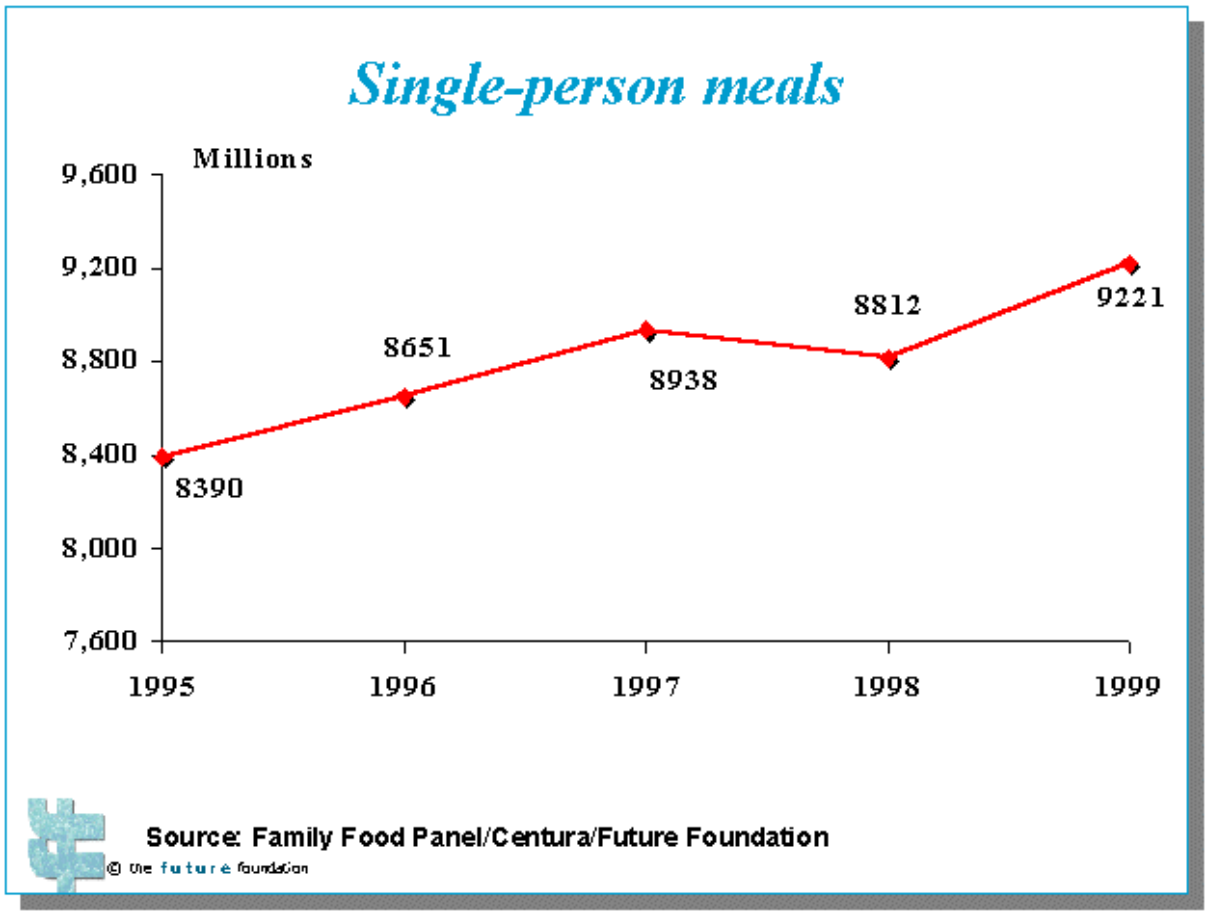
12.1 Impact on energy consumption

The impact on domestic energy consumption is expected to be greater for education with more time being spent at home studying instead of in libraries:

- Increased need for domestic lighting, heating and computer use
- Additional number of meals consumed inside the home

13 Changes in cooking and eating

Fewer people are cooking from scratch. In 2000, expenditure on ready and pre-prepared foods in the UK overtook that of raw ingredients for the first time.



It can be seen that the number of single meal occasions is rising inexorably as people eat on the move or between other activities. This trend is expected to continue as the number of single-person household's increases.

13.1 Impact on energy consumption

The overall effect on energy consumption of such changes is difficult to predict. There are possible increases in energy efficiency:

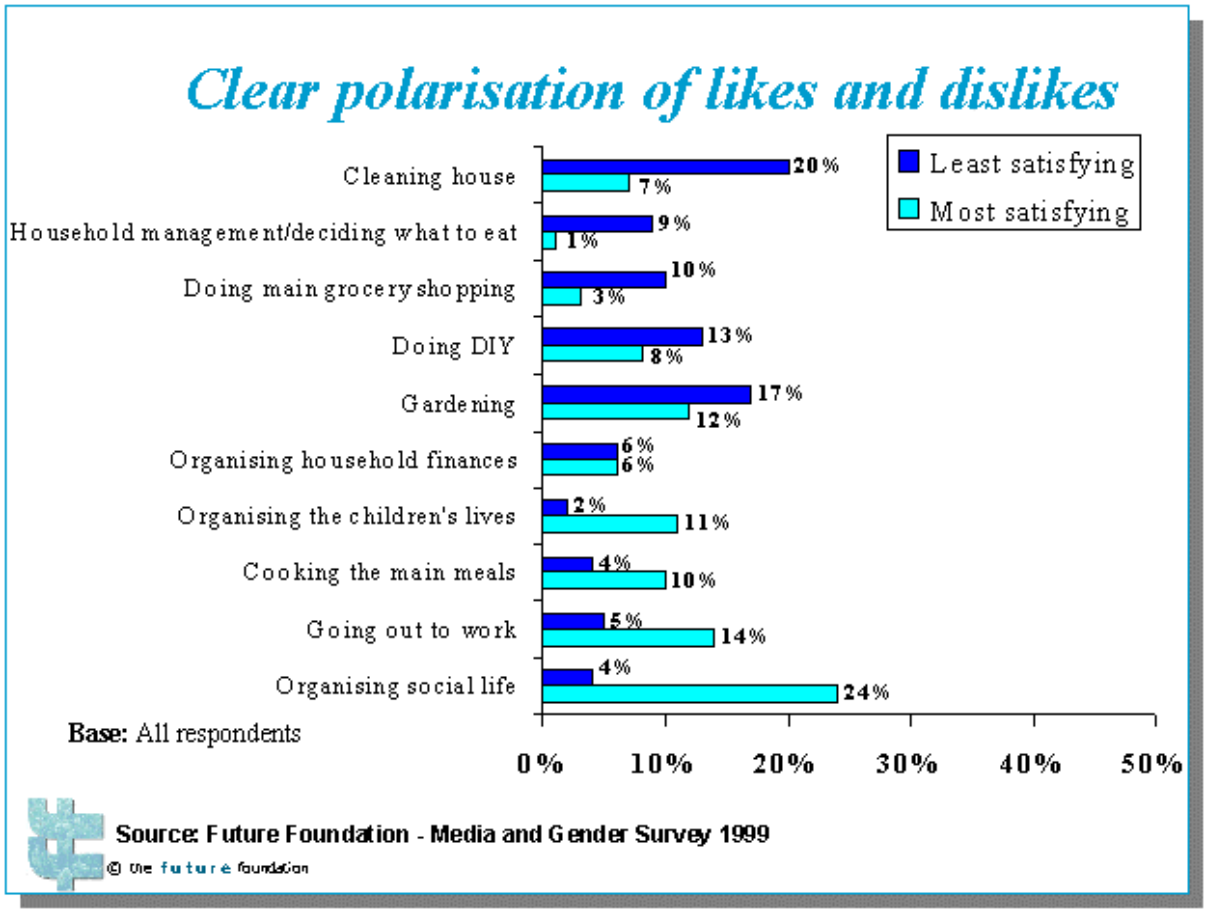
- Re-heating a ready prepared meal for one in a microwave can be energy efficient.
- Cooking and freezing batches of food for later consumption is energy-efficient at the cooking stage
- Eating out and eating take-aways forms a growing part of consumers' culinary repertoire

There are also possible decreases in energy efficiency:

- Preparing and cooking food for one is less energy efficient than cooking for several.
- Consumers to increasingly purchase convenience foods that need to be stored in a freezer and (possibly) defrosted in a microwave
- Similarly, cooking and freezing batches of food involves later stages which all consume energy: freezing, defrosting (if done in a microwave), and re-heating.

14 Time pressure on consumers

As far as the domestic consumption of energy is concerned, the Future Foundation suggests that this will have a potentially important impact. Consumers will want to trade money for time; ditching the activities they find unrewarding in favour of those that they find fun and fulfilling. This is why they feel that rising affluence has an impact on consumers' lives beyond the simple ability to buy new appliances: suddenly the desire to eliminate tasks can be realised – such as buying a dishwasher to save time on washing up - thereby reclaiming personal time. In this context, looking at which tasks consumers say they enjoy and which they dislike is illuminating. Trading money for time by buying timesaving appliances will increase domestic energy consumption.



14.1 Impact on energy consumption

- Older people may well require a greater level of domestic heating and lighting than younger people.
- Older people tend to need less sleep, so may extend the consuming day at either end

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Report Title: Report Title and Report Title

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