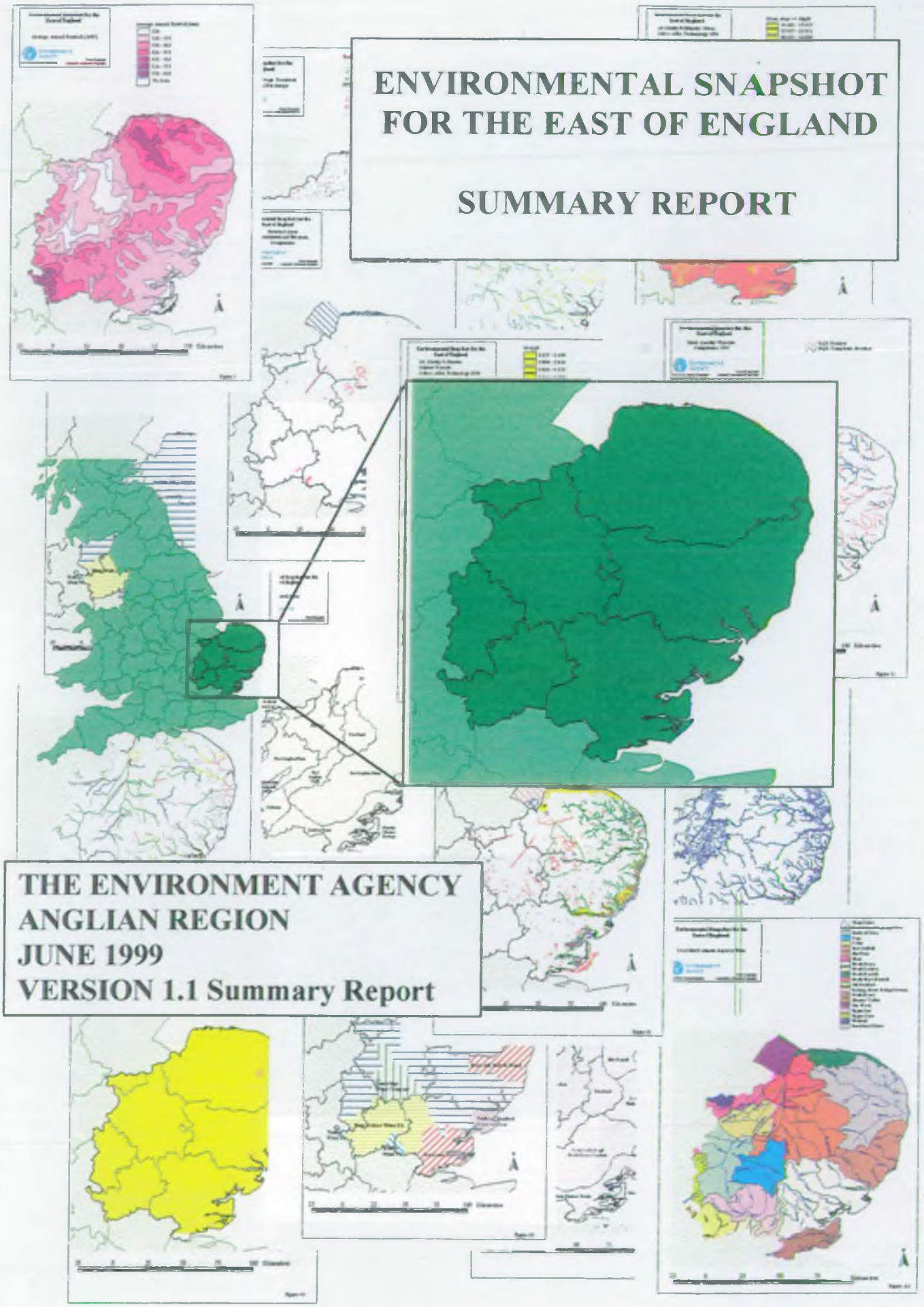
EA - Anglian Box 10

# ENVIRONMENTAL SNAPSHOT FOR THE EAST OF ENGLAND

## SUMMARY REPORT



**THE ENVIRONMENT AGENCY**
**ANGLIAN REGION**
**JUNE 1999**
**VERSION 1.1 Summary Report**

ENVIRONMENT AGENCY

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# INTRODUCTION

## THE ENVIRONMENT AGENCY

With the emergence of a regional chamber and the East of England Development Agency, we are entering a period of intense re-appraisal and change in the East of England.

The Environment Agency which has approximately 1600 staff and carries out £6.2M of expenditure in this region, is a major stakeholder in ensuring that future growth contributes to the goal of sustainable development and that the environment is at the heart of future decision making.

To equip ourselves and others to consider the environmental consequences of differing development scenarios we have prepared an Environmental Snapshot – which we hope will be an interesting and useful reference document for those preparing policies and strategies. (This booklet is intended to be a summary of the larger report and highlights some of the key issues).

If you would like a copy of the full Environmental Snapshot for the East of England then please contact:
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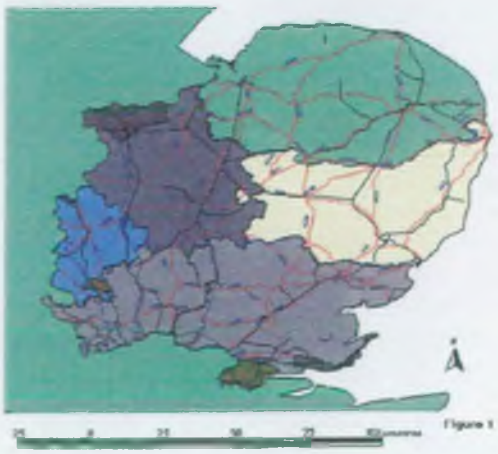
Regional Context



**The East of England**

The East of England Region comprises the counties of Cambridgeshire, Bedfordshire, Norfolk, Suffolk, Essex and Hertfordshire.

This region has extensive sparsely populated rural areas and coastline interspersed with metropolitan centres, around which urban populations and industry have developed.

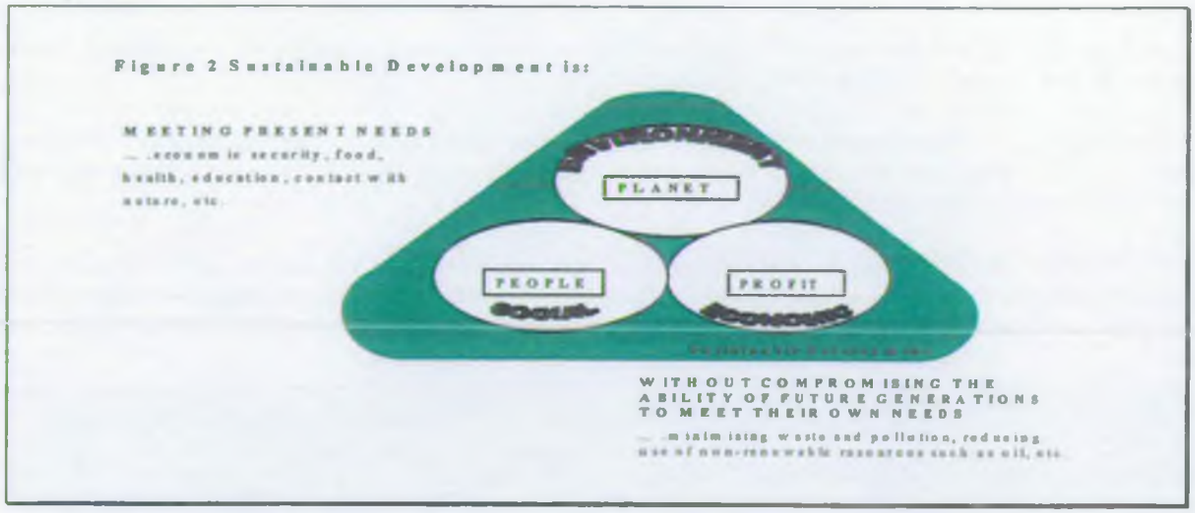
The East of England is a centre of leading-edge technology, biotechnology and world class research. It has major ports at Felixstowe, Harwich and Tilbury. Its cultural, historical and tourist attractions bring in large numbers of visitors. Cambridge, with its world renown reputation in particular, has had a successful record in attracting inward investment.

Key Environmental Issues which need to be addressed in future regional strategies are as follows:

- ensuring the prudent use of natural resources in one of England's fastest growing regions;
- ensuring the sustainable water management of England's driest region;
- restoring the quality of degraded habitats and reclaim fen and reedbed habitats that have been lost;
- considering climate change scenarios and the implication of flood risks.

# Sustainable Development

Everyone has a role to play in ensuring a better quality of life today and for future generations – through integrating social, economic and environmental goals. The term 'sustainable development' has been used frequently in recent years, Figure 2 gives an illustration of the most commonly used definition.




**"Think globally, act locally"**

As we approach the millennium, reflection on what the future holds is commonplace, but do we know where we are going or what a sustainable future may mean?

On a global scale our current reality is not a comfortable one. We are experiencing rapid socio-economic change which looks set to continue. Society is changing so that many traditional sources of personal security no longer operate. Information technology and global markets are transforming our economy. However, in our efforts to improve material standards of living, we are rapidly transforming our environment and in the process, we risk destroying its ability to support us.

Moving forward and planning future change, in a sustainable way, creates the future we want rather than allowing the future to 'happen' to us. This means both individual change and collective action.

In order to assess progress towards a more sustainable approach to development, the government is proposing a number of 'headline indicators'. The diagram below gives a summary of what these indicators are.

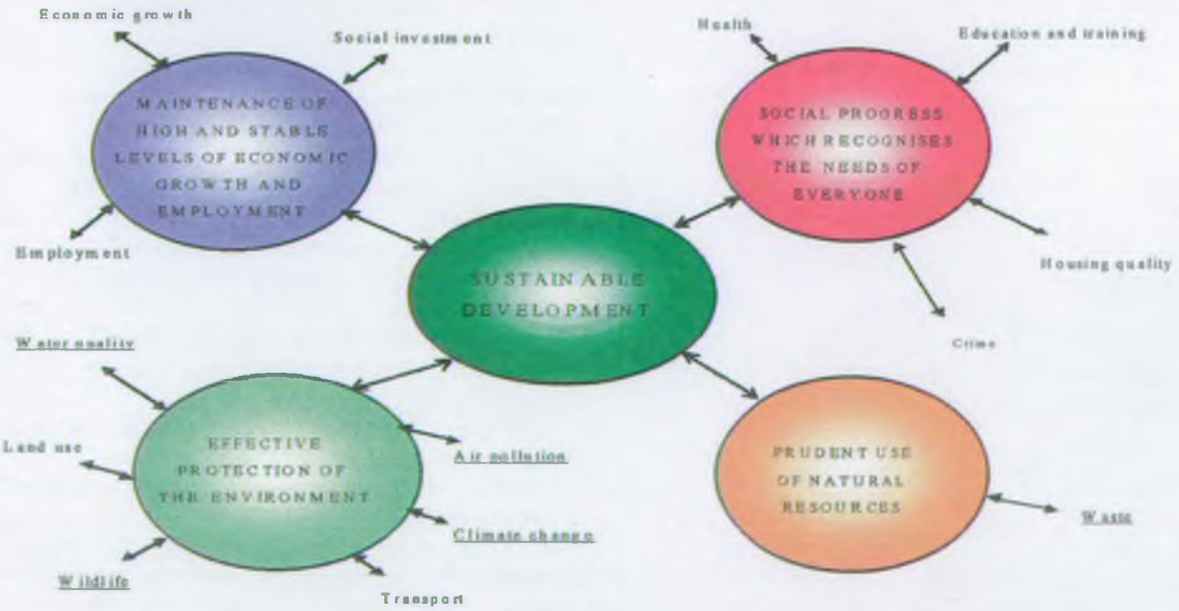



**Figure 3: Headline Indicators of Sustainable Development**

Where appropriate, in an environmental context, these 'headline indicators' will be identified in the following text.

# CLIMATE CHANGE

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. Since the industrial revolution (18th century), there has been a rise in the global-mean surface air temperature of 0.6°C. 'Global warming', as this is now known, is potentially one of the most serious global environmental problems facing society.

**Latest climate change forecasts for the East of England**

**Temperature:** Annual average will increase by 0.5°C over the next 30 years.

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

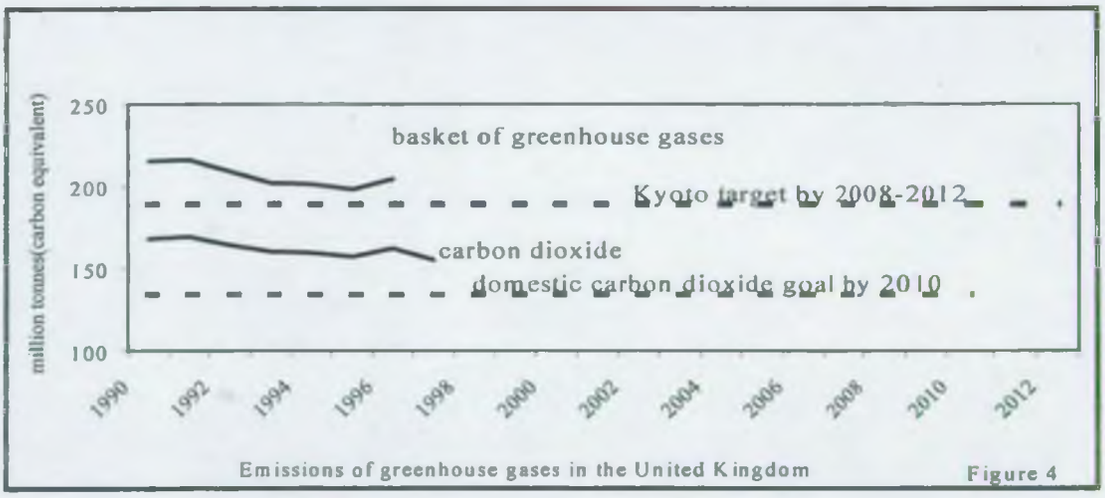
However, more will fall, with greater daily intensity, between November and March - increasing run-off and flood risk. Less rainfall from April to October will make the summer water resources more limited.

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

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

**Actions to reduce climate change**

The UK has a legally binding target under the Kyoto Protocol to reduce emissions of six greenhouse gases by 12.5% below 1990 levels by 2008-2012. (See Figure 4 below) It has also set itself a tougher domestic goal of reducing $CO_2$ emissions by 20% below 1990 levels by 2010 **[Government Headline Indicator]**.




Emissions of greenhouse gases in the United Kingdom Figure 4

Ultimately, the Government's commitment to $CO_2$ reduction will be delivered locally. Local Authorities have been working to raise awareness of the issues, e.g., through schools and Local Agenda 21 (LA21), energy efficiency and transport initiatives, $CO_2$ reduction strategies, and audits of the use of energy and production of $CO_2$

$CO_2$ emissions are mainly driven by energy consumption. Transport has been the fastest growing source in the UK as a result of a sharp increase in road traffic, and accounts for about a quarter of all $CO_2$ emissions. These are forecast to continue to rise. People can help by reducing their dependency on the car and using other modes of transport.

For business and the public sector, which account for almost half of the total emissions, there is considerable scope to use less energy and save more money. Households, responsible for about one quarter of all $CO_2$ emissions, can also reduce emissions and save money by being more energy efficient.

**Air Quality – Summary**

We need good air quality for our own health and to sustain the environment. Air pollution is caused mainly by road transport, energy generation, industrial processes and domestic sources such as open fires. Road transport is the major source of pollution in the County, especially in urban areas such as Cambridge.

Air quality is generally good across the whole of the East of England. Levels of most pollutants, including $SO_2$ and $NO_2$, are 'low' according to the UK classification system. Ozone may be an occasional problem in summer, which is likely to continue for some years, under certain conditions in the south of the region. Particle levels are probably the cause of most concern in certain meteorological conditions, when polluted continental air is blown across the region.

Local industry may occasionally contribute significantly to local air quality problems but this is unlikely to be a major cause of problems on a regional scale. The main air pollution problems tend to be in urban areas where pollution from traffic is likely to be the main cause of concern.

Nitrogen Dioxide Levels

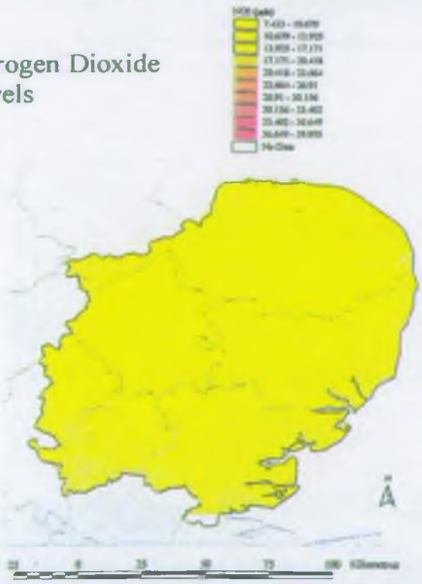
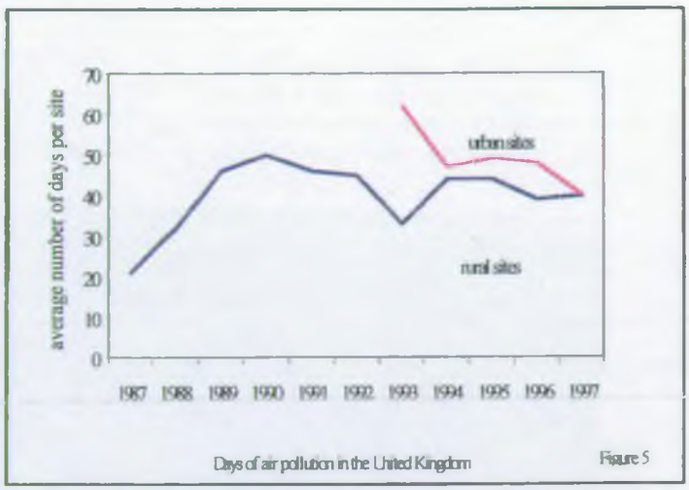


Figure 6




Days of air pollution in the United Kingdom

Figure 5

**Days of Air Pollution**

National figures indicate that in general, urban sites experienced around 40 days in 1997 when pollution levels were above the national air quality standard (at which mild health effects may be experienced by sensitive groups of people). Rural areas experienced an average of between 40-50 days of moderate or poor air quality. It is likely that generally across the East of England results were slightly better than the national average.

**Nitrogen Dioxide ($NO_2$)**
The proposed air quality standard for $NO_2$ is 21ppb (by 2005). Certain urban areas and major roads have the potential to exceed this, but it is unlikely to be a major problem for the East of England compared with other regions.

**Sulphur Dioxide ($SO_2$)**
As a result of the Clean Air Act (1993), the replacement of coal as a fuel and the use of cleaner technologies in the industrial sector, emissions of $SO_2$ have fallen by 63% in the UK since 1970. Nationally emissions of $SO_2$ are now generally dominated by a few large emitters, none of which are sited in the East of England, although there are a number of smaller lower volume sources within the region.

**Ozone ($O_3$)**
$O_3$ does not feature in the Air Quality Regulations (1997), despite featuring in the National air quality strategy, as it is a secondary pollutant and it is recognised that local air quality management measures cannot control it. $O_3$ levels are being exceeded, especially in the south of the region. This is probably due to the airborne transport of precursors generated in London and Europe. $O_3$ tends to be a rural, summertime problem as it requires sunlight.

**Particles ($PM_{10}$)**
It is now generally acknowledged that $PM_{10}$s are made up of several different types of particles from different sources and consequently the measurement of them is not as accurate or reliable as we would wish.
Levels of particles higher than the National air quality standard are sometimes experienced throughout the UK. Modelling suggests that the elimination of all urban traffic would not bring levels down sufficiently to achieve this current objective. Therefore, the proposed standard will be adjusted to encompass recent developments in particle research and monitoring.

# WATER RESOURCES

## Water Resources – Context

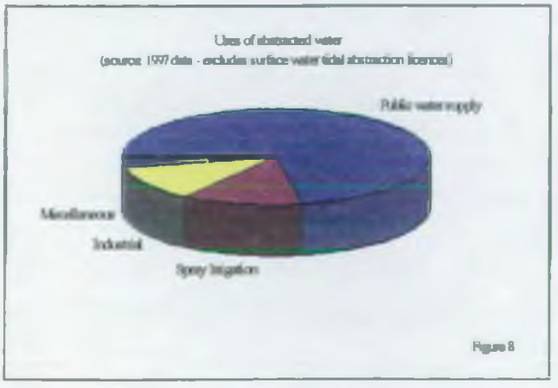
The East of England is the driest part of England and Wales (see Figure 7) and efficient use of water resources is vital if future development is to be sustainable. The water environment (rivers, streams, wetlands and estuaries) of the East of England Region is a valuable one, containing many valuable wildlife sites of national and international importance. The Agency recognises this and is working with the water companies, English Nature and other organisations to ensure that abstractions do not take place to the detriment of the environment.

Water Availability in England and Wales

## Uses of Water

The main sources of water are direct rainfall, rivers and groundwaters. These sources supply man's needs for domestic water supply, agriculture and industry as well as a number of recreational and amenity uses. At the same time, water is needed to sustain many aspects of the environment, both rivers and its habitats – wetlands and associated wildlife.

We can provide detailed information on industrial, agricultural and domestic water use. The general trend is that spray irrigation is on the increase, whilst general industrial use has decreased over recent years (see Figure 8).




## How much do we use?

Figure 9 shows the consumption per person for measured (metered) and unmeasured households for the water companies in the region.

This shows that the average unmeasured per capita consumption is 159.5 litres/head/day. 141.5 litres/head/day in measured households.

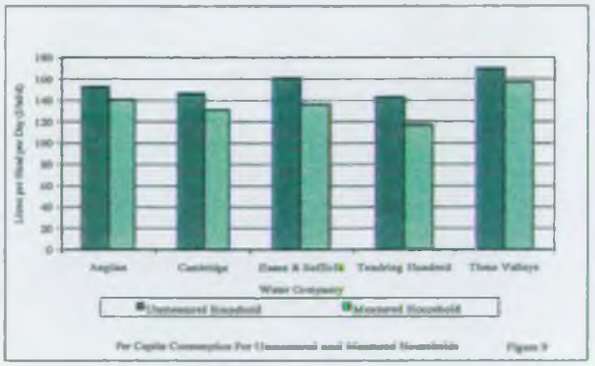
## Leakage

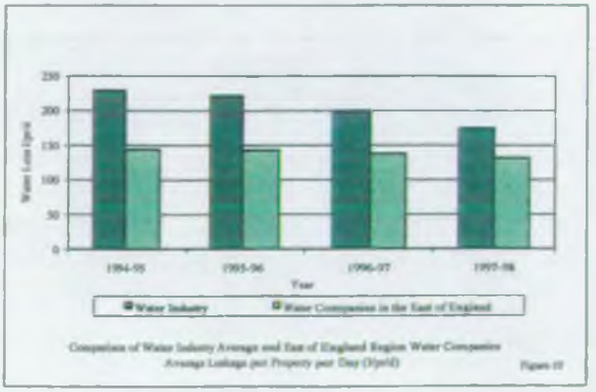
Figure 10 shows the average leakage in litres per property per day in the region as compared to the water industry as a whole.

The average leakage is 131.2 l/pr/d.

The graph shows that the water companies in this region have a lower level of leakage than the national average. They are active in maintaining low levels and reducing leakage.

**Sustainable Development Issue**
In a dry region (with intense development) both metering and leakage control are ways of securing the prudent use of water resources and as such these measures are good indicators of Sustainable Development. However there are costs and social implications associated with these controls.



## River Water Quality

Water is precious for our survival and key to this is its inherent quality (usefulness) and protection from pollution.

The Environment Agency has a method for classifying the water quality of rivers and canals, known as the General Quality Assessment scheme (GQA). This provides a consistent assessment of the state of the water quality across England and Wales and any changes in this over time. The chemical GQA detects the most common types of pollution **[Government Headline Indicator]**.

The Environment Agency uses River Quality Objectives (RQOs) to plan the actual improvement to river quality (see Figure 11); RQOs ensure that river quality is checked against the standard of water quality required for certain uses.

RQO failures that are due to water utility companies, or which might be caused by these companies in the next five years, will be addressed by the periodic review of company plans by Government regulators. The remaining risk to water quality is from the intensity of land use and agriculture. It is clearly desirable that any future development should not worsen water quality or undermine the ability to meet any agreed RQOs.

Figure 11
RQO Compliance 1997

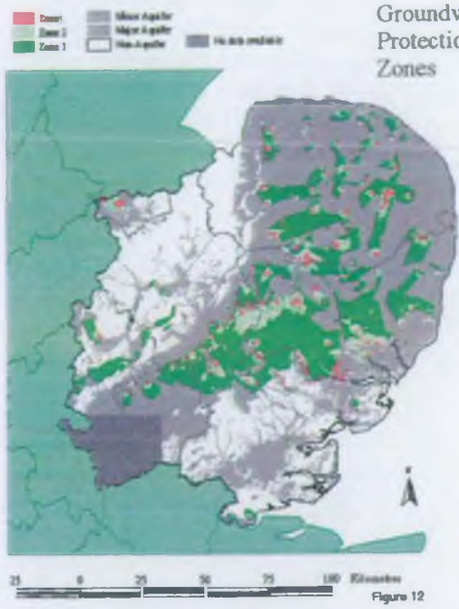
## Bathing Waters

Bathing water quality has shown a continued improvement since 1987. Indeed, in 1997 and 1998 all bathing waters in the East of England Region complied with the standards in the Bathing Water Directive.

This improving quality represents an opportunity to further tourism in the East of England Region.

## Groundwater Protection

Groundwater is particularly vulnerable to pollution and, once polluted, aquifers are difficult, if not impossible to clean up. In order to protect groundwater, the Agency has defined sets of protection areas. The Agency seeks to restrict certain types of development in these areas (see Figure 12).



Groundwater Protection Zones
Figure 12

## Pollution Incidents

We follow up reports of pollution and attempt to catch and prosecute people who cause incidents.

In the East of England (in 1997), 13 substantiated incidents were Category 1 (major) – 6.5% of the total number of Category 1 incidents in England and Wales and 72 were Category 2 (significant) – 5.5% of the total number of Category 2 incidents nationally (see Figure 13).

Pollution Incidents 1997
Figure 13

**Shoreline Management Plans (SMPs)**

SMPs are part of an initiative, backed by the Ministry of Agriculture, Fisheries and Food, the Association of District Councils, English Nature and the Environment Agency, to improve the future planning of our coastlines.

The objectives of SMPs are to:

- improve our understanding of coastal processes;
- work in partnership with all interested parties and organisations; and,
- prepare an agreed framework for long term planning of coastal defences.

The associated map (Figure 14) details the current and proposed long term options within the East of England.

Shoreline Management Plans


Figure 14

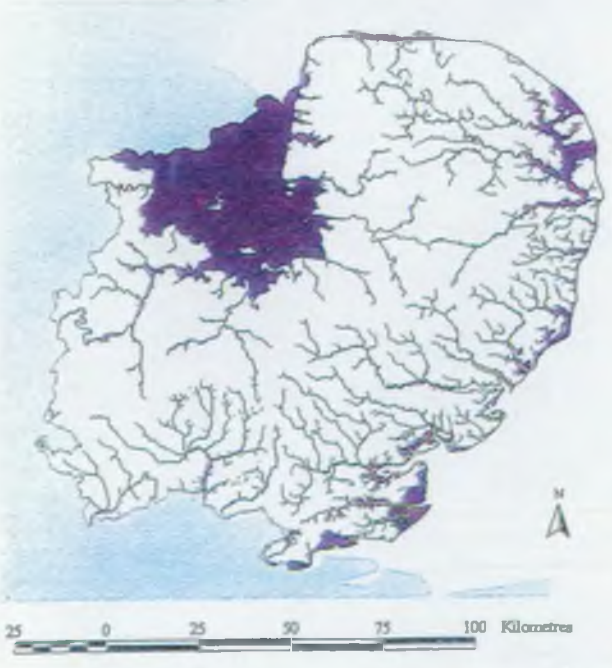



Figure 15

Indicative Floodplain

**Areas at Risk of Flooding**

The information provided in Figure 15 represents the best available knowledge on the area at risk of flooding. This indicative floodplain represents land which lies beneath either the tidal 1:200 year or river 1:100 year return period flood (assuming no flood defences are in place).

The Agency is currently undertaking a floodplain mapping exercise of areas that have been identified as being under greatest development pressure. These refined floodplain maps, known as Section 105 Maps, will provide planning authorities with floodplain information.

To accelerate the transfer of information to the planning authorities the Agency will provide indicative floodplain maps by September 1999. These maps will cover both statutory main and non-main rivers. These maps are an interim measure and will be replaced by Section 105

# LANDSCAPE AND LAND USE

## Landscape Character

The Countryside Agency (formerly the Countryside Commission and Rural Development Commission), English Nature and English Heritage have identified Character Areas. Character Areas are landscape definitions based on locally distinct areas which have developed from the interaction between land use, wildlife, natural features, human impacts and the built environment (Figure 16).

This analysis has shown us that the landscape in the region is varied - ranging from the unique character of the fens in the north, to the chalk area of the Chilterns in the west, to the coastal zones such as the Greater Thames Estuary. The value of the region's landscape has been recognised and certain areas are statutorily designated, e.g., the Broads National Park and the Chilterns Area of Outstanding Natural Beauty (AONB).

Character Areas


Figure 16

## Urban land Use

Figure 18 illustrates the extent of urban development in the East of England. This highlights the rural nature of the region and the increased urban density as one travels south towards London. Issues surrounding the built environment are inseparable from others such as landscape, archaeology, air quality and the need for infrastructure. Discussion on the region's urban areas can be found in regional planning guidance and county-level reports.

## Rural Land Use

A significant proportion of the East of England is high quality agricultural land. 58% of the whole country's grade 1 and 2 land (the most versatile agricultural land) is in the East of England. Much of the grade 1 and 2 land is in and around the Fens. This is mainly in Cambridgeshire.

Although the East of England is normally associated with arable farming, parts of the region have been traditionally associated with livestock. For example, it is the second largest pig and poultry area in the country.

The Government has stressed the importance of 'a living and working countryside'. As the economic climate changes it is desirable that traditional rural industries such as agriculture are complemented by a range of other businesses to sustain the economy. However, it should be noted that agriculture will continue to play an important role in the rural economy of the East of England.

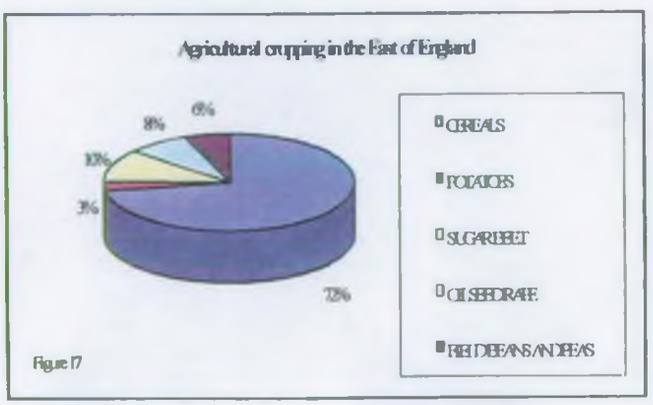



Figure 17

Urban Land Use

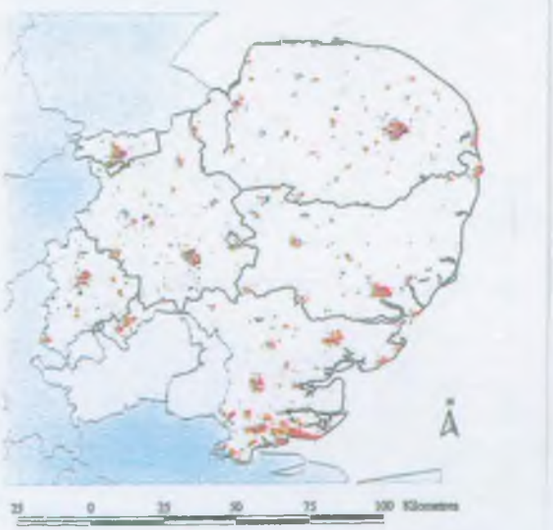




Figure 18

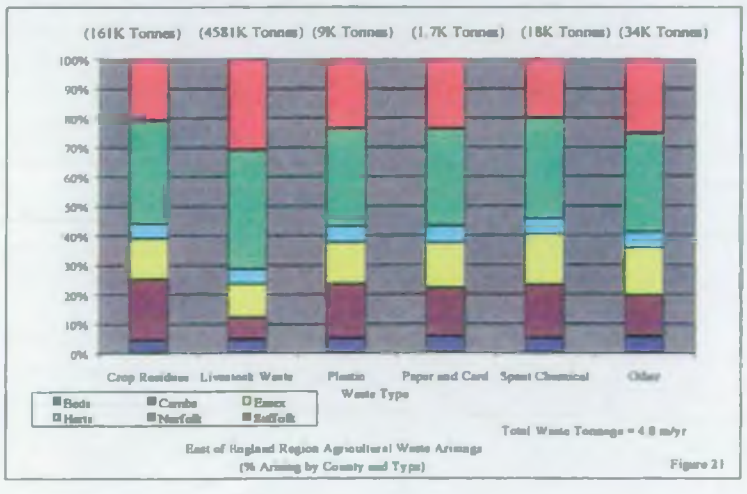
## Waste Disposal Facilities

Figure 19 shows the location of the most important waste disposal facilities in the East of England. These facilities include landfill sites and incinerators. There is a relatively even distribution of landfill facilities across the East of England with each county possessing important sites.


## Agricultural Waste

Figure 21 shows the types and quantities of agricultural waste arising in the six counties of the East of England. Across the region, in excess of 90% of agricultural waste is material derived from the keeping of livestock, including manures, slurries and bedding. Other large components of agricultural waste are crop residues and spent chemicals such as pesticide washings and oils.

Within the region, the counties of Norfolk and Suffolk account for approximately 70% of estimated agricultural waste arisings. This reflects the relatively rural nature of these counties and, in particular, the number of intensively reared livestock.

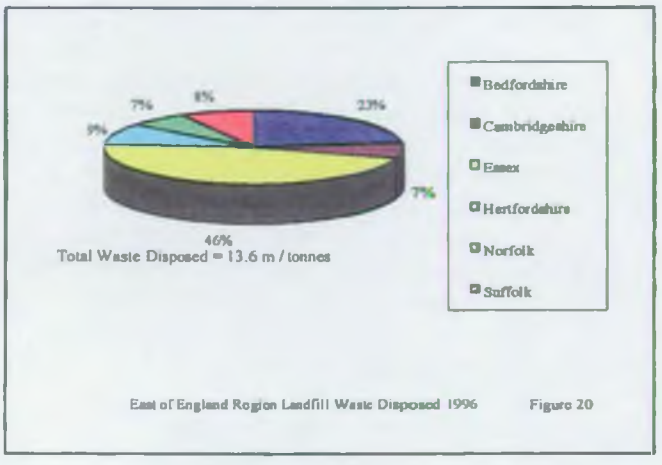



## Waste Disposed to Landfill

Landfill disposal in the region is characterised by the influence of London and the South East. The availability of landfill within the counties of Essex and Bedfordshire, and ease of transport between them and the Capital (by road, rail and water), means that over many years these counties have taken significant quantities of waste from London and the South East. In 1996 approximately 40% of the waste disposed to landfill sites in Bedfordshire and Essex originated in London.

**[Government Headline Indicator]**

In future Local Authorities will be encouraged to develop more local waste management options such as minimisation and recycling.




# BIODIVERSITY AND WILDLIFE

The East of England possesses a high quality countryside with a great proportion of some of the UK's rarest species and habitats. for example:

- The floodplain of the Norfolk Broads has the largest expanse of species-rich fen in lowland Britain and the largest example in Britain of calcareous fens. which support a number of rare species.
- The largest reedbeds in England are in the Suffolk Coast and Heath areas.
- The Basingstoke Canal is the most species-rich freshwater system in England. containing half of Britain's native aquatic higher plants and 24 dragonfly species.
- Orton Pit supports the largest known population of great crested newts in the UK.
- Most of the recent British records of the rare barbastelle bat are from Breckland.
- The farmed areas of the East of England support the majority of the English population of brown hare. and lowland farmland birds such as corn bunting and linnet **[Government Headline Indicator]**
- The Rex Graham Reserve in Breckland supports 95% of the British population of the military orchid.

## Wildlife and its protection in the East of England

The East of England possesses a wealth of wildlife including many rare species. There are a large number and area of non-statutory and statutory sites designated for nature conservation value, for example there are 888 Sites of Special Scientific Interest (SSSI) covering 1487Km$^2$ (Figure 22). As well as SSSIs there are, National Nature Reserves (NNRs), Special Protection Areas (SPAs) and candidate Special Areas of Conservation (cSACs). Such sites protect the best and rarest examples of biodiversity in the country.


Protected Areas National Desienations

Figure 22

Figure 23


Crayfish Data 1985 onwards

## Biodiversity

The Government has made a commitment to protecting and enhancing biodiversity (the wealth of wildlife) through its signing of the Biodiversity Convention at the UN Conference on Environment and Development held in Rio de Janerio in 1992. Local Biodiversity Action Plans are being produced for the counties in the East of England. The white-clawed or native crayfish has been recognised as important by the UK Biodiversity Action Plan. Native crayfish are threatened by the spread of the introduced signal crayfish, as well as other non-native crayfish, which have escaped into the wild. Once widespread in clean rivers and lakes in England particularly chalk rivers, the distribution of the native crayfish has declined sharply in the UK and the East of England (see Figure 23).

# CONCLUSIONS AND NEXT STEPS

**State of the Region**

The Environment Agency has a key role to play in securing sustainable development in the East of England. As well as fulfilling our statutory and regulatory duties, we are keen to offer information and advice to support the initiatives of others such as the East of England Development Agency, the East of England Regional Chamber and the Government Office (Go-East). To take this forward we would welcome fully inclusive, collaborative projects and partnerships.

**Linking the Economy and the Environment**

**We feel that the following concepts are key to understanding the links between the economy and the environment**

- The 'environmental sector' of the economy is a growth area as business attitudes change, as customers become more aware and as a result of new European environmental legislation.
- There is a need to view the environment as an economic activity in its own right, employing thousands and contributing millions to the economy (i.e., 5 – 10% of GDP) and is growing.
- Achieving a good quality of life is important to encourage people to live and work in a locality. Areas of wilderness are important to relieve human stress and reduce pollution.
- Some sectors, traditionally reliant on natural resources, e.g., agriculture and sea fisheries, are declining – environment and ecotourism programmes could be a driver for regeneration in these communities.

The diagram below lists the types of environmentally - orientated business activities under three themes:

- maximising the Environment sector;
- regenerating the Primary sector;
- capitalising on a high quality environment.

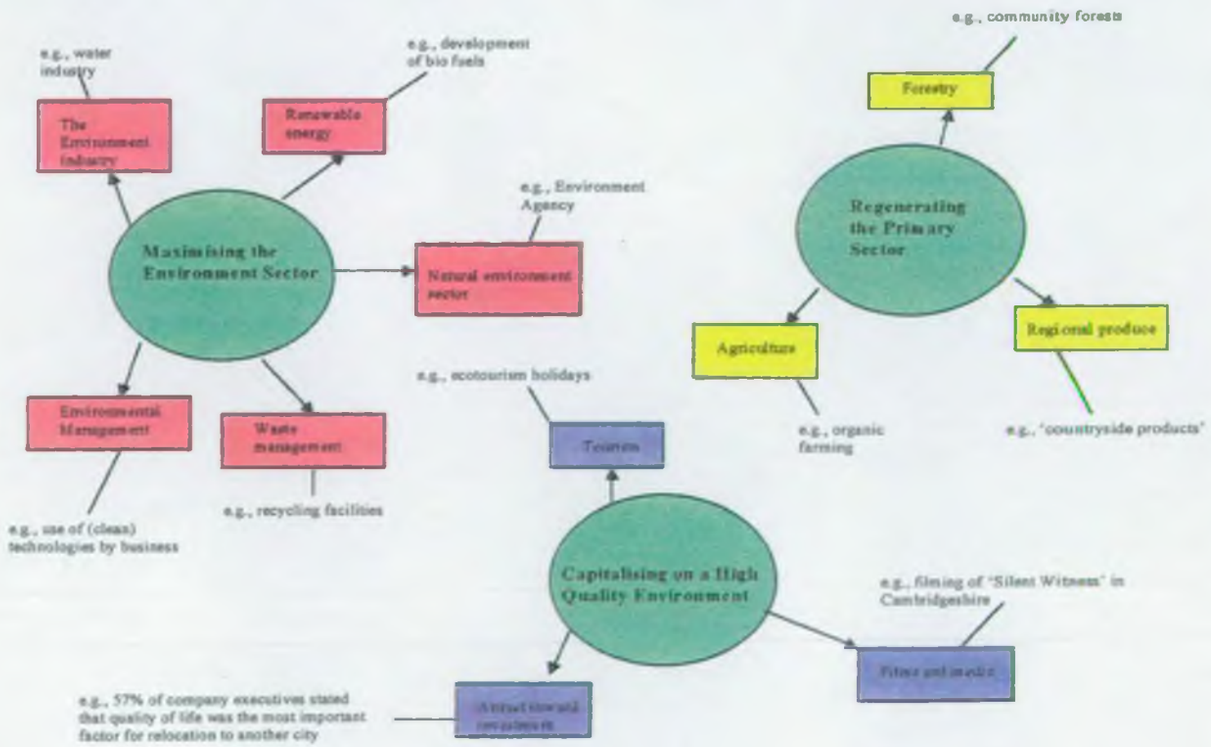



**Figure 24: Economy and the Environment**

It would seem valuable, as a next step, to determine the significance of these sectors - they are, clearly, areas of potential employment and commercial opportunity.