



# **Foresight Futures 2020**

**Revised scenarios and  
guidance**

11010010100  
0101010010  
101100000001  
000001010  
11010010100  
0101010010



# Contents

- 1** Contents
- 2** Introduction to Foresight Futures 2020
- 4** Overview of the scenarios
- 5** The scenario storylines
- 6** World markets
- 10** National enterprise
- 14** Global responsibility
- 18** Local stewardship
- 22** Guide to using the scenarios

# Introduction to Foresight Futures 2020

Everyone needs to plan for the future. Even everyday activities such as leaving the house in the morning require decisions based on assumptions about the future – e.g. what will the weather be like today? Do I need an umbrella or sunglasses? Thinking about the future is a key aspect of everyday life.

In the same way businesses also consider how the future might change before taking decisions. For example holiday tour operators need to take into account trends in people's holiday destination preferences. As more people prefer taking holidays abroad in the sun operators need to ensure they offer more holidays in hot climates where the weather is not so changeable.

All decisions, whether in business or government, are taken against an uncertain future. Against this background of uncertainty, business needs to choose more robust strategies that will bring benefits even in very different futures. Planning more robust strategies can be made easier by assessing different options against three or four possible future scenarios. For example if a business is involved in providing office accommodation it might want to consider its strategies against a scenario where demand increases in and around London, one where demand increases evenly throughout the UK, and also a future where overall demand falls in the UK.

Getting started can be difficult and too often we are trapped in our own preconceptions of what the future might be like. This publication aims to help you start the process of planning for the longer term. It provides you with four alternative scenarios of change in the UK over the next 20 to 30 years against which you can test your business strategies. Set out at the back of this report is guidance for those new to using scenarios. The guidance covers:

- Why use scenarios?
- How to use scenarios to develop strategies.
- Five keys to ensure success when using scenarios.

## **Background**

The scenarios were developed, reviewed and revised over the last 3 years by a team of researchers at SPRU-Science and Technology Policy Research, University of Sussex, in consultation with stakeholders from business, government and academia<sup>[1]</sup>. The framework builds on an extensive review of national and global futures scenarios and draws on work of related scenarios exercises from the Foresight programme and more broadly. The scenario storylines draw on an analysis of current socio-economic trends, but they also introduce elements of novelty and change. The main criteria for the development of scenarios' storylines are consistency and plausibility.

**1** An earlier version of the scenarios was published as: Office for Science and Technology, 1998. *Environmental Futures*. Department of Trade and Industry, London.

**2** UK Climate Impacts Programme (2001), *Socio-economic scenarios for climate change impact assessment: a guide to their use in the UK Climate Impacts Programme*. UKCIP. Oxford. See also [www.ukcip.org.uk](http://www.ukcip.org.uk).

Another set of socio-economic scenarios, based around the same framework, has been published by the UK Climate Impacts Programme (UKCIP)<sup>[2]</sup>. The UKCIP socio-economic scenarios were specifically designed to be used in climate impacts studies. As well as storylines for each scenario, the UKCIP report provides quantified values for a range of indicators, covering economic development, planning and built environment, agriculture, water, biodiversity and coastal zone management.

### *About the Foresight programme*

The Foresight programme tries to look beyond normal commercial horizons to identify potential opportunities from new science and technologies. It also identifies actions to help realise those opportunities. It does this by bringing together scientists and technologists with business, consumers and those who can help deliver the benefits.

It is a fluid, rolling programme that looks at three or four areas at any one time. The starting point for a project area is either a key issue where science holds the promise of solutions, or an area of cutting-edge science where the potential applications and technologies have yet to be considered and articulated.

All Foresight projects should deliver:

- thorough and up-to-date information and analysis of recent developments in relevant science and technology, including an international perspective, and forecasts of what the next developments might be;
- visions of the future, reflecting the potential impact of science and technology, and of forecast social and economic trends, i.e. what success will look like;
- recommendations for action, by research funders, business, Government or others, to make the most of the potential of science and technology;
- networks of people who recognise the importance of the issues addressed by the project, and who are keen to take the recommendations forward.

# Overview of the scenarios

Scenarios are not intended to predict the future. Rather, they are tools for thinking about the future based on four assumptions:

- The future is unlike the past, and is shaped by human choice and action.
- The future cannot be foreseen, but exploring the future can inform present decisions.
- There are many possible futures, scenarios map a 'possibility space'.
- Scenario development involves rational analysis and subjective judgement.

The four scenarios in this report describe what the UK could be like during the period 2010–2030. They have been developed by identifying social and economic trends. For example, potential changes in the balance of control between regional and national government. This and a range of other factors have been used to build up four scenarios of the future.

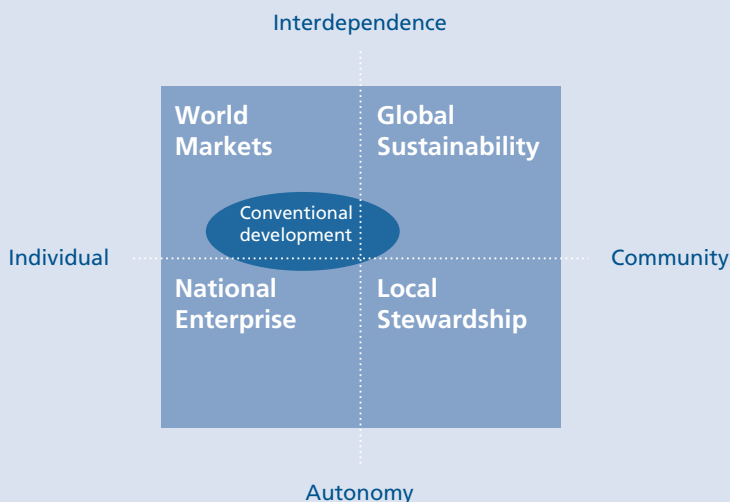


Figure 1: Four UK futures scenarios

Figure 1 shows the four scenarios and conventional development in relation to two drivers of change: social values (x axis) and systems of governance (y axis). Social values range from individualistic values to more community orientated values. It takes account of social and political priorities and the pattern of economic activity that results from them. Systems of governance deals with the structure of government and the decision making process. It ranges from autonomy where power remains at a national level to interdependence where power increasingly moves to other institutions e.g. up to the EU to down to regional government.

**3** Department of the Environment Transport and the Regions, 1999. *Quality of life counts – Indicators for a strategy for sustainable development for the United Kingdom: a baseline assessment*. London.

The scenarios are presented as storylines which set out some general trends and provide more detail in a number of areas:

- economic and sectoral trends
- employment and social trends
- regional development
- health, welfare and education
- the environment.

A synopsis of key drivers and underlying assumptions is given alongside the storyline for each scenario. In addition, *Snapshot 2010*, which can be found at the end of this report, provides key performance indicators for each of the scenarios. The indicators were chosen to cover a wide range of economic, social and environmental issues and relate to commonly-used statistics, such as the UK Quality of Life indicators<sup>[3]</sup>. However, all of the storylines and indicators presented here are only examples of what may happen in the future. They are intended as tools to help users on their way.

# The scenario storylines

The four scenarios are:

**World markets**

**Global sustainability**

**National enterprise**

**Local stewardship**

# World markets

People aspire to personal independence, material wealth and mobility to the exclusion of wider social goals. Integrated global markets are presumed to be the best way to deliver this. Internationally co-ordinated policy sets framework conditions for the efficient functioning of markets. The provision of goods and services is privatised wherever possible under a principle of 'minimal government'. Rights of individuals to personal freedoms are enshrined in law.

## Scenario drivers

This scenario assumes that people want to improve their own lives and are less concerned about equality and the effect that this might have on society as a whole. Business is focused on developing global markets, and global competition becomes more intensive, with a few firms and brands dominating many sectors.

Government becomes more international with increasing global co-operation. There is a shrinking role for government in the provision of healthcare, education and other social services. Pressure grows to reduce taxes, and more public services are privatised or privately managed. Self-regulation becomes more important in business with the role of non-governmental organisations (NGOs) growing.

Europe has a greater role in decisions on defence, economic and social policies. Some aspects of economic management, including trade, competition and monetary policy, are increasingly passed to global institutions. More devolution of political power occurs within the UK, but these regional bodies remain weak compared to international bodies. National governments share power with stakeholders such as companies and NGOs and are very responsive to public opinion. Political parties become more customer-oriented in a consumer-based culture. In general, there is a trend in European countries to adopt systems of government similar to those found in the UK and USA.

## International context

International co-ordination deepens in areas of trade, commercial and consumer protection law, and defence and security. The main aim is to secure the institutional conditions for commerce and trade. The World Trade Organisation extends the scope for the exchange of goods, services, labour and capital between countries. Regional currency zones emerge around the world, e.g. the Euro zone countries, and interest rate policy is co-ordinated within the Triad (the EU, US and Japan). Minimum standards of social and environmental policy are achieved through the international legal framework and further improved using a market-based approach. Key tensions are over the distribution of resources and power between rich and poor regions of the world as the gap in wealth continues to grow. Migration from the global 'periphery' – less developed countries and regions – is seen as a threat by many in the more developed regions.

Drivers	
<i>Social values</i>	Internationalist Libertarian
<i>Governance structures</i>	Weak Dispersed Consultative
<i>Role of policy</i>	Minimal Enabling markets
Economic trends	
<i>Economic development</i>	High growth High innovation Capital productivity
<i>Structural change</i>	Rapid Towards services
<i>Fast growing sectors</i>	Health & leisure Media and information Financial services Biotechnology Nanotechnology
<i>Declining sectors</i>	Manufacturing Agriculture
Social trends	
<i>Unemployment</i>	Medium-low
<i>Income</i>	High
<i>Equity</i>	Strong decline
<i>Areas of conflict</i>	Social exclusion Immigration/ emigration Political accountability

## Economy and sectoral trends

Liberal economic policy and the promotion of global competition generate high but uneven economic growth. The rapid adoption of new technologies in global markets increases productivity and accelerates structural change in the UK. Manufacturing is further marginalised, agriculture continues to decline. Growth is concentrated in services (health and leisure, financial services, media and information services) and high-tech sectors. Global markets for many goods and services are dominated by a few multinational companies. In other sectors there is high specialisation in innovative niche producers. International best practice in technology and management is adopted quickly and global standards emerge for many products and services. Technical change is consumer-focused and dominated by the wide use of information and communication technologies (ICT). This continues to have profound effects on how products and services are developed, manufactured and delivered. Use of biotechnology transforms both the health and food industries.

### Services

The service sector grows rapidly in absolute and relative terms. The main areas of growth are the finance sector; health care; leisure and travel; media and entertainment; education and information services. The service sector is revolutionised through the use of electronic network technologies. ICTs become critical in establishing strong customer relationships, for example through new methods of online market research, customised marketing, and design on demand. Biotechnology and nanotechnology also begin to be used in customer-focused service provision.

### Manufacturing and construction

Traditional manufacturing in primary industries declines, partly as a result of competition from newly industrialised countries (China, South Asia and Latin America). Other manufacturing sectors see high rates of innovation and growth, with ICTs and biotechnology being the main technological drivers of change. Assembly industries linked to complex global supply chains are generally small-scale and agile. Areas of world-class specialisation linked to a strong science and engineering base grow, while others decline. The construction industry experiences high rates of growth and rapid innovation in technologies for the built environment. Increasingly exposed to competition from overseas, British companies dramatically improve their productivity. ICT technologies become an essential element of the planning and management of commercial buildings. The scale of the built environment increases with city centres being given covered and conditioned environments.

## *Energy*

The UK electricity market continues to be dominated by fossil fuels, increasingly natural gas from Russia and Central Asia. Energy prices remain stable and there is little concern for energy security and energy efficiency. Renewable electricity generation technologies, such as wind power, become commercially viable but are not widely adopted due to low fuel prices and the low priority attached to climate change. Dependence on imports of transport fuels also grows significantly. There is a relatively slow diffusion of new power technologies like fuel cells.

## *Transport*

High mobility and housing development create a need for new investments in transport. New roads are built and the railway system is radically modernised to meet the increased demand for goods and passenger transport. Road traffic on motorways is efficiently managed using transport-based IT equipment, but congestion is widespread on smaller roads. Greater use will also be made of domestic air traffic and inter-city rail, whose economics will be driven by the needs of business passengers.

## *Agriculture and food*

Agriculture becomes increasingly concentrated, industrialised and global in scale. Farms increase in size, accelerating the adoption of technological approaches such as 'precision farming'. EU agricultural subsidies are radically cut back, and intense competition prompts farmers to search for improved productivity. The use of genetically-modified crops becomes widespread. There is a growing differentiation between functional 'engineered' foods and organically-produced food. For the majority, diets improve, although there are growing problems of obesity and diet-related illness.

## **Employment and social issues**

The demands of a dynamic economy together with the weakening of labour regulations lead to a highly mobile labour force. The trend towards flexible employment arrangements, tele-work and a growing number of insecure jobs continues. Professional skills are highly valued in a global labour market, but there is continued growth in low skill, low pay service employment in local markets. Long-term unemployed and unskilled people tend to be further marginalised as benefits systems are squeezed. The 'digitalisation' of the economy and the society deepens social exclusion as internet access is needed to use most public and private services. Leisure time increases for the professional class as working hours stabilise and begin to decline. Leisure is characterised by high levels of consumption, more active life styles and rising mobility. The trend of an ageing

population is balanced through a larger number of immigrants from outside Europe, who predominantly enter into low-paying service employment. Disposable household income rises steadily, but increased labour productivity leads to a slight rise in unemployment.

## **Regional development**

Most regions benefit from the stable economic growth, but London and the South East, with its financial and other services, attract the bulk of the new investments. Social conditions in areas heavily dependent on manufacturing industries and deprived urban areas deteriorate. Segregation between the wealthy and the disadvantaged becomes more marked and 'gated communities' develop. Planning controls are relaxed, and new towns and communities are constructed on greenfield sites. The distinction between the country and the city blurs, especially in the South East. The trend to smaller households intensifies, bringing high demand for housing near centres of growth. Demand for mobility increases, but it will be matched with new investment in transport infrastructure. The trend towards longer commuting distances is offset by opportunities for tele-work but leisure travel increases.

## **Education, welfare and health**

Private services run by global providers become widely available, as more people join social insurance schemes and opt out of public services. State provision increasingly targets the very poor and most disadvantaged. There is a major increase in demand for both high-tech health care focusing on curing diseases and more holistic health promotion services.

## **Environment and sustainability**

The 'marketisation' of the environment develops rapidly, with explicit monetary values ascribed to a wider range of resources and environmental services. Access to these services is limited through charging, or by allocating rights that can be traded. In policy there is greater emphasis on self-regulation and the role of information and accountability in the market – corporate social responsibility. Greater emphasis is given to the health-environment link, with less concern for less tangible environmental values such as biodiversity. A market-based climate regime develops, which fails to reduce greenhouse gas emissions.

# National enterprise

People aspire to personal independence and material wealth within a nationally-rooted cultural identity. Liberalised markets together with a commitment to build capabilities and resources to secure a high degree of national self-reliance and security are believed to best deliver these goals. Political and cultural institutions are strengthened to buttress national autonomy in a more fragmented world.

## Scenario drivers

This scenario assumes that people value the freedom to do as they choose but within the context of a strong and independent United Kingdom. Business is more focused on UK and European markets, seeing greater instability and barriers in other parts of the world.

People are patriotic and keen to preserve a distinctive national identity. They would prefer political power to remain with the national government and believe in the role of markets and enterprise. Promoting personal responsibility, the government pulls back from the provision of healthcare, education and other social services.

Political power remains at the UK level and the process of devolution to Scotland, Wales and Northern Ireland is limited. The UK's relationship with the EU remains at arms-length, keeping responsibilities for defence, foreign and economic policy with the UK government. The traditional diplomatic and security relationship with the US is strengthened. Market values dominate, but government policies limit international competition and protect key national industries. As a result, long-term economic growth is somewhat reduced. Economic and political power is more concentrated in the hands of a few politicians over a long period of time, and in the business community.

## International context

International co-operation is limited to traditional domains such as defence, trade and immigration. There is a movement away from the sharing of power in other domains. Economic globalisation continues with growing international investment, but is constrained by the protection of national monopolies in key sectors (utilities, infrastructures, media). Framework treaties allow for a greater degree of flexibility to assert national interests. Trade grows more slowly. The European integration process comes to a standstill as national identities and interests come to the fore. Regional conflicts persist around the world, especially in Africa and central and south Asia.

Drivers	
<i>Social values</i>	Nationalist Individualist
<i>Governance structures</i>	Weak National Closed
<i>Role of policy</i>	State-centred Market regulation to protect key sectors
Economic trends	
<i>Economic development</i>	Medium-low growth Low innovation Maintenance economy
<i>Structural change</i>	More stable economic structure
<i>Fast growing sectors</i>	Private health and education Domestic and personal services Tourism Retailing Defence
<i>Declining sectors</i>	Public services Civil engineering
Social trends	
<i>Unemployment</i>	Medium-high
<i>Income</i>	Medium-low
<i>Equity</i>	Decline
<i>Areas of conflict</i>	Unemployment Poor public services Inequality

## Economy and sectoral trends

The trade-off between liberalised markets and the retention of some national control over the economy makes this a medium growth scenario over the long term. Economic and structural change slows as key British companies (utilities, pharmaceuticals, aerospace, banks, media) are actively protected in the UK economy, while their competitiveness is supported in foreign markets. At the same time, foreign direct investment continues to be important as labour markets are further deregulated and corporate taxes competitively reduced. The rate and spread of technological and organisational innovation is slowed by restraints on competition. This limits productivity growth and economic development. There is reduced public investment in infrastructure development. The decline of agriculture and manufacturing slows, with growth primarily in services (retailing, tourism, financial services). ICTs flourish in specific sectors, e.g. home entertainment and logistics, but their impact remains limited.

### Services

The service sector grows moderately, especially in the areas of health, tourism and retailing. New markets develop in the area of specialised personal services for high-income groups, while services for low-income brackets tend to decline. Technology is a less important driver to growth in service. The informal service economy (e.g. cleaning, bar work, etc) flourishes as more people are excluded from the mainstream job market. The transport and communication sectors suffer from low levels of investment.

### Manufacturing and construction

A reduction in available capital and the preservation of national monopolies in key sectors means that manufacturing is characterised by lower levels of innovation, low investment and low labour costs. The pace of technological change is moderate, but ICTs and biotechnology are still the main drivers of change. The most innovative players are small and medium-sized enterprises (SMEs) producing goods and services for the national market. Service-based relationships between consumers and manufacturers develop less strongly. The construction sector struggles because of low levels of investment in housing and infrastructure. Maintenance, refurbishment and conversion of existing structures is the primary activity. Traditional construction techniques continue to play a major role. Much of the sector remains labour-intensive with a fragmented supply chain.

## *Energy*

Ensuring a supply of cheap and secure energy is the main objective of energy policy in this scenario. There is a drive to exploit domestic sources of energy, including domestic coal, gas and nuclear power by extending the lives of existing stations. The main driver for investments in energy efficiency and new and renewable sources of energy is energy security.

## *Transport*

There is a continuing reliance on private transport with little additional provision for public transport, but moderate GDP growth limits the spread of car ownership. Many roads operate at full capacity and congestion increases. With a relatively slow increase in international trade, air traffic does not grow any faster than other transport modes. Without new developments in the rail system, freight continues to move mainly by road.

## *Agriculture and food*

Food prices remain low as agriculture continues to be strongly subsidised, though at a national rather than a EU level. Agricultural practices remain based on high inputs of pesticides and fertilisers. The uptake of genetically-modified organisms in agriculture is patchy. Retailers have a strong influence over farmers, manifested in requirements for uniform, inexpensive products. Indigenous products remain an important part of food markets, and the traditional British diet does not change radically.

## **Employment and social issues**

Unstable economic development and a lack of job creation in new dynamic sectors do not compensate for increasing flexibility in labour markets, and lead to higher levels of unemployment. Continued efforts at de-regulation of labour markets and social market policies have limited success. The job market remains relatively open for unskilled and semi-skilled workers, who continue to be in demand in manufacturing, construction and agriculture. But wide differences in income and social tensions grow. Working hours continue to increase, especially for lower paid workers who supplement income through work in the informal sector. The imbalance between a rising number of pensioners and fewer people in work becomes a challenge to public finances, especially because immigration is kept to a low level. Disposable income rises at slightly below historic rates.

## Regional development

Current regional economic differences continue. London and the South East experience the highest growth rates. The other regions rely on existing activities, and there is a lack of investment in new industries. Regions heavily dependent on international trade face lower growth prospects. Generally, regional policies are determined by decisions at the UK level. Housing demand remains stable due to medium economic growth and low social provision. Planning controls at the local level are weakened in an effort to encourage economic development. New housing development generally takes the form of additions to existing towns and villages. New developments are established in green belts and in the countryside.

## Education, welfare and health

The NHS and state school system remain the main source of provision for most people. There is continued pressure for efficiency gains and tighter regulation of performance standards. Those who can afford it increasingly make use of privately-funded services, but this remains a niche rather than the norm. Social service provision also declines with relatively low concern about social inequality and exclusion.

## Environment and sustainability

Regulation of the environment continues to be the responsibility of national government. There is relatively little institutional change, although policies that are implemented through the market become the norm – principally associated with maintaining energy and environmental security. People, especially the well-off, are concerned about the quality of the local environment and amenities. This provokes NIMBY (Not In My Back Yard) protests. However, these prove less effective due to weaker planning controls.

# Global responsibility

People aspire to high levels of welfare within communities with shared values, more equally distributed opportunities and a sound environment. There is a belief that these objectives are best achieved through active public policy and international co-operation within the European Union and at a global level. Social objectives are met through public provision, increasingly at an international level. Markets are regulated to encourage competition amongst national players. Personal and social behaviour is shaped by commonly-held beliefs and customs.

## Scenario drivers

This scenario assumes that people want to be part of the wider community, both nationally and internationally. Business aims to work internationally but tries to balance pursuit of profit with its social responsibilities, working where it can in partnership with governments and consumers.

Achieving a balance between economic, social and environmental policy is seen as important in the UK and internationally. The government plays an important role in providing education, healthcare and other social services, but the welfare state works increasingly on an international level. Governments co-operate to make business and the rest of society work together to achieve social improvement.

The EU expands and takes on a greater coordinating role across many areas of policy, while regional government also gains greater power. Getting wide agreement on policy issues becomes standard practice. As a consequence the decision making process is more open and complex. However, deciding where accountability lies becomes complicated.

## International context

International co-ordination is set on a path towards integrated global governance systems in many domains: security, economic development, resource management and environmental protection. Institutional and legal developments take place in all these areas, promoting co-operation and collaboration through networks of governmental, non-governmental and private sector organisations. These new multi-level partnerships begin to supplement more traditional state-based international organisations like the United Nations. A key tension is over the responsiveness and accountability of these global governance networks. International trade grows, but conventions guarantee that social and environmental standards are respected. As part of a commitment to balanced economic and social development, major flows of capital, technology and capacity-building towards the south of the globe are encouraged .

## Drivers

*Social values* Internationalist  
Communitarian

*Governance structures* Strong  
Co-ordinated  
Consultative

*Role of policy* Corporatist  
Political  
Social & environmental goals

## Economic trends

*Economic development* Medium-high growth  
High innovation  
Resource productivity

*Structural change* Fast  
Towards services

*Fast growing sectors* Education and training  
Large systems engineering  
New and renewable energy  
Information services

*Declining sectors* Fossil fuel energy  
Traditional manufacturing

## Social trends

*Unemployment* Low

*Income* Medium-high

*Equity* Improvement

*Areas of conflict* Structural change  
Change of skills  
Political accountability  
Institutional rigidity

## Economy and sectoral trends

Stable economic conditions, a commitment to innovation and international competition in most sectors enable a fairly high economic growth, despite greater policy intervention in markets. Technological development is driven by user needs and geared towards eco-efficiency. The UK economy experiences rapid structural change. While energy and resource-intensive sectors decline, there is a strong growth of services and high-tech industries offering low environmental impact and high social value. Interest rates are low, producing high levels of investment, for example in public transport, new and renewable energy, water and information infrastructures. Some of the greatest commercial opportunities arise in fast-growing developing countries experiencing 'catch-up'. Working hours decline and there is more leisure time. High mobility of labour, internationalised systems of education and training, and global communication systems act to drive cultural and political systems closer together.

### Services

Intangible goods and services (e.g. consultancy and financial services) generate the largest part of economic value. The service sector becomes increasingly integrated with other areas of the economy as goods are supplied as part of wider service packages. Service sectors experiencing rapid growth are software and ICT support, communication and media, education, leisure, and finance. Innovative services are also developed for groups with special needs, for example elderly or disabled people. The use of ICTs is particularly strong in the education sector.

### Manufacturing and construction

Manufacturing industry is transformed by the combination of high investment and the drive towards the global provision of resource efficient services. Innovation is concentrated in overhauling infrastructures and in information-intensive goods and services. Heavy manufacturing tends to be re-located to the South, while new high-tech manufacturing sectors requiring a strong knowledge base are built up in the UK. The built environment is transformed with investment in the rapid replacement of old and low-quality buildings and infrastructures. Due to strict development controls, housing construction is concentrated in existing urban centres and in 'brownfield' sites. There is a particular emphasis on training and the acquisition of skills as UK firms seek to learn advanced construction techniques.

### Energy

Promoted for environmental as well as for economic reasons, natural gas is the dominant energy fuel up to 2010. Thereafter, renewable energy sources become fully commercial and gain a large market share. Dominant renewable sources are

onshore and offshore wind, biomass, and solar energy. There is major infrastructure investment to support the use of hydrogen. Encouraged by regulatory incentives, energy suppliers move towards the provision of integrated energy services. New energy services as well as high energy prices greatly enhance the take-up of energy efficiency measures. The perceived need to reduce carbon emissions combined with a willingness to invest in technologies with low rates of return on capital revives a debate about nuclear power.

### *Transport*

The modernisation and restructuring of freight and passenger transport is started, with the longer-term aim of building an eco-efficient, integrated system. Although technology (hybrid cars, low emission engines) reduces the negative impacts of traffic, a tension between the transport demands of a mobile society and environmental concerns persists. New infrastructures are developed, but with a high priority given to minimising environmental impacts. Cost of private car transport rises substantially while public transport is heavily subsidised.

### *Agriculture and food*

Under this scenario, the objective is to balance high agricultural yields and economically healthy farming communities with high levels of biodiversity and low environmental impact. There is a limited uptake of genetically modified crops to produce tailored inputs for food and energy production. Tight regulatory controls are in place to screen for adverse environmental and biodiversity impacts. Large-scale livestock farming declines as people become more health-conscious and eat less meat. Under a reformed Common Agricultural Policy, support payments for farmers are tied to the sustainable management of rural landscapes. Substantial areas of land are taken out of production and are used to support organic production and nature conservation in the countryside.

## **Employment and social issues**

Stable economic conditions are combined with policies to support a high-skill, high-wage labour force. Active training and labour market policies keep unemployment to a relatively low level. The demands of the economy for a dynamic labour force are limited by regulation, for example on working hours, conditions and fixed-term contracts. A global market develops for a wider range of occupations and increasingly professions become recognised at an international level. Income differences are somewhat reduced. Education and training policy aims encourage equal opportunities in a job market with rapidly changing qualification requirements. However, the rapid technological change excludes parts of the population from the job market and causes social tensions.

## Regional development

Greater London continues to be an area of growth, but regional development is more evenly distributed through planning controls and transfer payments. Development prospects are shaped by the existence of a highly-skilled labour force, a high quality of life, and advanced communication and transport infrastructures. In regions heavily dependent on manufacturing, the management of the economic transition is a challenge for national and regional policy. Strong planning controls prevent development in the green belt. Most new housing demand is met by dense low-rise development mainly on existing urban land. There is little conversion to urban land on the fringes of smaller towns and villages. There is a higher turnover of the housing stock, with a general emphasis on modern, high-quality housing for socially disadvantaged groups.

## Education, welfare and health

An increasingly Europeanised education, welfare and health care system provides a comprehensive safety net for disadvantaged groups, financed by higher taxes. Economies of scale and new technologies lead to the introduction of more tailored provision in health and education. There is a shift from care for the sick to high-technology health promotion and preventive care, with an emphasis on personal responsibility. There is equal access to high-quality public education, which reinforces social and environmental values throughout the curriculum.

## Environment and sustainability

Reconciling growth and sustainability is one of the guiding principles of this scenario, including significant increases in environmental quality, and major efforts in industry and planning systems to reduce the effect of economic activity on the environment. Ideological concerns about the environment are translated into practical action. Sustainability is seen from a global perspective, including the maintenance of biodiversity, the protection of global commons (the atmosphere, oceans, wilderness areas) and fair access to environmental resources. Policy is increasingly co-ordinated at the EU and international level.

# Local stewardship

People aspire to sustainable levels of welfare in federal and networked communities. Markets are subject to social regulation to ensure more equally distributed opportunities and a high quality local environment. Active public policy aims to promote economic activities that are small-scale and regional in scope, and acts to constrain large-scale markets and technologies. Local communities are strengthened to ensure participative and transparent governance in a complex world.

## Scenario drivers

This scenario assumes that people see themselves as part of the local community and this encourages development at a regional level focusing on using local resources to achieve this. Business becomes more focused on serving the specific needs of customers in local markets, leading to new business strategies and fragmentation of many industries. Being small and local becomes a competitive asset. This regional focus leads to very different outcomes in different parts of the UK. The importance of local issues and fairness shapes economic growth and change. Protecting the environment and conservation of resources are strong political objectives.

More people take part in politics and the political system is designed to allow this. Health, education and social services are publicly funded through high levels of taxation, again with more regionalised control. Decision-making power is further devolved to regional government in the UK. Political and business cultures become more inward looking with the increased focus on local affairs. Economic growth is slow but in some ways quality of life is improved.

## International context

The goal of international co-operation is to secure local and regional economic and political autonomy. This is mainly through coalitions with other cities/regions. Some of these alliances are stable and persistent, while others are characterised by conflict and tension. The promotion of local production, efforts to minimise transport, and ethically-motivated trade restrictions put a ceiling on international commerce. The EU develops as a loose association between European regions.

## Economy and sectoral trends

The limited scope of markets and the focus on social and environmental objectives means that, using conventional measures, growth is low. In general, companies face lower competitive pressures while economic and technological developments are constrained by regional resources (knowledge, capital, and materials). Levels of private investment decrease and rates of innovation and technical change decline. Research and development activities are also restrained by social attitudes towards new technologies such as genetic engineering and advanced communication systems. Government attempts to co-ordinate the economy to meet local demand and to preserve economic independence. Tight regulation ensures that products and production systems are environmentally and socially acceptable. Economic policy encourages smaller-scale production, SMEs, co-operatives, and mutual societies prosper. The basic structure of the economy is relatively stable, but high-tech sectors and international services are in decline.

## Drivers

<i>Social values</i>	Localist Co-operative
<i>Governance structures</i>	Strong Local Participative
<i>Role of policy</i>	Interventionist Social & environmental

## Economic trends

<i>Economic development</i>	Low growth Low innovation Modular & sustainable
<i>Structural change</i>	Moderate, towards regional systems
<i>Fast growing sectors</i>	Small-scale manufacturing Food and organic farming Local services
<i>Declining sectors</i>	Retailing Tourism Financial services

## Social trends

<i>Unemployment</i>	Medium-low (larger voluntary sector)
<i>Income</i>	Low
<i>Equity</i>	Strong improvement
<i>Areas of conflict</i>	Land use Under-investment Environmental restrictions

## Services

Services remain the most important area of the economy, but the sector undergoes significant change. As average household income is relatively low and people are not materialistic, the demand for services is oriented towards basic needs. Services targeted to high-income brackets and business-related services (marketing, corporate finance, management consultancy) tend to suffer. Personal services, such as health care, tourism, retailing, catering, and leisure become increasingly localised.

## Manufacturing and construction

There are generally low rates of investment and innovation in the manufacturing industry. Major changes occur in industrial structure with a relative decline in very large multinational companies, with SMEs and technologies adapted to small-scale sustainable production being favoured. There is stress on eco-efficiency, quality and durability in consumer goods and there are longer-term 'service' relationships between producers and customers, with locally-based maintenance and recycling systems. A conservationist ethic and lower demand for new developments contributes to the continued dominance of traditional housing. There is increased investment in energy and water efficiency measures as well as local utilities systems (electricity, telecoms). The construction industry continues to be dominated by small firms but the skill base is greatly enhanced, leading to efficiency gains and higher quality.

## Energy

Energy systems are diverse and are restructured around local energy resources, whether fossil or non-fossil fuel. A wide range of small-scale renewable energy technologies are exploited, particularly wind, biogas, biomass, and photovoltaics. Combined heat and power systems flourish. Many of the new technologies are subsidised through funds raised by substantial energy taxes. High energy prices lead to the adoption of energy efficiency measures and encourage consumers to save electricity. This trend, coupled with low economic growth, leads to an absolute fall of energy demand.

## *Transport*

This sector is affected by a major slowdown in the growth of trade and the demand for mobility. Environmental taxes and high energy prices increase the cost of transportation, especially air traffic. Passenger transport is still dominated by private cars, but public road and rail transport structures are extended. Alternatives such as car sharing, cycling and walking increase in popularity.

## *Agriculture and food*

The downward trend in agricultural production is reversed and farming continues to be heavily subsidised to protect both food security and local communities. The main goal of agricultural policy is to support a broader desire by people for local self-sufficiency and traditional farming practices. The major retailers lose market share to other supply routes, including farmers' markets and local shops. Sales of processed food as well as those of imported fruit and vegetables decline. Demand for meat also falls and broader support for animal rights brings an end to the transport of live animals over long distances. There is a rapid growth in organic and low-input farming.

## **Employment and social issues**

Unemployment levels are relatively low despite historically low rates of economic growth. This is due to the relative growth of labour-intensive sectors, an increase in informal employment, and publicly-funded employment schemes. Strong emphasis is given to education and training, especially to preserve traditional skills and to improve social abilities. Working hours stabilise, but do not fall due to lower rates of productivity improvement. International markets are limited to specialised professional skills. Income differences are dramatically reduced.

## **Regional development**

The demand for new housing declines as lower incomes and the revival of more collective social values lead to larger household sizes. The urbanisation of the countryside comes to a halt as planning controls are tightened. New buildings are located in existing towns and cities, leading to a denser urban development. There is general migration away from the larger cities and a corresponding growth of small and medium-sized towns more suited to a smaller-scale local development path. Planning favours mixed residential and commercial development and decentralisation. Extensive farming generates new demand for agricultural land, which tends to conflict with nature conservation objectives. There is emphasis on avoiding the need to travel, and on encouraging walking and cycling, with local development policies ensuring that basic facilities are available close to people's homes. National rail and bus transport is publicly owned.

## **Education, welfare and health**

There is a high level of public provision of education, welfare and health services, with an emphasis on fairness and open access. Because weak economic growth limits tax income, funding for public services does not grow rapidly. This is partly compensated through the more active role played by families, neighbours and local community organisations (such as charities and religious communities) in supporting people in need.

## **Environment and sustainability**

Sustainable development is an underlying objective of this scenario, profoundly shaping changes in economic activity, social behaviour and institutional development. Social values and political processes encourage individuals and organisations to integrate environmental concerns into all their activities. A key focus is on using technology and ingenuity to maximise the use of local and regional resources, while not damaging their long-term health. The capacity of different regions to achieve this balance varies greatly, and leads to diverse and sometimes perverse outcomes. Global and regional environmental problems receive less attention.

# Guide to using the scenarios

Good scenarios help us to understand how key drivers might interact and affect the future.

Scenarios go beyond a single best estimate, or a 'high' and 'low' projection either side of this, and encourage us to explore a number of different, logically-consistent pathways as a way of framing questions about the future.

## Why use futures scenarios?

In this guide we illustrate why organisations should use scenarios in their planning process; how to use scenarios to test and refine strategies; and five keys to the successful use of scenarios.

### *Adding value to strategy-setting*

Although scenario exercises vary in their specific aims, they possess a number of common traits, which distinguish them from more traditional forecasting approaches. Not only are they looking into the far future, usually one or more decades ahead, but they also assess developments across a broad area.

The use of exploratory scenarios approaches should be considered when:

- the future is uncertain
- the ability to adapt to future change is restrained or if adjustments carry the risk of negative effects over the longer term (e.g. technological 'lock-in')
- there are opportunities for positive gains from pursuing 'robust strategies'.

Broadly, the benefits of scenario planning are:

- It expands the range of future outcomes considered in strategic decision-making, so strategies are developed to be more robust under a variety of circumstances. This avoids the risk of 'putting all eggs in one basket'. It places under scrutiny the assumptions underlying strategic decisions, for example about long-term growth prospects or consumer preferences.
- The process of engaging with scenario elaboration itself can be a valuable contribution to preparing the ground for change. If carried out in an inclusive and positive process, scenario planning can encourage self-reflection within the organisation, strengthen strategic thinking at all levels, and help overcome organisational rigidities and routines.

4 See Appendix on page 30 for a list of scenario characteristics.

## How can the Foresight Futures 2020 scenarios be used?

The Foresight Futures can be used in a range of different ways, depending on the needs of the individuals or organisations and the resources available. Users are encouraged to develop their own conclusions about the futures, employing the scenarios as a starting point and then elaborating and evaluating them in ways that are in tune with their needs.

Over the past three years, a number of organisations have used the scenarios to explore the future. For example, a number of trade associations have used the scenarios to challenge views of future prospects in their sectors; Government departments have explored strategic policy issues and research; and research projects, including an number of Foresight projects, have used the scenarios to assess long-term socio-economic trends<sup>[4]</sup>. Based on a review of these exercises and insights from the futures literature, this section provides guidance on the use of the Foresight Futures scenarios. It offers some ideas and recommendations, without attempting to be prescriptive.

There are two basic approaches to the use of the scenarios.

### *Approach 1*

To use the scenarios to stimulate thought on what the future holds and to consider the implications for medium and long term strategies.

Such exercises are usually carried out on a small scale with one-off brainstorming events. Typically they start with a presentation and discussion of the scenarios, followed by a brainstorming session to consider the implications. Involving representatives from all interested parties is crucial for the success of these exercises. So, in a business, people from marketing, finance and production should be included, rather than just staff from the strategy or research unit.

These exercises are usually:

- participative
- based on the experience of practitioners
- a mechanism to engage key people in the development of strategy.

Frequently their use depends on a 'champion' of scenario planning at a senior level of management. Their function is to attract interest and to stimulate creative thinking.

5 See <http://www.foresight.gov.uk/>

An exercise carried out by the Foresight Crime Prevention Panel provides an example for a typical one-off scenario planning event. The aim of the Panel was to explore the crime potentials of new technologies and to ensure that these potentials were minimised through preventive action. The 1998 Foresight Futures scenarios were used in a one-day workshop to structure thinking about the future of crime. Groups organised around each of the four scenarios developed sectoral scenarios for the crime of the future. They identified new technologies likely to be used by criminals, as well as potential prevention strategies and necessary responses. Results of the workshop were fed into the Panel's consultation paper and report<sup>[5]</sup>.

## Approach 2

To use the scenarios as the basis for a research-based study on a specific sector or issue. The scenarios provide the conceptual framework for the study.

When the scenarios are used in this way the approach typically:

- is based on data in addition to expert knowledge;
- includes scientific methods as well as consultation;
- uses the scenarios to assess outcomes.

The main challenge for this approach is to combine the 'soft' scenario tool with 'hard', quantitative methods. This report offers a number of indicators as an illustration of trends, but again these should only be seen as a starting point. If it seems appropriate, they can be revised, specified or complemented by other indicators. Simple modelling and cross-impact analysis can be employed to ensure consistency and analytical depth.

The RegIS study<sup>[6]</sup> investigated the combined effects of the UKCIP socio-economic scenarios (based on the same framework as the Foresight Futures scenarios) and the UKCIP98 climate scenarios, for two regions of the UK. This was the first UK regional integrated assessment of the impacts of climate change on agriculture, water, biodiversity and the coastal zone. In RegIS, two of the UKCIP socio-economic scenarios were further developed with local decision-makers from East Anglia and North West England. This provided quantified indicators (e.g. for agricultural crop prices) for the 2050s, for input into the RegIS sectoral models.

6 *Regional Climate Change Impact and Response Studies in East Anglia and North West England*, co-ordinated at Cranfield University and funded by the Department for Environment, Food and Rural Affairs (formerly the Ministry of Agriculture, Fisheries and Food and the Department of the Environment, Transport and the Regions) and UK Water Industry Research, as part of the UK Climate Impacts Programme.

## Five keys to successful use of scenarios

There are five key challenges to meet in order to use scenarios successfully. These are:

### *Engaging stakeholders*

Scenario exercises can only be successful in promoting creative and unconventional thinking if those with an interest trust the process and are engaged throughout. To convince stakeholders of the value of these exercises, it is vital to:

- be clear about the aims and limitations of the approach. Scenarios are not aiming to predict the future, nor even to identify the most likely future. Instead, they map out a 'possibility space' to inform the decisions of the present. The scenarios method is based on subjective choices (as is any other approach to explore uncertain futures) but unlike other tools, it allows stakeholders to consider the underlying assumptions and to discuss and challenge how this might affect the future.
- provide sufficient detail. Experience has shown that the first presentation of the scenarios is crucial. It needs to give enough detail to convey the basic logic of the scenarios without overwhelming the audience. It can be helpful if participants have the chance to become familiar with the scenarios in advance.
- explain how the results will be used. If participants are to be convinced of the importance of their contribution, the aim of the scenario planning process needs to be well-defined and clear indications need to be given as to how the results will feed into decision-making.

### *Getting the process right*

Maximising the learning benefits of scenario planning exercises requires close attention to process. Careful planning and structuring of the scenario elaboration, synthesis and evaluation stages of scenario planning is needed. The details of the process should be tailored to the needs and resources available in each case.

The process needs to:

- allow for the integration of the different viewpoints and technical expertise;
- be iterative, combining creative, participative workshops with work carried out by individuals or small groups to synthesise and elaborate scenarios;
- be realistic about the time and resources needed to complete an exercise as this tends to be under-estimated; allow time for analysis of the results;
- involve stakeholders.

7 See Wilsdon, J. (ed), 2001. *Digital futures: Living in a dot com world*, Earthscan, London.

The process used in the Digital Futures study<sup>[7]</sup> included the following steps:

- background scoping research
- stakeholder workshop
- small expert group meetings
- individual elaboration of scenarios with contribution from experts
- presentation/consultation with stakeholders
- final scenarios
- input into research and policy recommendations.

The scenario elaboration workshop is perhaps the most critical stage. Key points to consider are:

- It takes time to familiarise participants with future thinking; the initial workshop should be at least a full day.
- A typical structure for the workshop might be: aim of the process, introduction scenario approach, presentation of scenarios, elaboration of sectoral scenarios (e.g. transport in 2020) in break-out groups, feedback, planning next steps.
- Moderation by a professional with scenario experience is recommended.

We recommend that three principles are applied in scenario elaboration and evaluation: *symmetry*, *balance* and *triangulation (comparison)*.

#### *Symmetry*

Equivalent effort is devoted to the elaboration of all the scenarios chosen.

#### *Balance*

The scenario storylines and indicators are developed as neutrally and dispassionately as possible – covering the same areas and seeking to avoid bias towards or against any particular scenario.

#### *Triangulation (comparison)*

A process of ensuring that the distinctiveness and coherence of scenarios is retained (mainly by viewing the narratives side-by-side).

## *Adapting the scenarios*

The scenarios provide a generic framework but they are in themselves not relevant to many sectors or policy areas. The aim of the framework and these guidance notes is to provide a means for scenarios to be elaborated for any given area of interest. This requires:

- the identification of key drivers in the sector (e.g. international markets, social preferences, regional planning)
- an assessment of the links between drivers and relevant sectoral trends
- specialist knowledge of the sector.

The scenario framework is a flexible tool which should be adapted and altered to suit the needs of a given study; it can be modified and 'played with'. They should not be taken as an authoritative set of projections. The benefit of using a common set of basic dimensions (values and governance) is that these have proven robust in a number of different settings. However, these dimensions may not always be relevant, or there may be an interest in testing alternatives. New dimensions and new scenario labels would then be the right course to take.

Producing four scenario elaborations can be time-consuming, with diminishing returns. One alternative approach is to choose a smaller number of scenarios for in-depth analysis (say two or three). Some studies have chosen to look at diametrically-opposed scenarios (World Markets and Local Stewardship, for instance). However, we recommend that the symmetric two-by-two matrix approach to scenario elaboration is retained during a first phase to avoid the risk of narrowing down the thinking too soon.

Effort devoted to the development of indicators will vary between studies. Indicators may illustrate the storylines, or they may be outputs of the scenario planning exercise that are used in further analysis (planning, options appraisal or scientific modelling).

**In developing the UK Climate Impacts Programme socio-economic scenarios, the following steps were taken to produce illustrative indicators:<sup>[8]</sup>**

- identification of data needs of climate change impact modellers
- identification of suitable indicators and data sources on the basis of criteria (significance, sufficient knowledge, sufficient stability)
- consultation about indicators; drawing on expert knowledge to assess indicator values for scenarios.

**8** UK Climate Impacts Programme (2001), Socio-economic scenarios for climate change impact assessment: a guide to their use in the UK Climate Impacts Programme. UKCIP. Oxford. See also [www.ukcip.org.uk](http://www.ukcip.org.uk).

We recommend that scenarios are kept simple to make them accessible and to test them with non-specialist audiences. In longer or more intensive scenario planning exercises, users may want to introduce extreme events and feedback mechanisms.

There are several ways to adapt the scenarios:

- Two scenarios can be combined, for example one for the UK level, and one for the international level. It is, of course, essential to choose the combination carefully. The choices made will depend on what is realistic and relevant for the study in question. For example, a scenario exercise on the UK manufacturing industry could examine the effects of an international World Market scenario combined with a National Enterprise scenario.
- Major shocks or extreme events are not part of the scenario storylines presented here. They can, however, be introduced during the planning process. This involves the identification of relevant 'side swipes' (for example through a brainstorming session), and a subsequent analysis of impacts under each scenario.
- Another approach would be to introduce a third dimension (driver of change) relevant to the sector: high or low technology scenarios have been tried in a number of exercises including the Special Report on Emissions Scenarios (SRES) for the Intergovernmental Panel on Climate Change (IPCC), (which are based on the same principal axes as the Foresight scenarios)<sup>[9]</sup>. In this case the effects of different assumptions about the adoption of energy technologies in the future was analysed in detail for one of four socio-economic scenarios.
- If the original set of scenarios is thought to over-simplify trends it is possible to add a second round of scenario elaboration encouraging participants to think about feedback mechanisms. This allows learning processes to be taken into account. One option would be to organise this round of the evaluation as a 'game-playing' simulation.

### *Taking account of major shocks*

The exploratory and synthetic approach used in these scenarios suggests that change occurs gradually along a single trajectory. Future states are seen as the outcome of an accumulation of changes over time, all pointing in the same direction. But not all change is like this. The direction of change may itself vary over time, with one set of conditions being replaced by a new set. This change in direction may take place slowly (as part of the process of economic and social development), or it may happen suddenly as a result of major, surprise external events (such as terrorist attacks, or rapid changes in the natural environment). If the change is slow it may be possible for one scenario to be superseded by

**9** Intergovernmental Panel on Climate Change (2000). *IPCC Special Report – emissions scenarios. A Special Report of IPCC Working Group III*

another (a shift from World Markets to Global Responsibility, for instance). If the change is sudden, the question to be asked is “how ‘resilient’ is a given scenario to its impact?” Answering this question will be very difficult, mainly because large-scale, unanticipated events are hard to foresee. We suggest that governments and other organisations build up inventories of ‘shock’ events, by scanning conventional and unconventional sources, and through brainstorming. The question of resilience could then be investigated by applying the shock to each of the scenarios and trying to assess how easily each of them could recover or adapt to their impacts.

### *Taking scenario planning further*

We believe that scenario planning is one example of a broader set of tools that today’s business and public sector organisations need to apply more consistently. Economic and political conditions change rapidly, and foresight enables organisations to think about early warning signs for identified trends, plan for possible responses by the organisation, and develop ways of increasing their capacity to adapt. Periodic scenario planning exercises can be helpful, but beyond this the organisation may also seek to embed futures ‘routines’ within many business processes. Generating greater awareness about future trends throughout the organisation is a condition of organisational change, and is likely to lead to a more agile and responsive business.

# Appendix

	World markets	National enterprise	Global responsibility	Local stewardship
<b>Drivers</b>				
<i>Social values</i>	Internationalist libertarian	Nationalist individualist	Internationalist communitarian	Localist cooperative
<i>Governance structures</i>	Weak, dispersed, consultative	Weak, national, closed	Strong, coordinated, consultative	Strong, local, participative
<i>Role of policy</i>	Minimal, enabling markets	State-centred, market regulation to protect key sectors	Corporatist, political, social and environmental goals	Interventionist, social and environmental goals
<b>Economic trends</b>				
<i>Economic development</i>	High growth, high innovation, capital productivity	Medium-low growth, low innovation, maintenance economy	Medium-high growth, high innovation, resource productivity	Low growth, low innovation, modular and sustainable solutions
<i>Structural change</i>	Rapid, towards services	More stable economic structure	Fast, towards services	Moderate, towards regional systems
<i>Fast-growing sectors</i>	Health and leisure, media and information, financial services, biotechnology, nanotechnology	Private health and education, domestic and personal services, tourism, retailing, defence	Education and training, large systems engineering, new and renewable energy, information services	Small-scale manufacturing, food and organic farming, local services
<i>Declining sectors</i>	Manufacturing, agriculture	Public services, civil engineering	Fossil fuel energy, traditional manufacturing	Retailing, tourism, financial services
<b>Social trends</b>				
<i>Unemployment</i>	Medium-low	Medium-high	Low	Medium-low (larger voluntary sector)
<i>Income</i>	High	Medium-low	Medium-high	Low
<i>Equity</i>	Strong decline	Decline	Improvement	Strong improvement
<i>Areas of conflict</i>	Social exclusion, immigration/emigration, political accountability	Unemployment, poor public services, inequality	Structural change, change of skills, political accountability and institutional rigidity	Land-use conflicts, under-investment, environmental restrictions

## Snapshot 2010

Indicator	Today	World markets	National enterprise	Global responsibility	Local stewardship
<i>GDP growth per year</i>	2.5%	3.5%	2%	2.75%	1.25%
<i>Total investment – % of GDP</i>	19%	22%	18%	20%	16%
<i>Economic activity in sectors %</i>					
<i>services</i>	66%	75%	68%	72%	70%
<i>production</i>	27%	20%	25%	22.5%	22%
<i>construction</i>	5%	4%	5%	4%	5%
<i>agriculture</i>	2%	1%	2%	1.5%	3%
<i>ICT sector – % of value added</i>	3.3%	7%	5%	6%	4%
<i>Qualification age 19 – population with level 2 qualification</i>	75%	85%	75%	90%	95%
<i>Unemployment</i>	5%	5%	8%	4%	5%
<i>Poverty – % of people with income below 60% of median income</i>	18%	23%	25%	15%	10%
<i>Health life expectancy – years lived in good/fairly good health</i>	67 years	68.5 years	67.5 years	69 years	68 years
<i>Newly developed land – hectares per year</i>	6,500 ha	6,000 ha	4,500 ha	3,000 ha	1,000 ha
<i>Passenger transport average change per year</i>	??	2%	1%	1.5%	0%
<i>passenger-kilometres</i>	720 billion	910 billion	810 billion	860 billion	715 billion
<i>Traffic congestion – % of network at 100% stress</i>	6%	11%	13%	9%	5%
<i>Primary energy consumption average change per year</i>	??	+ 1.7% pa	+ 1.5% pa	+ 0.1% pa	+ 0.1% pa
<i>tonnes of oil equivalent</i>	230 million	280 million	270 million	230 million	230 million

## Annex: Overview of uses of the Environmental Futures scenarios

Organisation/user	Sector	Aim	Type	Process	Output Key audience
<i>ACACIA research project</i>	Climate change	Assess climate change impacts <i>EU 2050</i>	Detailed, qualitative and quantitative	Based on data and expert knowledge, small team	Report <i>EU policy</i>
<i>REGIS research project</i>	Climate change	Assess climate change impacts <i>NW England and East Anglia, 2020, 2050</i>	Detailed, qualitative and quantitative	Based on data and expert knowledge, small team	Report <i>UK policy</i>
<i>Climate Change and the Demand for Water – research project</i>	Climate change and water demand	Assess impacts of climate change on water demand	Detailed, qualitative and quantitative	Based on data and expert knowledge, small team	<i>Underway</i> <i>UK policy</i>
<i>CSERGE, University of East Anglia</i>	Climate change	Explore climate change impacts <i>East Anglia, 2020</i>	Detailed, mainly qualitative	Structured stakeholder interviews	Report <i>Regional stakeholders</i>
<i>Environment Agency, National Water Demand Management Centre (NWDMC)</i>	Water demand	Assess levels and structure of water demand <i>2025</i>	Detailed, mainly quantitative	Based on data and expert knowledge, small team and consultation	<i>Underway</i> <i>UK policy and business</i>
<i>Digital Futures – research project</i>	ICTs and e-commerce	Explore the digital economy <i>2010, 2020</i>	Detailed, qualitative and quantitative	Based on data and expert knowledge, small team and consultation	Report <i>UK policy and business</i>
<i>Foresight – Crime Prevention Panel</i>	Crime	Explore issues of crime and crime prevention <i>2020</i>	Sketchy, qualitative	Participative workshop	Consultation document <i>UK policy and business</i>
<i>Foresight – Integrated Transport Chain Task Force</i>	Transport	Assess priorities for sustainable transport strategy	Detailed, quantitative and qualitative	Workshop, detailed elaboration by project manager	Report <i>UK government</i>
<i>Foresight – Energy Futures Task Force</i>	Energy	Assess sustainable energy technologies	Sketchy, qualitative	Based on data and expert knowledge	Report <i>UK government</i>
<i>Foresight – Minerals Panel</i>	Minerals	Assess sustainability of minerals extraction and use	Detailed, qualitative and quantitative	Workshop	Report <i>UK government</i>
<i>Natural Environment Research Council</i>	Environment	Identify environmental research priorities	Sketchy, qualitative	Participative workshop	Report <i>ENE Panel, NERC science policy</i>



