

Aim

“think globally, act locally”

The purpose of this chapter is to explain the concepts of sustainable development and sustainability, to emphasise global issues and to consider how Cambridgeshire may relate to that picture. It also introduces the issues being debated nationally and those that will be discussed later in this report.

We are all stakeholders in the future of the planet. The key message is that everyone has a role to play in ensuring a better quality of life today and for future generations - through integrating environmental, economic and social (including health) goals.

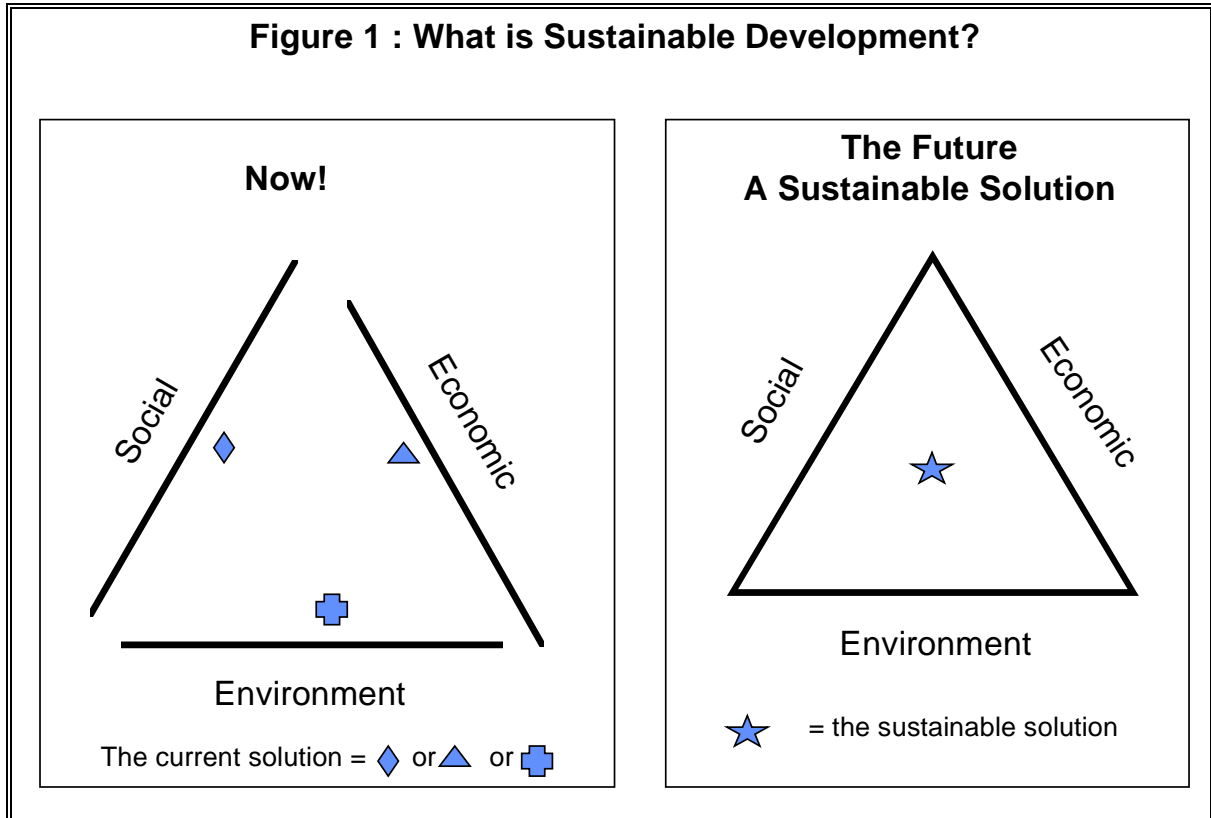
1. INTRODUCTION

What is sustainability?

- 1.1. During the 1990s, the sustainability agenda has become an increasingly significant and guiding part of international, national, regional and local policy development. It is also growing in importance to individuals, businesses and the voluntary sector.
- 1.2. Sustainable development is about ensuring an optimum quality of life for everyone, now and for generations to come, without degrading the environment. Its most commonly used definition is *“development that meets the needs of the present without compromising the ability of future generations to meet their own needs”* (Brundtland Commission, 1987).
- 1.3. Sustainable development encompasses a number of complementary concepts:
 - staying within the capacities of the natural environment to support life;
 - offering our children opportunities at least as good as those available to us;
 - ensuring that the needs of the poorest and most disadvantaged in society are met, and, that they are not, because of poverty, forced to live in unsustainable ways; and,
 - integrating environmental policy objectives with social and economic policies - in order that a decent standard of living is achievable by future generations.
- 1.4. Its sister concept, sustainability, is related to the capacity of the planet to support life. Sustaining the environment implies, that overall:
 - the rate of **consumption** of finite natural resources, including fossil fuels, should be **reduced** to a minimum;
 - **renewable** resources should, where possible, substitute for non-renewable ones;
 - **waste minimisation** should be an aim; wastes that are produced should be reused or recycled, and any remaining wastes should be assimilated into the natural environment with the minimum possible pollution;
 - valuable natural and physical **assets** and other amenities should be **managed** for the long term.

These will be explored in the sections below.

Figure 1 : What is Sustainable Development?



1.5. "Opportunities for Change" (February 1998) - the Government's consultation paper on a new sustainable development strategy for the UK - re-emphasises this concept and the commitment to achieving it by stating four key objectives:

- social progress which recognises the needs of everyone;
- effective protection of the environment;
- prudent use of natural resources;
- maintenance of high and stable levels of economic growth and employment.

1.6. Future guidance is likely to be structured on this basis and likewise society's success in achieving sustainable development will be measured against this framework.

Indicators of Sustainable Development

1.7. The UK Round Table on Sustainable Development was established in 1995. It aims to encourage discussion on major sustainable development issues and to build consensus between people and organisations who have different perspectives and different responsibilities. In late 1997, the Round Table recommended to Government that a small number of key sustainability indicators should be selected, to cover the following **five** themes (these will be expanded upon in section 2.0, below):

- **consumption of non-renewable resources;**
- **pollution of air, water and land;**
- **social values and issues;**
- **biodiversity;**
- **landscape and cultural resources.**

Figure 2 : Towards sustainable development - the political context



- 1.8. Therefore, in an attempt to set indicators for sustainable development, the political community has shifted from environmental matters to also consider economic and social factors. This is reinforced by research into public opinion which listed health, education, poverty, unemployment and crime as well as "quality of life" as key concerns. There are a variety of approaches to this topic and consequently numerous indicators. Therefore, the efforts of the UK Round Table in the future will be directed towards producing some key indicators to simplify the messages and focus public attention. Agreeing this list will be, necessarily, an iterative process. In mid 1998, the Government is seeking the development of 10 key indicators - aimed at being useful and high profile - ultimately, making the news headlines.

How do indicators work?

Chapter 1 Introduction, above, explains that our approach to state of the environment reporting follows a pressure-state-response model. This simple model can also be applied to producing indicators for sustainable development.

Human activities exert *pressures* on the environment and change its *state* in terms of its quality and its stocks of natural resources. Society *responds* to these changes by institutional, legal or financial measures, which, in turn, influence changes in human behaviour. The indicators expressed here tend to focus on assessing "*state*" and due to the nature of this report will tend to focus on environmental factors.

Conversely, the use of meaningful indicators for these *pressures* will, in themselves, raise awareness - acting as "drivers for action" by highlighting responsibility and thus influencing changes in behaviour. For example, reporting road traffic volumes or energy consumption by social class. However, inevitably, due to the complex interactions between social, health, economic and environmental dimensions, it is not possible here to produce a manageable set of indicators which cover all the issues. Indicators also need to be measurable and robust.

Ideally, more than one of these dimensions could be covered within an individual indicator to reflect the integrated nature of sustainable development, e.g. amount of land farmed organically is an environmental indicator and is also, possibly, an indicator of healthy eating and economic trends.

Local Agenda 21 (LA21)

- 1.9. The participating governments at the 1992 Rio Earth Summit signed up to Agenda 21; a Global Action Plan for the 21st century to achieve sustainable development. It encompassed three basic principles; sustainability, equity and participation. LA21 was conceived as a means by which local authorities world-wide would plan, through the active participation of their communities, for achieving sustainability in their areas.
- 1.10. Within the UK, the Local Government Management Board plays a central role in co-ordinating LA21 under the direction of the Local Government Association.
- 1.11. Councils are seen as a critical link in the chain from global to local; able to observe and understand global issues but also well placed to translate these into initiatives that engage local communities. The preparation of LA21 plans is one way to formalise this process and acts as a platform to partnership working towards sustainability goals. The Government has recently set a target for all local authorities to have in place a strategy for LA21 by 2000. Table 1 shows Cambridgeshire's progress towards that target.
- 1.12. Cambridgeshire ACRE (Action with Communities in Rural England) has operated a Sustainability Action Programme since 1996, which is steered by a Sustainable Development Panel. This three-year programme aims to help people improve their quality of life.
- 1.13. When engaging local communities, it is important that complex global issues are broached in such a way that is relevant to people's lives and what they care about. Many of the LA21 strategies are broadly structured around 13 key themes for a sustainable community identified by the Local Government Management Board, namely:

- Resources (consumption and waste)
- Pollution
- Biodiversity (wildlife and nature)
- Local needs and focus
- Access for all to basic needs (food, water, shelter and fuel)
- Access to facilities, services, goods and other people
- Health
- Safety (Crime)
- Knowledge (information)
- Empowerment (local democracy)
- Leisure, culture and recreation (distinctiveness and diversity)
- Equity
- Satisfying employment

Table 1: LA21 activity in Cambridgeshire	
Local Authority	LA21 Process
Cambridge City Council	The "Sustainable City" Steering Group and working sub-groups (Planning and Transport, Health, Energy and Waste, and Biodiversity) were established in 1996. A draft Action Plan was out for consultation during May 1998. The final plan is due in the autumn.
Cambridgeshire County Council	LA21 Round Table - established summer 1997. This aims to bring together partners to build understanding and organisational capacity for partnerships on local environmental and sustainability issues. Local authorities, Cambridge and Huntingdon Health Authority and a wide range of business, statutory, voluntary and academic groups are participants.
East Cambridgeshire District Council	A corporate approach to the development of an Agenda 21 strategy will be demonstrated during 1998 with the establishment of an environmental co-ordinator (under the direction of the Assistant Chief Executive).
Fenland District Council	The Council's LA21 programme will focus on three key areas: <ul style="list-style-type: none"> • development of sustainability indicators; • establishment of community/village sustainability panels which will be represented on the Fenland LA21 Forum Steering Group; • application of a sustainability appraisal to the Council's own decision-making procedures.
Huntingdonshire District Council	"Going for Green". This is a citizen's environmental initiative (launched in 1996). Achievements include completing a study of environmental attitudes and actions among selected Huntingdonshire communities. The "Towards Local Agenda 21 for Huntingdonshire" strategy document will be prepared and consulted upon in the Autumn.
Peterborough City Council	Peterborough Environment City Trust (PECT) have carried out various audits such as natural environment and energy. The lifestyles audit, "Greener Futures", is currently being undertaken by families with school age children and has recently won a national award. The City Council is involved in initiatives dealing with environmental management, anti-poverty, health, crime reduction and community consultation and has recently produced an economic development strategy which supports the principles of sustainable development A way forward on LA21 is currently being considered.
South Cambridgeshire District Council	A LA21 Action strategy has been produced and short/medium term objectives for the Council have been set. Five guiding principles for LA21 were adopted by the Council in February 1998. The Council is focusing its activity this year on internal good practice and intends to undertake public participation to implement key objectives.

1.14. These local activities complement other policy and related initiatives. For example, in response to Planning Policy Guidance Note 12, sustainable development is being included as a key element of statutory land use development plans. The County

Council's third Environmental Action Plan, "Environment 2000 - A Strategy for Action", was published in November 1997. Some District Councils have also produced their own environmental strategies or undertaken audits. The Environment Agency's Environment Strategy for the Millennium (1997) will be delivered locally through Local Environment Agency Plans. The LEAPs covering Cambridgeshire are the Cam, Old Bedford, Ely Ouse and Nene. Companies such as Anglian Water have environmental action reports and plans for the sites they manage, e.g. Grafham Water. "Cambridgeshire's Biodiversity" (1997) was a strategy produced by a multi-organisational Steering Group.

- 1.15. Environmental strategies, audits and State of the Environment reporting form the basic data required to take forward LA21 and environmental management. As part of this approach, it is important to assess "capital" - which is our stock of natural (environmental) resources. This stock should not be allowed to decrease beyond a certain threshold so that future generations can enjoy wealth and well being. Audits and State of the Environment Reports are "stock takes" of these resources and highlight certain critical environmental aspects which should be protected. Clearly, this has resonance with the broader concept of sustainability.
- 1.16. Sustainable development remains geographically abstract. Cities, towns or villages are not self-sufficient, e.g. they are net consumers/importers of resources and net producers/exporters of waste. Therefore, balancing development and environmental capital in this context is problematic. For example, "Chapter 5: Water", explores the need to consider water resources strategically, both regionally (water company areas) and nationally (through transfers and reservoirs). In this context, debating one county's situation is redundant. However, local consideration (through the LA21 process, for example) does have a role in achieving sustainable development through:
 - determining local (environmental) assets which are important and need protecting;
 - enhancing social, economic and environmental capital;
 - minimising resources and waste;
 - minimising the impact of development both locally and to other communities.
- 1.17. Local sustainability issues cannot be examined without regard to their global context. **The following section briefly considers the global environmental challenges (see Figure 2) and their relationship to Cambridgeshire.** Pressures such as habitat and species loss, demand for development, traffic congestion, problems of waste management, and air and water pollution incidents continue to affect the environment in Cambridgeshire. Local activities and events also affect, and may be affected by, a range of significant global problems such as climate change, ozone depletion and deforestation.

2. KEY ENVIRONMENTAL SUSTAINABILITY ISSUES

- 2.1. Earlier in Section 1.7, the likely framework for future sustainable development indicators was described. This section describes some key sustainability issues for the global and local environment - grouping them under the **five** key themes:

Consumption of non-renewable resources

Key issue: Waste generation and management

Pollution of air, water and land

Key issues: Global warming and climate change; air pollution

Social values and issues

Key issue: Population increase

Biodiversity

Key issue: Loss of biodiversity and how to secure or improve current levels

Landscape and cultural resources

Global and local issues

Consumption of non-renewable resources

Key Issue: Waste generation and management

- 2.2. Large quantities of waste are produced as a result of modern production, packaging and consumption and mark the inefficient and unsustainable use of resources. Transportation, storage and management of waste have a potential impact on the environment but are also greatly influenced by economic factors and social behaviour.
- 2.3. The key sustainability issues are:
- the use of non-renewable or non-recoverable resources at the expense of future generations;
 - the potential environmental, pollution and health risks especially in relation to the hazardous materials associated with waste. These pose threats to soil (contaminated land), air and water quality, if not properly managed;
 - the transportation and storage of waste, particularly chemical, radioactive and other hazardous waste.
- 2.4. This is explored in the chapter on waste, which focuses on the need for increased waste minimisation. Companies and other organisations can assess their environmental impact and seek to improve their environmental performance by introducing an environmental management system such as EMAS (European Eco-management and Audit Scheme). Increasingly, waste is being seen as a product or as a resource in its own right and hence the costs associated with its generation are under scrutiny. The introduction of EMAS, as well as being environmentally desirable and a good marketing tool, may well lead to savings (or hidden profits) through reducing resource use and waste.

- 2.5. The "waste as resource" concept has also been recognised in the Government's June 1998 consultation paper "Less Waste, More Value", where greater consideration could be given to energy/heat recovery from the incineration of waste. The paper also encourages substantial increases in recycling from all sectors, including householders.
- 2.6. Although this will not be developed here, the context of waste generation and management can be broadened out to consider global concerns. Fundamental to this is the over-exploitation of primary resources, often in the developing world, to meet the needs of the developed.

Pollution of air, water and land

Key issue: Global warming and climate change

- 2.7. Climate changes naturally, but man's impact on this process is now evident and believed to be causing more marked effects than would occur naturally. "Global warming", as this is now known, is potentially the most serious global environmental problem facing society. Its far-reaching implications are outlined below.
- 2.8. Global warming, a complex and incompletely understood phenomenon, is thought to be due to the excessive production of greenhouse gases such as carbon dioxide (CO₂), a by-product of energy use, methane from many sources including waste landfills and agriculture, oxides of nitrogen and chlorofluorocarbons (CFCs) from aerosols etc. Global warming, and associated climatic change, could have significant global and local effects upon wildlife and agriculture, as well as human activity.
- 2.9. Greenhouse gases produce a "greenhouse effect" by trapping heat in the atmosphere and slowing down its loss into space - thus keeping the Earth warmer than it would otherwise be. Although these gases occur naturally, their atmospheric concentration has been increasing due largely to human activity. The concentration of CO₂ is some 25% greater than the pre-industrial (mid-18th century) level. Methane concentrations also have more than doubled over the same period.
- 2.10. This accelerated rate of production of greenhouse gases due to industrialisation and deforestation is intensifying the greenhouse effect and will mean that, on average, the Earth's surface and lower atmosphere will get warmer. This is already having an effect upon sea levels and climate patterns, both globally and locally.
- 2.11. The Intergovernmental Panel on Climate Change (IPCC), with a membership of more than 300 leading scientists, is the most authoritative body investigating climate change. Its *First Assessment Report*, published in 1990 (and a 1992 supplementary report), concurred with the above and concluded that:
 - average global temperatures have increased by 0.3-0.6°C during the last century; this is consistent with models of the enhanced greenhouse effect that would be expected, but it is also within the bounds of normal climate variability;
 - without actions to restrain emissions, an increase in global temperatures of around 0.3°C per decade (with an uncertainty range of 0.2-0.5°C) is likely in future. This could imply sea level rises of around 6cm per decade (with an uncertainty range of 3-10cm).

- 2.12. Such scientific consensus in support of the occurrence of global warming has stimulated international action to limit climate change by reducing the levels of greenhouse gases stored in the atmosphere. An example of this is the *United Nations Framework Convention on Climate Change* (to which the UK is a signatory). The Convention, originally signed at the Rio Earth Summit in 1992, includes the commitment to take measures aimed at reducing CO₂ emissions.
- 2.13. In late 1997, a summit on Climate Change was held in Kyoto, Japan. The Intergovernmental Panel on Climate Change concluded that both national and international changes in climate (due to greenhouse gases) could have far reaching detrimental and irreversible effects on agriculture, water resources, wildlife and health. A new international protocol was agreed, which legally committed developed nations to a 6% reduction in greenhouse gases below 1990 levels between 2008 and 2012. This means that developed nations will save approximately 250 million tonnes of Carbon from being emitted. The EU's reduction figure will be higher at 8%.
- 2.14. The UK Government is still committed to its own target to cut CO₂ emissions by 20% from 1990 levels by 2010. The Department of Environment, Transport and the Regions (DETR) has said this will be delivered by: greater energy efficiency; undertaking renewable forms of power generation; and implementing an integrated transport policy. The Government is drawing up a plan to achieve this 20% cut (see Chapter 2: Energy).

Even if remedial action were to be taken, global warming would still continue for a number of years because of the existing build-up of greenhouse gases in the atmosphere.

Possible consequences of climate change

- 2.15. The UK Climate Impacts programme is leading research in this country. Its predictions are that:
- temperatures will increase by 1.5 - 3.5 °C over the next century if greenhouse gas emissions continue to rise at the same rate;
 - there will be a greater frequency/clustering of extreme events;
 - water-dependent activities such as agriculture will feel the affects more. Ecosystems are particularly vulnerable and species may have to shift 50-80km per decade;
 - Some sectors of the economy could benefit, e.g. forestry and tourism but the majority will suffer, including water and insurance industries;
 - there will be greater geographic contrast - the south-east becoming drier and more drought-prone, with the north-west becoming more wet and flood-prone. This will accentuate the UK's current water supply and demand problem. Southern England's climate may resemble that of southern France by 2050 and Durham may experience the weather of today's Devon.
- 2.16. If, as predicted, there is a rise in global mean temperature of 3°C by the end of the next century, there would probably be a rise in mean sea level caused by the thermal expansion of the oceans and the melting of glaciers and land ice sheets. The

predicted rise is about 20cm in global mean sea level by 2030 and 65cm by the end of the next century. As important as any absolute rise will be the regional variations, which are far more difficult to predict. Sea level rise predictions for the UK suggest that 10,000 hectares of coastal mudflats and salt marshes are at risk of inundation. These areas are vital for wildfowl and coastal protection. Low lying areas such as the Fens will obviously be the most affected in the UK but it is likely that the most severe consequences will be in heavily populated coastal and delta areas in the developing world.

Latest climate change forecasts for Cambridgeshire

Temperature: Increase by 0.5°C over the next 30 years.

Rainfall: Increase by 1-5% over the next 30 years

However, more will fall between November and March - increasing run-off and flood risk. Less rainfall from April to October will make summer water resources more limited.

Evapotranspiration: Increase by 10% over the next 30 years.

Soil Moisture Deficit: Higher in autumn. Therefore, less water available for the winter recharge of Cambridgeshire's chalk aquifers.

- 2.17. An increase in mean sea level can also affect tides and surges and may also change the frequency and severity of storms, e.g. events of the magnitude of 1953 or 1987. Average wind speeds are also likely to increase under this scenario.
- 2.18. If the world becomes drier and warmer, the most widespread effects could be on the nature and distribution of natural vegetation and agriculture. Again, the effects will vary regionally; some marginal areas may become too arid for cultivation and habitation, whilst others may become more productive agriculturally (see Chapter 7 Land uses). Half of the UK's grade 1 agricultural land is below the 5m contour (including Cambridgeshire) and much could be affected by saline intrusion (due to sea level rise). Existing habitats could be threatened by different species following weather patterns. Species with a predominantly Mediterranean distribution would be expected to expand northwards, e.g. coniferous woodland may be supplanted by deciduous woodland and similar changes would be expected for certain animal groups. The crops that could be viably grown may also be subject to migration northwards. New diseases and pests may become prevalent in areas where previously climatic conditions limited their effect.
- 2.19. Changes in agriculture and forestry could also lead to large scale population movements of "environmental refugees" who become displaced by the deterioration of their local environments. Climate change may also result in changes in the patterns of infectious diseases. This will pose major social and economic problems for governments, planners and health authorities.

- 2.20. In response to this, the scientific community is now considering climate change predictions in management and land use plans, e.g. the Environment Agency's water resources strategy, flood defence work etc. Ultimately, the Government's commitment to CO₂ reduction will be delivered locally. Cambridgeshire County Council and others have been working to raise awareness of the issues, e.g. through schools and LA21 and are promoting energy efficiency and transport initiatives. The County Council produced a CO₂ reduction strategy in 1995 - other local authorities have also audited CO₂ production and energy use.
- 2.21. Research into climate change needs to continue to refine predictions and so ascertain whether international commitments are being met and whether these measures are alleviating the problem.

Key Issue: Air pollution

- 2.22. Air quality, especially in urban areas, is of major concern (See Chapter 4). Air quality is reduced by pollution (the addition of harmful substances or energy) and this can significantly affect human health, especially of those already ill, the young and the old. The main sources of air pollution in urban areas are road transport, energy generation, industrial processes and domestic dwellings.
- 2.23. For example, man-made sulphur emissions are the principal source of acid rain - one of the most well known and controversial consequences of air pollution. Acid rain can harm vegetation, aquatic life and buildings - including historic monuments.
- 2.24. The Environment Act 1995 laid the foundations for a nation-wide system of local air quality management. The "United Kingdom Air Quality Strategy", published by the Government in March 1997, provides the strategy required by that legislation. It aims to:
- improve areas of poor air quality;
 - reduce significant risks to health; and,
 - work towards achieving the wider objectives of sustainable development.
- 2.25. It includes air quality standards and objectives for eight groups of chemicals:
- | | |
|--------------------|----------------------------------|
| • carbon monoxide | • 1,3-Butadiene |
| • sulphur dioxide | • lead |
| • nitrogen dioxide | • ozone |
| • benzene | • particles (PM ₁₀). |
- 2.26. All local authorities must undertake an air quality review and assessment to determine whether these national objectives will be met in their area by 2005. These standards are likely to form the basis of air quality indicators along with other indicators of the impacts of air quality on health (e.g. the incidence of respiratory illness) or economics (e.g. the impact of park and ride initiatives on retailers).
- 2.27. In Cambridgeshire, pollution from motor vehicles, rather than from industrial and domestic sources, is a significant problem. In particular, emissions of the oxides of nitrogen (NO_x) and other pollutants such as PM₁₀ (small particles less than 10 microns in diameter) particulates are causing concern. Clearly, this is of particular concern in urban areas and along major trunk roads.

- 2.28. Ozone is both a naturally occurring beneficial gas in the upper atmosphere and an undesirable product of pollution at ground level. However, over the past decade, concern has developed over its depletion leading to holes in the ozone layer over the poles. This depletion leads to harmful ultraviolet rays reaching the Earth's surface and it is believed that this can contribute to, for example, increased incidences of skin cancer and crop failure.
- 2.29. The Government is committed, under the Montreal Protocol, to phasing out substances that deplete the ozone layer, e.g. CFCs, halons, HCFCs, and methyl bromide. Concern over ground level ozone is also growing, especially where traffic emissions in conjunction with bright sunlight can cause photochemical smogs. Ozone-related problems are trans-boundary and therefore require strategic, rather than solely local, management.
- 2.30. Noise and excessive artificial light are also considered to be among widespread forms of environmental pollution. More research is necessary to assess any link with health.

Social values and issues

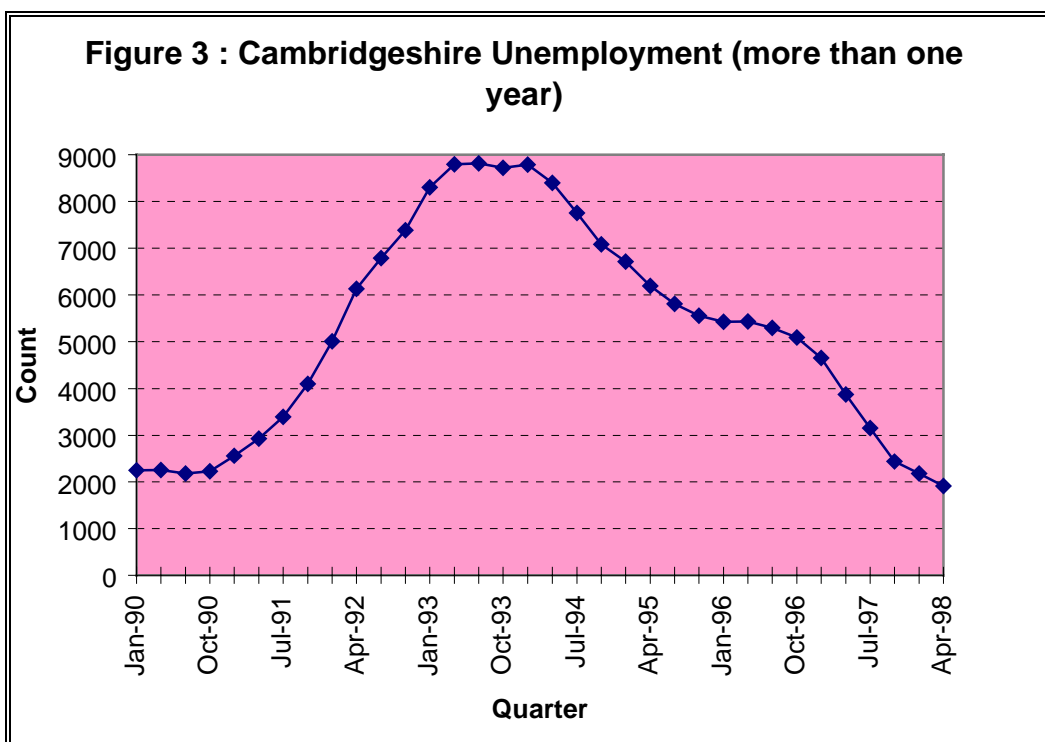
- 2.31. This particular topic is very wide-reaching and encompasses many of the social, health and economic issues facing society. This report focuses on the state of the environment; but to aspire to sustainable development, we increasingly need to view all four dimensions and develop indicators which reflect social, health and economic perspectives as well as environmental ones. Given below is a flavour of topics which would need to be covered in a sustainable development report.
- 2.32. Sustainable development is based on the view that everyone has a responsibility for the impact they have on the environment and society. In this case, everyone should have an opportunity to become involved, in any way they wish, in the decisions made on their behalf by many different organisations. Therefore, public participation is vital to ensure that social, health, economic as well as environmental policies are sustainable and achievable. Much of the LA21 work centres around the need to develop sustainable communities which focus on improving quality of life, reducing social inequalities, alleviating poverty and maximising the participation of its members in decision-making.

Health issues

- 2.33. Health is an outcome of sustainability. A recent Government green paper "Our Healthier Nation", sets out the Government's vision for public health and acknowledges the important links between environment and human health. Factors considered include: air quality (indoor and outdoor conditions affecting respiratory conditions); housing (inefficient energy, radon); water quality (lead in drinking water); transport (congestion and pollution); noise pollution; global warming; and, ozone depletion. Consequently, the development and reporting of sustainable development indicators, especially as they relate to health, will require more data collection and analysis.

Economic issues

2.34. The numbers of long-term unemployed in a County will generally give a good indication of the state of the economy. As far as sustainable development is concerned, there is a definite link between wealth and health. The links between unemployment and sustainability are less direct. In a time of depression, when individuals are unemployed, they tend to be less concerned with the environment and the grand scheme of things and more interested in the basic human needs e.g. food and warmth. However, their situation will often be indirectly connected with sustainability, for example, reduction in the use of coal in power stations because of stricter pollution control results in redundancies. Like the majority of the country in the early 90's, Cambridgeshire suffered from a distinct rise in the number of people out of work for more than one year, reaching nearly 9,000 in 1993 (see Figure 3).



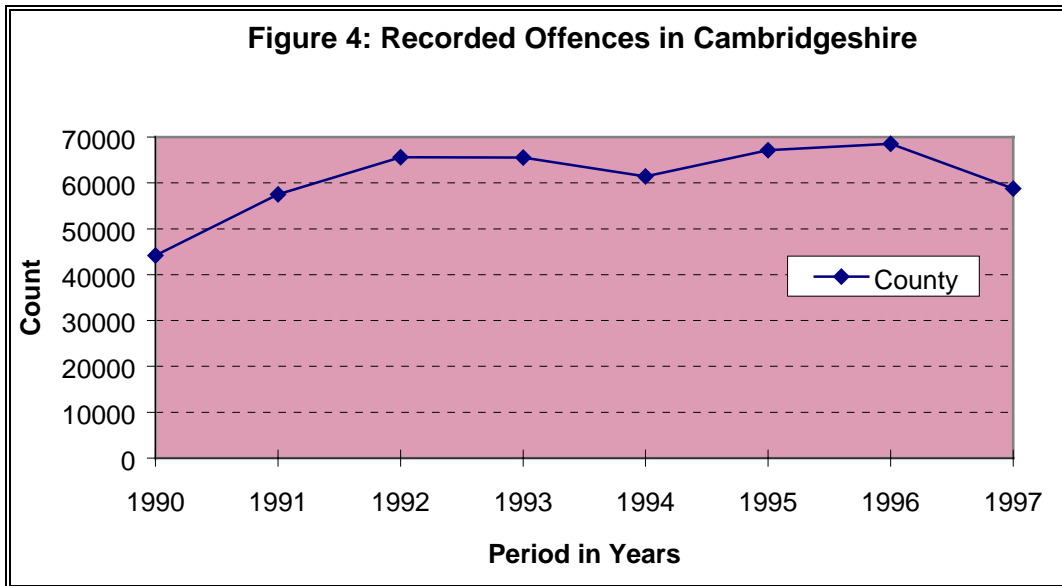
Source: Cambridgeshire County Council

Social Issues

2.35 Up until 1997, there had been a slow but steady rise in the number of recorded crimes in the County as a whole. In 1997, however, the number of recorded crimes was 58,769, the lowest since 1992. The crimes per 100 people in the County had also dropped to 8.5. It is still noticeable that the largest cities in the County have much higher crimes per 100 people (Peterborough 13.9 and Cambridge 12.6). Even more interesting is Fenland's figure of 8.5, while it is the least populated and most rural of all the Districts.

2.36 The reason for the decrease in recorded crime across the County could be one of many. For example, it could be due to people simply not bothering to report minor crimes anymore or that society has become more tolerant. On the more positive side the drop could be because of better public awareness; increase in deterrents such as Neighbourhood Watch and security devices; alternatively the police may be more

effective or managing to get their message across more successfully. The fact that the trend is County wide suggests a genuine drop in crime.



Source: Cambridgeshire County Council

Key issue: Population increase

- 2.37. The world's population is increasing, especially in the developing world, placing major strain upon the earth's capacity to provide a reasonable quality of life. In many parts of the world hunger, homelessness and poverty are endemic. Over-cultivation, deforestation and desertification are direct consequences of population growth.
- 2.38. Although UK population growth is slow by comparison with the developing world, our population density is one of the highest in the world. In rapidly growing regions, such as East Anglia, the south-east and south-west England, in-migration and rapid rates of household formation have created intense pressures for development of all kind, including new dwellings.
- 2.39. Development is the most significant impact on the environment. The capacity of Cambridgeshire to accommodate predicted levels of growth is currently being assessed (see case study below). The results will shape development in the county over the next 20 years (see chapters 7 and 9:)

Pressure of growth: Cambridgeshire Capacity Study - Planning for 2016

This study has been prompted by the need to feed into regional guidance and review the County's Structure Plan - in the light of new projections of population growth over the next 20 years.

Cambridgeshire Structure Plan (adopted December 1995)

Includes a policy on sustainable development whereby the significance and implications of the concept will be material considerations in determining planning applications and in the formulation of Local Plans. Therefore, the County's development plans should be subject to sustainability considerations such as:

- minimising adverse impacts, e.g. through developers taking remedial measures;
- including positive measures to enhance the environment;

- minimising the consumption of resources by using renewable resources and incorporating recycling facilities;
- maximising the use of existing infrastructure; and,
- maintaining and improving the quality of life of the people of Cambridgeshire.

The 1995 Structure Plan advocated the development of environmental indicators (which is discussed in this report) and also included a number of environmental sustainability targets, many of which have been developed in the County Council's "Environment 2000 - A Strategy for Action" (1997). The capacity study provides a basis for taking forward sustainable development indicators.

Why is there pressure for further growth?

The reasons include:

- existing needs for housing;
- increase in the number of smaller households;
- people are living longer;
- immigration into a county enjoying a growing economy; and,
- need for improved infrastructure - a growing population will need accessible employment, shops, health and social services, leisure facilities and open space, as well as homes.

How much growth?

The Government has stated that 4.4 million new homes will be needed to meet demand between 1991-2016. The figure for Cambridgeshire ranges from 64,500 to 122,500. The capacity study used the SCEALA estimate of 96,500, of which 51,500 are already built or have planning permission. Therefore, 45,000 homes would need to be allocated (that is 4,000 per year) with additional land for new shops, employment, schools, roads and open space (a land area equivalent to the size of Cambridge).

20,000 of these can be located by infilling existing urban areas. Therefore, the remaining 25,000 would have to be situated on rural brownfield or on "greenfield" (previously undeveloped) land.

SCEALA has prepared a regional strategy which is to be used as Draft Regional Planning Guidance (RPG). This will be subject to public consultation (autumn 1998) and a regional Examination in Public (EiP, January 1999). This will discuss issues such as the level and distribution of housing in the region and the role of the Cambridge "sub-region". Cambridgeshire authorities are working towards an agreed position statement (to accompany the results of the Capacity Study) as part of their "case" at the regional EiP. The Government is hoping to publish the final RPG in September 1999.

Constraints to development

There is a need to undertake a full assessment of the impact of new development and ascertain which environmental assets need to be protected. When identifying the location of new development, the following need to be considered:

- wildlife/biodiversity;
- landscape;
- high-quality agricultural land;
- Cambridgeshire's special character and green belt;
- the adequacy of water supplies and drainage;
- maintenance of good air quality;
- the capacity of transport;
- access to jobs, schools and hospitals; and,
- conserving the existing character of towns and villages.

How will the impact be assessed?

An important part of this study was to consult the people of Cambridgeshire and interested organisations on a number of options regarding the distribution of the new development.

Their responses became the basis for an assessment of each option. The assessment covered the following:

- *Meeting needs*, e.g. employment, housing demand;
- *Environmental impact*, e.g. air quality, habitat, water quality;
- *Social and economic impact*, e.g. urban "quality of life", jobs and workforce balance;
- *Sustainable development and transport*, e.g. energy efficiency for buildings, public transport provision (See Chapter 3), re-use of disused (brownfield) land.

Results of Capacity Study Consultation

The key points to arise from this exercise included:

- concerns about the impact of development on local communities, the environment and (transport) infrastructure;
- fears about "quality of life" not being sufficiently considered, e.g. local housing needs or rural issues.

Differing views were expressed across the County reflecting differing economic status. It was also clear that more work needed to be done on specific areas before the EiP, namely traffic growth/commuting and water supply and drainage.

Next Steps

The review of the Cambridgeshire Structure Plan will begin in late 1999 after the regional EiP and publication of the RPG. To embrace fully the concept of sustainable development, this may need to be developed innovatively through the adoption of new approaches. For example, many development plans are now signing up to Local Biodiversity Action Plan (LBAP) targets (see Chapter 8) and consequently these plans are seen as a route to maintaining and enhancing biodiversity. Therefore, increases in the target species and habitats can act as indicators as to whether sustainable development is being achieved in Cambridgeshire. Another new approach is to work with health authorities (and the *Health for Cambridgeshire* partnership) to prepare health impact assessments of proposed development areas.

Biodiversity

Key Issue: Loss of biological diversity (biodiversity) and how to secure or improve current levels.

- 2.40. Biodiversity is the "variety of life". Biodiversity is under threat globally through the unsustainable use of the Earth's resources. It is also important to view the issue in terms of securing the biodiversity that already exists and that positive action towards enhancing it is necessary.
- 2.41. Historically, threats to biodiversity may have been due to the excessive exploitation of a particular species. More recently, entire ecosystems are under threat. Ecosystems are fragile and can only adapt to "natural" rates of change. The rapid rates of change in the environment brought about by man far exceed those at which species and ecosystems can naturally adapt and consequently a net loss of species is occurring. Species extinction is a clear indication of unsustainable development. Biodiversity is, therefore, a key test of sustainability. Sustainable development must conserve and, where possible, enhance biodiversity while meeting economic and social goals. The development of biodiversity indicators is an essential first step to enable us to measure our progress towards sustainability.
- 2.42. Chapter 8 gives an account of how the issue will be tackled in Cambridgeshire. Further to "Biodiversity: The UK Action Plan 1994", an approach has been designed

by a Local Steering Group of organisations, including English Nature, the Wildlife Trust, RSPB, Cambridgeshire County Council and District Councils, and the Environment Agency in consultation with more than 100 other organisations. As launched in the November 1997 document "Cambridgeshire's Biodiversity - a framework for action", LBAPs will be developed according to five themes:

- *Rivers and Wetlands* (habitats include Fens, flood-plain grazing marsh and chalk rivers; species include otter, water vole, great crested newt, large copper butterflies and a number of molluscs);
- *Trees and Woodlands* (habitats include lowland wood pasture and park land; species include dormouse, bullfinch, moths, flies and butterflies);
- *Arable farmland* (habitats include cereal field margins and ancient/species-rich hedgerows; species include brown hare, corn bunting, grey partridge and a number of plants);
- *Cities, towns and villages* (habitats include ponds and lakes, gardens and allotments; species include pipistrelle bats and song thrush);
- *Dry grasslands* (habitats include lowland calcareous grassland, embankments and cuttings; species include skylark, stone curlew and a number of plants and bryophyte mosses).

2.43. The LBAPs will be used as a mechanism to assess and manage both nationally and locally important habitats and species. The LBAPs will also set targets to improve the value of habitats and the number and range of species they support. It is likely that species indicators will be developed from the LBAPs to assess biodiversity, e.g. the presence or absence of green-winged orchid to signify the health of calcareous-clay grasslands. The Steering Group pledged to produce pilot LBAPs by March 1998 and finalise plans for the highest priority species and habitats by December 1998. Progress has been made on all five themes and the 1998 targets will be met.

2.44. It is vital to see areas of nature conservation importance as resources that should be valued and protected. Traditionally, this was done by designating protection areas such as SSSIs or even internationally through the EU Habitats Directive Special Areas of Conservation (SACs). Premier sites in Cambridgeshire include the Nene and Ouse Washes. These man-made habitats show the importance in Cambridgeshire of re-creating and expanding habitats as well as conserving the existing resource. However, it is important to look beyond designated sites to ensure that biodiversity in urban areas and the wider countryside is protected and enhanced.

2.45. Initiatives which engage communities to both enhance their local biodiversity and their ability to enjoy it include the South Cambridgeshire pond project and the Parish Paths Partnership (See Chapter 8).

Landscape and cultural resources

Global and local issues

2.46. In the global context, issues such as desertification and deforestation have been identified as key concerns. The expansion of the world's deserts, especially into sub-Saharan Africa, is leading to a loss of productive land and soil erosion). The reasons

for desertification are complex and include over-cultivation due to development pressures and population growth; excessive water abstraction; and climate change.

- 2.47. The loss of tropical rain forest and other woodlands destroys natural and human habitats, reducing biodiversity as well as a valuable carbon "sink" (as trees store carbon in growth helping to reduce atmospheric CO₂ levels). Poor management of the cleared areas, principally by unsustainable agricultural practices, can often lead to the rapid degradation of soils and landscapes.
- 2.48. Agriculture, soil and landscape are also clearly of importance locally. In Cambridgeshire, the key issues relating to landscape and cultural resources include:
- pressure for growth and impact of development;
 - importance of maintaining archaeological resource and encouraging its enjoyment and understanding (see Chapter 10);
 - loss of local landscape character and distinctiveness (See Chapter 8). Features such as trees, hedgerows, ponds, orchards and limestone walls are being lost and as a result the countryside is becoming more uniform. This is largely the result of changing agricultural practices or inappropriate management (see Chapter 7). The Cambridgeshire Landscape Forum has been established to address these issues. A later chapter details how tree planting initiatives are being promoted to address Cambridgeshire's status as the least wooded county in England;
 - influence of agriculture on local economies and environment.

The Sustainability of Agriculture

Farming dominates the rural economy of the Cambridgeshire Fens and beyond. This was due to the presence of peat soils which historically are highly productive - sustained by drainage and irrigation (See Chapter 7).

Farmers have to respond to market forces - at present, this is dominated by the requirements of the major supermarket retailers. Within this context, farmers are finding it difficult to stay competitive. Two of the key environmental issues, soil degradation and water resources, are described below (see the Environment Agency's Old Bedford LEAP (May 1997) for a fuller account). However, a full analysis of sustainable agriculture would need to cover a number of other topics such as: local supply and demand to avoid transportation impacts and packaging, and viability of small farms; increased organic production; nutritional requirements; urban farming; changes in European policy and subsidies; landscape and wildlife.

Soil

Agriculture in the Fens is characterised by intensive mechanised production of root and vegetable crops on organically-rich peat soils. Intensive use has led to a reduction in the quality and extent of these soils. Draining and cultivation have caused the peat to waste away by about 1cm a year. It is estimated that it will take 100 years or so for the soil to change from peat through organic "skirt" soils to mineral soils - which are typical of arable land found elsewhere in Eastern England. These soil changes will lead to problems with moisture retention and workability so that a smaller range of crops can be grown with a greater need for irrigation. Consequently, a local downgrading of Agricultural Land Classification is likely to occur.

In the light of this, further decline of peat soils is inevitable without fundamental changes in the farming system - this soil should be regarded as a resource to be managed sensitively.

This includes awareness of the long-term impact of chemical fertilisers and pesticides.

Water

Water is a key ingredient to a successful and productive agricultural business. As irrigation is an integral part of the production of high quality soft fruits and vegetables, the reliability of water supplies is paramount. As demand is predicted to outstrip available resources in the years to come, the need for winter storage reservoirs is likely to increase in the future. However, this is a finite resource and planning authorities have concerns about these reservoirs on landscape and mineral extraction grounds. Water-efficient irrigation methods are also being developed.

For agriculture to be sustainable, the natural resources on which it depends should not be exhausted so that future generations can continue farming. In the longer term, if climate changes as predicted, farming methods and crops may also have to change. In the light of this, maintaining the status quo in to the future may not be cost-effective or environmentally desirable to farmers and regulators alike. Consequently, this issue requires further debate and research.

Recent changes in the farming industry have already had a significant impact on the local economy; a fact reflected by a 30% decline in the county's agricultural workforce over the last 10 years. Due to the unique characteristic of the Fens, opportunities for counteracting this decline through alternative forms of development are limited and as a consequence some of the area has been designated under a EU scheme to promote recreation, environmental enhancement and retail activities. This aims to help maintain a rural economy of which healthy agriculture is a key component.

3. CONCLUSION

- 3.1. The above chapter gives a taste of the types of sustainability issues being debated and many topics have not been covered. This reflects how huge the subject is and the difficulties in grasping the concept of sustainable development.
- 3.2. The Government has set a target for all local authorities to have sustainable development (or LA21) strategies in place by the year 2000. The production of strategies, with the effective participation of stakeholders and communities, is to be encouraged as they harmonise and clarify social, health, economic and environmental factors and their interrelationships - while taking a long-term perspective. The conclusions of such plans need to be integrated into the policies and plans of, for example, business, local authorities and Government agencies as well as being actioned locally to ensure that sustainable development is achieved.
- 3.3. The communities of Cambridgeshire and Peterborough have initiated a number of projects in this vein and the challenge is to maintain momentum and achieve real improvements in quality of life. The use of sustainable development indicators is a straightforward way of measuring performance. The draft Action Plan for Cambridge Sustainable City has attempted this. For example, the aim of social equity could be monitored by using indicators such as the number of homeless, and environmental quality could be measured by child asthma cases requiring hospital treatment.
- 3.4. The CLIP Task Force on sustainable development, LGMB and LGA are carrying out work on indicators for inclusion in the revised national sustainable development strategy (due to be produced by the end of 1998). These indicators will ultimately be used by local authorities to measure the progress on sustainable development locally.

- 3.5. It is likely that when this report is reviewed in four years time, it will evolve into a state of sustainability report as opposed to just focusing on the environment and therefore the use of representative indicators will be crucial to enable clear messages to emerge.

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WORKING GROUP MEMBERS

- Dr M Scott/Ms M Doyle, Environment Division, Cambridgeshire County Council
Mr M Vigor, Planning Division, Cambridgeshire County Council
Mr J Bowrey, Chief Executive's Dept., Cambridgeshire County Council
Ms K Peat, Policy and Planning Dept., Cambridge City Council
Mr C Lambart, Planning Dept., East Cambridgeshire District Council
Mr R Probyn, Planning Dept., Huntingdonshire District Council
Mr T Patey, Council for the Protection Rural England - Cambridgeshire Branch
Mr R Hall, English Nature, Peterborough
Mr W Woodrow, Royal Society for the Protection of Birds - East Anglia, Norwich
Mr D Crowther, The Martin Centre, Department of Architecture, Cambridge