

environment

strategy for wales



Llywodraeth Cynulliad Cymru
Welsh Assembly Government

THE SUSTAINABLE DEVELOPMENT SCHEME - SUSTAINABLE DEVELOPMENT PRINCIPLES

Translating the Assembly's vision into action will mean changing the way we work so that:

- sustainable development underpins and drives everything the Assembly does and advocates others to do;
- critical issues are identified, through dialogue with leading stakeholders, and focused on;
- people and communities are at the heart of sustainable development;
- decisions in each field of policy take account of effects of proposals 'in the round', not just in the field in question and recognise potential tensions and risks of action and inaction;
- policies and programmes are designed in an integrated way so that they are mutually reinforcing and evidence based;
- funding and grant schemes reinforce this integrated approach;
- opportunities are recognised early and acted upon;
- spending plans are directed towards achieving key sustainable development outcomes with suitable planning horizons;
- new ways of working with our partners to achieve our objectives are developed;
- decisions about the short term should not be contradictory to long-term aims;
- policies recognise the needs and opportunities of all parts of Wales and the connections between actions at different spatial scales;
- we take into account the global impacts of decisions made at the Wales level;
- wherever possible the root causes of problems are tackled;
- good practice examples of sustainable development projects are replicated and mainstreamed at all levels, from local to national;
- sustainable development is integrated into education and training programmes;

- public understanding and awareness of the meaning of sustainable development and its day-to-day implications for everyone is enhanced.

The Assembly is committed to:

- putting people, and their quality of life now and in the future, at the centre of its concern;
- ensuring everyone has the chance to get information, see how decisions are made and take part in decision-making;
- long-term planning which takes account of the need to recognise future challenges and opportunities e.g. climate change to safeguard the interests of this and future generations;
- using scientific knowledge to aid decision-making, and trying to work out in advance what knowledge will be needed so that it can be researched;
- taking account of the full range of costs and benefits when making plans and decisions, including those which cannot easily be valued in money terms, and taking account of timing, risks and uncertainties;
- respecting environmental limits, so that resources are not irrecoverably depleted or the environment irreversibly damaged: this implies, for instance, contributing to protection of the planet's climate; protecting and enhancing biodiversity; minimising harmful emissions; and promoting sustainable use of natural resources;
- applying the precautionary principle, that cost-effective measures to prevent possibly serious environmental damage should not be postponed just because of scientific uncertainty about how serious the risk is;
- preventing pollution as far as possible, and making the polluter pay for the damage done by pollution, and more generally trying to ensure that costs are met by those whose actions incur them.



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Ministerial Foreword



Our environment is a key asset. It underpins our health, our economy and our quality of life, but there is mounting evidence that our

actions are pushing natural systems beyond their ability to cope.

There is, for example, overwhelming evidence that climate change is occurring, and that the consequences are potentially very serious. We need to take action to tackle its causes and ameliorate its impacts.

Other challenges such as unsustainable resource use, biodiversity loss and environmental inequalities must also be tackled.

To help us achieve a sustainable future for our environment, and to address the challenges we face, I am pleased to present the Welsh Assembly Government's first Environment Strategy for Wales.

The Strategy builds on the strategic agenda set out in Wales a Better Country and provides a framework for the long term protection of our environment and a vision for a distinctive Welsh Environment thriving and contributing to the economic and social wellbeing and health of all the people of Wales.

The Strategy recognises the importance of the environment, both for its own sake and for the vital services it provides us with. It highlights the challenges we face, sets out the Assembly Government's vision for what we want to achieve by 2026 and starts to map out how we will get there.

The Strategy, and its first Action Plan, is a starting point. I am pledging my ongoing commitment to delivering the vision set out in the Strategy, but I recognise that the contribution of people and organisations across Wales will be vital in achieving success.

I hope that we can harness the commitment, enthusiasm and knowledge that was evident throughout the consultation on the Strategy and work together to deliver a better future for our environment and for the people of Wales.

Carwyn Jones AM

Minister for Environment, Planning and Countryside

Executive summary

This is the Welsh Assembly Government's long term strategy for the environment of Wales, setting the strategic direction for the next 20 years. It is supported by a series of regularly updated action plans and a policy map setting out the key actions that will be taken to deliver the outcomes in the Strategy.

The purpose of the Strategy is to provide the framework within which to achieve an environment which is clean, healthy, biologically diverse and valued by the people of Wales. By 2026, we want to see our distinctive Welsh environment thriving and contributing to the economic and social wellbeing and health of all of the people of Wales.

The Strategy has been developed through an extensive consultation process and in partnership with key stakeholders. It reflects the results of the consultation *Our Environment - Our Future - Your Views* launched in July 2005, and the results of a pre-consultation held in summer 2004. The consultation process helped to identify the key environmental issues we need to address and helped to define our vision for the future. It also helped to decide what outcomes we want to achieve, how we will measure them and the action we will take to deliver them. We are very grateful to all those who responded to the consultation and shared their time and expertise in developing the Strategy. We look forward to working in partnership to take the Strategy forward.

The first chapter - **Our Strategy** - sets out the broad intentions of the Strategy and the context within which it operates.

The second chapter - **The challenges we will face up to 2026** - highlights the key environmental challenges facing Wales and the global environment up to 2026. This time period is intended to provide a longer term focus and to reflect that many environmental processes operate over long time periods.

The third chapter - **Vision for the environment of Wales** - sets out the Assembly Government's vision for the environment in 2026.

The fourth chapter - **Enabling change** - highlights four key structural themes: leadership; policy integration; clarity about roles and education, which will help deliver broader environmental priorities.

The next five chapters focus on key environmental themes:

- **Addressing climate change** - covers mitigation and adaptation
- **Sustainable resource use** - covers materials consumption and waste; water; soils; minerals and aggregates
- **Distinctive biodiversity, landscapes and seascapes** - covers biodiversity; the marine environment; landscapes and seascapes and their historic component
- **Our local environment** - covers the built environment and access to green space; environmental nuisances; walkability in urban areas and access to the countryside and coast; and flood risk management
- **Environmental hazards** - covers pollution; chemicals; and radioactivity

These chapters, and the sub-topics within them, follow the same broad structure, with minor variations:

- An introduction to the issue and key messages about the Assembly Government's approach
- The outcomes that the Assembly Government will deliver, including a time scale and indicators for measurement
- The baseline, which includes a mixture of quantitative information and descriptive text about the state of the resource, pressures on it and policy responses
- A section setting out, in broad terms, how the outcomes will be addressed and areas of particular priority
- A final section highlights the spatial dimension to the issues covered

The final chapter - **Monitoring and evaluation** - sets out how progress in delivering the Strategy will be monitored and reported on.

There are five annexes: the first provides a **Summary of Outcomes** proposed in the Strategy; **Clarity of roles**, which gives an overview of the organisations and sectors with an interest in the environment; **Glossary**, which explains technical terms used in the Strategy; **Equality issues** which summarises the environmental issues with particular relevance to one or more equality strand and **Policy links** which sets out which outcomes different policy areas have an impact on.

The Strategy is supported by an Action Plan, which details specific actions aimed at delivering the vision and outcomes set out in the Strategy. The Action Plan alone will not deliver the vision and outcomes. Current policies and programmes will contribute towards delivery and will need to ensure that they reflect the priorities set out in this



Our Strategy

Strategy. Their role is highlighted in Annex E and the accompanying policy map.

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The purpose of the Strategy is to provide the framework within which to achieve an environment which is clean, healthy, biologically diverse and valued by the people of Wales. By 2026, we want to see our distinctive Welsh environment thriving and contributing to the economic and social wellbeing and health of all of the people of Wales.

The Strategy has been developed through an extensive consultation process and in partnership with key stakeholders, many of whom are represented on the Environment Strategy Reference Group which has helped to steer the development of the Strategy. It reflects the results of the consultation *Our Environment - Our Future - Your Views* launched in July 2005, and the results of a pre-consultation held in summer 2004. The consultation process helped to identify the key environmental issues we need to address and helped to define our vision for the future. It also helped to decide what outcomes we want to achieve, how we will measure them and the action we will take to deliver them.

Our environment

The environment is central to every aspect of life. It supplies our basic needs - clean air, water, food and a place to live and work; it is the source for the raw materials we use; it provides a place for recreation and improving our health and supports a range of economic activities.

The diversity of the Welsh landscape, and the cities, towns and villages that form part of it, gives Wales its unique sense of place. The landscape and coast is high quality, including large areas which are internationally recognised for their beauty, heritage or biodiversity value.

We recognise that the economy and the environment are closely linked and that a healthy, attractive environment will play a key role in attracting and retaining people to live and work in Wales. We are committed to developing a diverse, competitive, high added value economy, with high quality skills and education that minimises demands on the environment.

The environment also has a profound connection with our health and wellbeing. Environmental problems like air pollution, impact negatively on our health, but attractive outdoor spaces and scenery make us feel good and we can improve our health by using them for sport and active recreation. This Environment Strategy forms part of our response to Health Challenge Wales as the national focus for a co-ordinated and sustained effort to improve health and wellbeing in Wales.

The challenge and opportunities

To build a sustainable future for Wales we need to manage the pressures we place on our environment more effectively and to address new challenges like climate change.

Many activities, which are important in their own right, put pressure on our environment, including:

- transport
- agriculture, fisheries and forestry
- industry and commerce
- energy use
- construction and development

As a result of these pressures, the environment faces a number of key challenges (described in more detail on pages 11-14):

- climate change
- unsustainable resource use
- degraded ecosystems
- loss of biodiversity
- loss of landscape and heritage quality and distinctiveness
- poor quality local environments
- environmental hazards

These challenges do not exist in isolation and we must ensure that our response to them is properly integrated. Putting sustainable development into practice means ensuring that economic and social policies address how they can help deliver environmental benefits and similarly our environmental policies will consider how they can enhance economic and social wellbeing.

These challenges will vary in how they impact on different people and in different places. We will ensure that our response to them reflects these differences. This means



ensuring that the response is flexible enough to deliver equality of outcome and reduce inequality; and to deliver spatially differentiated solutions reflecting local priorities and circumstances.

Our vision for improving the environment, and the action we take to deliver it, will reflect our duty to promote equality of opportunity. We have identified a number of areas as having particular relevance to one or more equality strand, and these are set out in Annex D.

Addressing spatial differences poses particular challenges as the cause of an environmental problem may not be at the same spatial scale as its impact. We also recognise the need to minimise our impact on the wider global environment.

There are also great opportunities, which this Strategy seeks to take advantage of:

- to improve our health and wellbeing
- to build a sustainable economy
- to improve our quality of life
- to conserve and enhance our environment and landscape

The choices are not always straightforward and one priority for action may conflict with another. We will ensure that we address difficult issues directly, are clear about why we have taken a particular decision and ensure that the principles of sustainable development inform every decision we make.

The context

Our strategic agenda for Wales is set out in *Wales: A Better Country, Starting to Live Differently: the Sustainable Development Scheme and Action Plan* and *People, Places, Futures: The Wales Spatial Plan*. In them, we recognise the importance of the environment and the central role it must play in building a sustainable future for Wales.

Delivering the commitment in Wales: A Better Country and the Sustainable Development Scheme

"...action in our built and natural environment that enhances pride in the community, supports biodiversity, promotes local employment and helps to minimise waste generation, energy and transport demands;" (*Wales: A Better Country*)

...We seek to value and improve the biodiversity and quality of our environment not only for its own sake, but also as an essential part of delivering a sustainable future for local economies and communities." (*Wales: A Better Country*)

"Promoting a diverse, competitive, high added value economy, with high quality skills and education that minimises demands on the environment;" (*Wales: A Better Country*)

"The National Assembly for Wales will promote development that meets the needs of the present without compromising the ability of future generations to meet their own needs. By this we mean the needs of all human life, within the carrying capacity of supporting ecosystems, without compromising the ability of future generations to meet their own social, economic, environmental and cultural needs." (*Starting to Live Differently: The Sustainable Development Scheme*)

This Strategy takes this agenda forward and plays a significant part in the delivery of our sustainable development duty.

This Strategy provides a clear policy agenda for the environment in Wales. It sets out, in the vision and outcomes, our environmental objectives. All of our policies will take account of these objectives and contribute to their achievement, as shown in the diagram (fig 1).

We are not starting with a blank canvas. We are already delivering policies addressing specific environmental issues

and implementing our obligations under a large body of Welsh, UK, European and international legislation. This legislation is an important driver for environmental improvement and we remain committed to its proper implementation and to influencing the content of new UK and European legislation as it is developed.

The new Government of Wales Bill will provide opportunities for the Assembly Government to expand its areas of responsibility, including those relating to environmental issues.

Fig 1

The policy framework

The high level agenda: the Environment Strategy helps to deliver this and provides the detail on the environmental priorities. For example:

- Wales: A Better Country
- Sustainable Development duty, Scheme and Action Plan
- Wales Spatial Plan
- Equality duty
- Public sector reform - Making the Connections and Delivering the Connections

Environment Strategy

Sectoral strategies and actions delivering the Environment Strategy. For example:

- Wales Waste Strategy
- Agri-environment schemes
- Energy Savings Wales

Informing other policy areas of environmental priorities and vice versa; and delivering the Environment Strategy through their strategies and actions. For example:

- Wales: A Vibrant Economy
- Transport Strategy
- Energy Routemap
- Planning Policy Wales

How the Strategy works

The Environment Strategy provides the framework for the Assembly Government and its partners to protect and enhance the environment in Wales. It has been developed following the consultation on *Our Environment - Our Future - Your Views* and that document remains a useful source for more detailed information about the topics covered in this Strategy.

In this Strategy, chapters one to four set out the context, the challenges we face, our vision for the environment and how we will enable change.

Chapters five to nine focus on key environmental themes:

- **Sustainable resource use** - covers materials consumption and waste; water; soils; minerals and aggregates
- **Distinctive biodiversity, landscapes and seascapes** - covers biodiversity; the marine environment; landscapes and seascapes and their historic component
- **Our local environment** - covers the built environment and access to green space; environmental nuisances; walkability in urban areas and access to the countryside and coast; and flood risk management
- **Environmental hazards** - covers pollution and chemicals and radioactivity

Each of these chapters explains the issues and where we are now, it sets out the environmental outcomes we want to achieve and the associated indicators and timelines for delivery.



The final chapter sets out how progress in delivering the Strategy will be monitored and reported on.

The Strategy contains five annexes: the first provides a summary of the outcomes proposed in the Strategy; the second gives an overview of the organisations and sectors with an interest in the environment; next there is a glossary which explains technical terms used in the Strategy; the fourth annex summarises the environmental issues with particular relevance to one or more equality strand and the final annex sets out which outcomes different policy areas have an impact on.

The Strategy is supported by an action plan, which details specific actions aimed at

delivering the vision and outcomes set out in the Strategy.

The action plan alone will not deliver the vision and outcomes. Current policies and programmes will contribute towards delivery and will need to ensure that they reflect the priorities set out in this Strategy. Their role is highlighted in the accompanying policy map. All new decisions, policies, programmes and service delivery will need to give specific consideration to how they can deliver the outcomes in the Strategy.

The Strategy will also need to be interpreted and applied at regional and local level. Community strategies, Local Development Plans and Spatial Plan Area Groups will play a key role in this work and in making the Environment Strategy a reality at local level.



The challenges we will face up to 2026

The State of the Welsh Environment Report 2003, and other routine environmental monitoring, show that in many areas our environment is improving, but problems remain.

We face a series of key environmental challenges, listed on page 6, that sit within the context of increasing globalisation, the persistent gap between rich and poor globally, demographic change, increasing consumption and the introduction of new technologies.

We cannot always be certain about what impact we can expect, but we will apply the precautionary principle and seek an appropriate balance between potential risks and benefits.

We will address unsustainable trends and take action to tackle the key environmental challenges we will face in the next 20 years. We will do this in a way that avoids us simply displacing environmental impact in Wales to another part of the world. We will ensure that Wales plays its part in tackling global problems - recognising that our global influence may be best directed to demonstrating best practice in sustainable development.



Climate change

Climate change is one of the most important issues facing the world. Up to 2026, emissions of greenhouse gases that have already occurred will largely determine the level of climate change, due to the time lags inherent in the climate system. However, action to cut emissions is needed now or we will face worse impacts in the future.

Global carbon dioxide emissions are currently about eight gigatonnes Carbon annually and are expected to grow to 12.66 gigatonnes Carbon by 2030 on a 'business as usual' scenario. The concentration of carbon dioxide in the atmosphere was 377 parts per million by volume in 2004.

The Royal Commission on Environmental Pollution (RCEP) has advised that carbon dioxide annual emissions need to be stabilised at 60 per cent below current rates to keep climate change within acceptable limits. This level of annual emissions would limit carbon dioxide concentrations to no more than twice pre-industrial levels - that is 550 parts per million by volume - concentrations above that level could lead to dangerous climate change.

Dangerous climate change would include a significant risk that ice sheets would melt and global ecosystems would collapse. The potential impact of this level of climate change would be catastrophic.

The EU has stated its goal of limiting the global average temperature increase to a maximum of 2°C. Recent research, presented at the International Symposium on the Stabilisation of Greenhouse Gases 2005, suggests that this will very probably require concentrations to be stabilised at even lower levels than 550 parts per million by volume.

We expect to see impacts in Wales as a direct result of climate change, for example increased storminess leading to a greater risk of flooding and very high summer temperatures causing health problems. Wales will also experience indirect impacts from the effect of climate change on other parts of the world, for example migration of people from vulnerable areas, movement and loss of species and habitats, and changes in food supplies and tourism.

Degraded ecosystems

Ecosystem services are the wide-ranging benefits we get from the environment. They are the natural systems that sustain life and help deal with the demands we place on the environment, such as pollution.

The types of services our ecosystems provide us with are varied:

- the production of 'goods' for us to consume and use, such as fish and other food, medicines, timber and water
- the maintenance of the atmosphere and climatic conditions suitable for human life
- life supporting natural processes such as water purification, oxygen production and pollination
- mitigation of pollution by breaking down harmful compounds into safer products

- provision of opportunities for recreational activities, aesthetic and spiritual benefits

There is a limit to the services that the environment can provide and if we keep putting pressure on ecosystem services we can overload them and after this point, they will break down.

The Millennium Ecosystem Report, produced in 2005 by the United Nations (UN), concluded that nearly two thirds of the services provided by nature to humanity are in decline worldwide. Some of the key messages from the assessment were:

- humans have made unprecedented changes to ecosystems in recent decades to meet growing demands for food, fresh water, fibre, and energy
- these changes have helped to improve the lives of billions, but at the same time they have weakened nature's ability to deliver other key services such as purification of air and water, protection from disasters, and the provision of medicines
- the pressures on ecosystems will increase globally in coming decades unless human attitudes and actions change

Unsustainable resource use

The largest and fastest growing pressures on the global environment come from household energy and water consumption, food consumption, travel and tourism. In the past, analysis of resources was narrowly based on pollution impacts, but wider lifecycle analysis is required to encompass all the impacts through production, use and disposal. The 2002 World Summit on Sustainable Development set new global standards for sustainable production and consumption.

Resources are the natural assets we use directly or extract from our environment to consume and make into other things. In Wales, we all consume resources at home, at work or for recreation.

- **Non renewable resources** such as fossil fuels, extracted from the land and sea, are finite and once a source becomes depleted it cannot be replaced.
- **Renewable resources** such as water, plants and fish stocks are replenished by natural processes, but excessive demands can cause these processes to fail and result in the loss of these resources, for example the extinction of a species.

Ecological footprinting indicates that, in Wales, we use more than our fair share of global resources. If everyone on Earth used the same amount of resources as the average Welsh resident, three planets would be needed to support the world's current population.

It is not just the resources we use directly, for example, on average, every Welsh resident eats about 600kg of food per year, but another 3.7 tonnes of other materials are needed to provide this, for packaging, construction of warehouses and supermarkets, fuel for transport and so on.

As well as depleting reserves, resource use has other impacts, including creating waste and pollution. This then puts additional pressure on our biodiversity and ecosystem services and causes environmental degradation and risks to our health. Dealing with the waste we produce in Wales remains a significant challenge.

Loss of biodiversity

Biodiversity is the variety of life on earth and plays a fundamental role in providing

ecosystem services, such as the maintenance of the atmosphere and climatic conditions, water purification, oxygen production and pollination, as well as being important in its own right. Biodiversity loss can put these services at risk.

The Millennium Ecosystem Report states that human activities have taken the planet to the edge of a massive wave of species extinctions, further threatening our own well-being. It reports that 12 per cent of birds, 25 per cent of mammals and 32 per cent of amphibians are threatened with extinction over the next century. The report estimates that the current rate of global extinctions has been accelerated by as much as 1,000 times the 'natural rate' typical of Earth's long term history. In the next 50 years it is projected that this rate may increase by a further ten times.

Loss of landscape and heritage quality and distinctiveness

Our landscapes and seascapes are dynamic and have been shaped over time by a combination of natural forces and human action. The historic environment of Wales is rich and varied and extends well beyond designated and recognised assets, such as individual listed buildings or our World Heritage Sites. The whole landscape and seascape is an important part of our heritage and a unique source of information about the past, with resonance, meaning and value for the present and future.

The landscape is vulnerable to increasing demands for development and other uses and from general pressures such as climate change. Its conservation is vital not only to provide us with a sense of place but also for

its contribution to sustainability, regeneration, vibrant communities and education.

The Explanatory Report on the European Landscape Convention states that *"[The people of Europe have] come to realise that the quality and diversity of many landscapes are deteriorating as a result of a wide variety of factors and that this is having an adverse effect on the quality of their everyday lives."*

Surveys of scheduled ancient monuments by the Assembly Government's field monument wardens; and registers, such as those held by local authorities detailing buildings at risk, highlight the threats facing historic features from neglect, vandalism, flood and other impacts of climate change. Without intervention, our distinctive historic environment will degrade and important aspects of our past will be lost forever.

Poor quality living environments

Many factors contribute to the quality of the living environment and not all of them are environmental, but environmental factors are significant. There are also significant differences between the environmental quality of poorer and more affluent areas, although the level of disparity varies between different measures of environmental quality.

Joseph Rowntree Foundation research, including the report *Cleaning up neighbourhoods: Environmental problems and service provision in deprived areas*, has shown that poor quality local environments contribute to a cycle of deprivation, by increasing disengagement and creating a situation where crime and other negative behaviours are more likely. They have also

shown that environmental service provision such as street cleansing is often worse in deprived areas compared to more affluent areas.

Ongoing Environment Agency research, which focuses on issues like flood risk, poor air quality and proximity to regulated sites, indicates that, in general, there is no clear correlation between these factors and deprivation in Wales.

Addressing environmental inequalities directly and delivering higher quality living environments for everyone in Wales will remain a key priority.

Environmental hazards

Emissions of certain pollutants and radioactivity can pose health risks. Regulatory systems are in place to minimise these risks, but in many areas there is insufficient knowledge about the risks posed, particularly of different substances in combination or from long-term exposure to them, often at low concentrations. Of particular concern is the bio-accumulation of metals and persistent organic pollutants in humans and ecosystems leading to issues of food safety. While there is a good knowledge base on acute exposures to pollutants, the effects of chronic low concentrations are less clear for example, endocrine disruption and the combined effects of several different pollutants.

We cannot be certain about the balance of health risks that we will face in 2026 as a result of exposure to pollution, hazardous chemicals and radioactivity. Gaining a greater understanding of these risks through studies of epidemiology and biological mechanisms for their impacts will be important.

Vision for the environment of Wales

We recognise that our environment:

- has an intrinsic value,
- is our life support system,
- is a finite source of raw materials and resources,
- is central to our quality of life, sense of place, health and wellbeing, and
- underpins our economic development.

We also recognise that people experience environmental inequalities which must be addressed.

By 2026, we want to see our distinctive Welsh environment thriving and contributing to the economic and social wellbeing and health of all of the people of Wales.

To achieve that, we are committed to:

- recognising and living within environmental limits, locally and globally,
- ensuring that all of our policies take the environment into account, in accordance with our statutory Sustainable Development duty,
- stimulating and enabling collaboration across the Welsh public sector,
- working with business and voluntary sector partners,
- encouraging individual citizens and communities to live in an environmentally sustainable way, and
- providing leadership by acting now for the future.

Our priorities will be to:

- minimise our greenhouse gas emissions and adapt to the impacts of climate change,
- conserve and enhance our biodiversity, while respecting the dynamics of nature,
- monitor and regulate known and emerging environmental hazards,
- tackle unsustainable practices, like waste production and disposal, and to
- conserve and enhance our land and sea, our built environment, our natural resources and heritage, developing and using them in a sustainable and equitable way and for the long term benefit of the people of Wales.



Enabling change

We will put in place structures and processes to help with the delivery of all of our environmental objectives. Key factors to achieve success include:

- Leadership
- Integration of environmental issues into decision making
- Clarity about roles
- Enabling people to make better choices

Leadership

Outcomes	
<p>The Assembly Government provides clear leadership on environmental issues through its policies, programmes and the way that it conducts its business</p>	<p>Timeline: ongoing</p> <p>Indicators:</p> <p>Trends in Policy Gateway assessments for contribution of policies to environmental priorities Achievement and maintenance of Green Dragon level five by the Assembly Government</p>
<p>Wales demonstrates the contribution a small developed nation can make to global sustainable development and environmental improvement</p>	<p>Timeline: ongoing</p> <p>Indicators:</p> <ul style="list-style-type: none"> • Ecological footprint <p>Achievement of Environment Strategy outcomes demonstrated in regular State of the Environment reporting</p>

We will provide leadership on environmental issues, starting by setting out our environmental objectives in this Environment Strategy.

We will also show leadership on environmental issues through the policy choices we make and the way in which we conduct our business.

The public sector is a major employer, landholder, and purchaser of goods and services. We will do the following and expect all of our Assembly Sponsored Public Bodies (ASPBs) to do the same:

- embed the vision for the environment contained in the Environment Strategy in policy decisions, plans and programmes

- promote education on, and communication of, environmental and sustainable living messages
- ensure a risk-based approach is used in setting priorities for statutory activities
- adopt environmental management systems in the management of the estate, proceed to accreditation and become exemplars for other sectors
- manage resource use more efficiently by reducing material, energy and water usage and waste production
- adopt green procurement principles
- take account of the need to conserve and enhance biodiversity when exercising functions
- ensure that all policies, programmes and services address climate change mitigation and adaptation
- work to put sustainable development into practice by integrating consideration of environmental, social and economic impacts in everything they do

We encourage the wider public sector, voluntary and the private sector, in Wales to adopt these approaches.

We will also support others to take action on environmental issues and remove barriers to action.

Integration of environmental issues into all policy decisions

Outcome

Environmental considerations are integrated in all policies, programmes and service delivery and that high quality and consistent environmental evidence is available to inform the decision making processes

Timeline: ongoing

Indicator:

Trends in policy gateway assessments for contribution of policies to environmental priorities

We will ensure that environmental issues and the impact of other activities on the environment are addressed in all of our decisions, policies, programmes and service delivery.

There are a number of key tools for ensuring this integration and different tools, or combinations of tools, will be appropriate depending on the issue being considered:

- Strategic Environmental Assessment (SEA)
- Sustainability Appraisal of Local Development Plans
- Health Impact Assessment
- Adoption of Environmental Management Systems
- Procurement practice
- Research and evaluation practices
- Measuring environmental footprint
- The Assembly Government's Policy Integration Tool

Clarity about roles

Outcome

The roles and responsibilities of organisations are understood leading to better integration for the delivery of environmental protection and enhancement

Timeline: ongoing
Indicator:
Indicator to be developed

The environment is a complex area, which is relevant to everyone in Wales. There are many organisations with specific interests and responsibilities in relation to the environment. Partnership - between organisations, sectors and citizens - will be at the heart of delivering environmental improvements.

We want to provide clarity about the role of each organisation and sector to reduce confusion about who deals with particular issues and to minimise duplication. This should be possible working at the scale of

Wales; Annex B provides an overview of the roles of key partners and we will build on this in future.

It is not just about the roles of organisations, we all have an impact on the environment through the choices we make in our day to day lives, but this means that we can all play our part in improving our environment.

The Action Plan that supports this Strategy will be clear about who is responsible for delivering the actions within it.



Enabling people to make better choices

Outcomes

Appropriate education about our environmental impacts is in place and good quality information is available at the point where people make decisions

Timeline: ongoing

Indicator:

Percentage of people taking action to improve the environment (broken down by reason for taking action), from the Living in Wales Survey

Individuals understand and are enabled to take responsibility for their environmental impact; changes in behaviour are apparent that help reduce negative environmental impacts

Timeline: ongoing

Indicators:

Percentage of people taking various actions to improve the environment, from the Living in Wales Survey

Percentage of municipal waste recycled

Additional indicators, including trends in number of people participating in environmental volunteering and greenhouse gas emissions from road transport, to be investigated



A common message in the responses to the consultation was the importance of information and education to enable people to make better choices and minimise their impact on the environment. This raised awareness needs to be coupled with ensuring that there are ways that people can put better choices into action.

We have a clear role to play in providing a strategic approach to communication on environmental issues, sponsoring awareness campaigns, ensuring that environmental issues are addressed in the curriculum as part of Education for Sustainable Development and Global Citizenship and supporting partners to take action.

Addressing Climate Change

We need to reduce the amount of greenhouse gases we emit to help limit the extent of climate change; and we need to adapt to its effects.

Outcomes	
<p>Greenhouse gas emissions are minimised, consistent with Wales contributing fully to meeting UK-wide targets and in line with more specific Wales targets that are under development</p> <p>Wales has improved resilience to the impacts of climate change. A clear flexible programme of measures is in place to enable Wales to respond and adapt to climate change</p>	<p>Timeline: See targets</p> <p>Indicators:</p> <ul style="list-style-type: none"> Annual emissions of basket of greenhouse gases (by sector) • Ecological footprint Change in soil organic carbon <p>Timeline: By 2007</p> <p>Indicator:</p> <p>Adaptation plan prepared, published and updated regularly</p> <p>Further indicators to be identified following the conclusion of Defra's work on adaptation targets</p>

Baseline

Carbon dioxide and other gases, collectively known as 'greenhouse gases', act as a partial blanket that increases the amount of heat from the sun that is trapped by the atmosphere. Since the industrial revolution, concentrations of greenhouse gases have increased, reducing heat loss from the Earth, and resulting in warming of the Earth's surface and lower atmosphere.

There is uncertainty about the impacts of climate change, but the UK Climate Change Impact Programme (UKCIP) has modelled a number of scenarios based on different emission projections. In general terms, the model suggests that Wales can expect:

- hotter average temperature
- increase in the number of hot summers and dry summers and an increase in the number of extremely hot days
- milder winters and a reduction of snowfall
- increase in winter rainfall and in the frequency of intense rainfall
- increase in the growing season

And that this will have a range of impacts:

- an increase in river and coastal flooding and erosion
- increased pressure on sewer systems
- increase in winter storm damage and coastal erosion

- habitat and species loss, for example in uplands and wetlands
- changes to the landscape
- summer water shortages and increased incidence of low river flows (coupled with higher demand)
- increased risk of subsidence in subsidence prone areas
- increasing thermal discomfort in buildings and health problems in summer, including heat-related deaths linked to high air pollution

It may also have some local advantages, depending on the scale and rate of change of climate, including:

- a longer growing season, enhanced yields and potential opportunities for agricultural and forestry diversification; balanced by the impact of increased storminess and potential risks from new plant pests and diseases
- less cold-weather transport disruption; balanced by greater disruption from storms
- reduced demand for winter heating and less cold-weather related illness

The UKCIP scenarios are based on a gradual change in the climate but a more sudden shift is possible, for example if the Gulf Stream was to reduce significantly or if large volumes of polar ice were to melt. Recent evidence, including research presented at the International Symposium on the Stabilisation of Greenhouse Gases - Exeter 2005, indicate that the risks of dangerous climate change are more serious than predicted previously.

There is some evidence that the Gulf Stream to the north-west of Scotland has diminished and a recent modelling study has indicated that on 'business as usual' emissions trends, there is a 4 in 10 chance of it ceasing by 2100, and a 2 in 3 chance of it ceasing by 2200. Without the Gulf Stream, which transfers heat from the warm tropics to the North Atlantic, the UK climate would be much colder. Predictions are that UK annual average temperatures would drop by up to 5°C and winter temperatures would frequently be below -10°C accompanied by a dramatic decrease in precipitation.

Through the Kyoto Protocol, the UK is committed to achieving a 12.5 per cent reduction in its emissions of greenhouse gases by 2008-2012. The Assembly Government has committed itself to contributing to the Kyoto target and to UK Government goals of a 20 per cent reduction in CO₂ emissions below 1990 levels by 2010 and a 60 per cent reduction by 2050, with real progress by 2020.

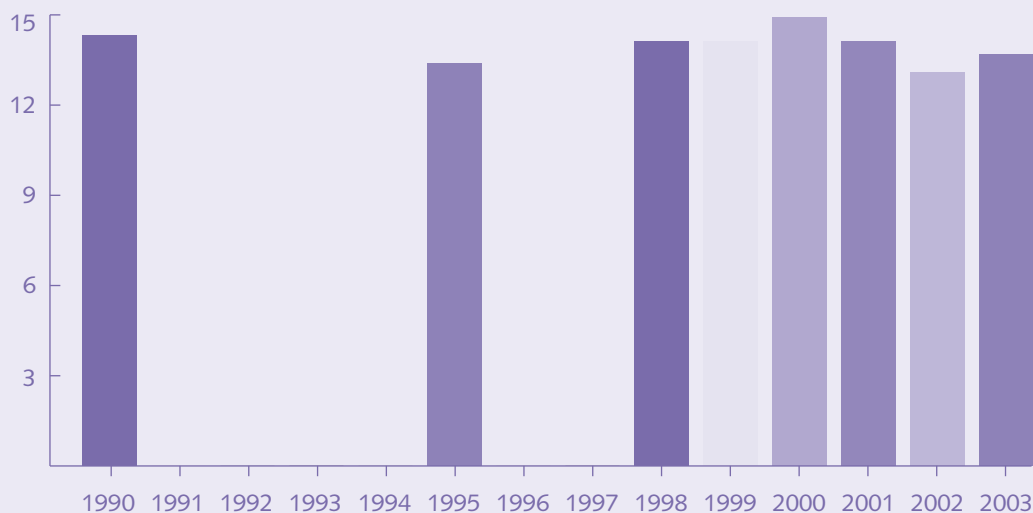
The recent Montreal Conference of the Parties to the UN Framework Convention on Climate Change included agreement under the Kyoto Protocol, for the process for future commitments beyond 2012 to start. A new working group was established to discuss future commitments for developed countries for the period after 2012.

The Assembly Government has also set a target of 20 per cent cut in greenhouse gas emissions by 2020 on a 2000 baseline of 46.114 mega tonnes of carbon dioxide.

The following graph, fig 2, shows the trends in Wales' greenhouse gas emissions since 1990 and the table, fig 3, shows the share for each sector in 2003.

Fig 2

Greenhouse gas emissions in Wales (Megatonnes of Carbon as global warming potential 1990 - 2003)



Note: No data is available for blank years

Fig 3

Greenhouse gas emissions in Wales (as a percentage of net total emissions) by sector for 2003

Sector	% of total
Energy supply (emissions from power stations, petroleum refining and solid fuel manufacture)	37.0
Business (emissions from industrial and commercial energy sources)	21.3
Transport (road and rail transport, not air and marine)	13.5
Agriculture (emissions from livestock and manure management)	11.6
Residential (direct emissions from oil, coal and gas)	9.7
Industrial processes (emissions from minerals processing, chemicals and metals production, and halocarbons and SF6)	5.04
Land use change* (emissions from forestry and land management) *Net effect of emissions minus absorption	- 0.30 net
Waste management (emissions from landfills and wastewater treatment)	1.08
Public (emissions from public sector)	0.97

The following table, fig 4, shows emissions in Wales by end user. This differs from the previous table because it allocates energy generation to the sector that actually uses the energy.

Fig 4

Carbon dioxide gas emissions by consumption sector in 2003

Sector	Megatonnes of CO ₂	% of Total
Domestic - direct	5.214	14.4
Domestic electricity consumption	2.796	7.8
Industrial and Commercial - direct	16.391	45.4
Industrial and Commercial electricity consumption	5.361	14.9
Land Use Change	0.225	0.6
Road Transport	6.116	16.9
TOTAL	36.103	

Addressing emissions-mitigation of climate change

We are committed to reducing Wales' contribution to climate change, by cutting greenhouse gas emissions and preserving carbon stores in soils and biomass.

We will identify ways in which greenhouse gas emissions can be reduced across every Ministerial portfolio. We will focus our action on sectors where we can exert influence: reducing transport demand and developing alternative fuels; public and social sector procurement, construction and estate management; promoting energy efficiency, renewable and low carbon energy generation; and land management practices that preserve soil carbon.

Our contribution to the UK Climate Change Programme, in partnership with the UK Government, Scotland and Northern Ireland,

is very important. We will also work with, and seek to influence, the UK Government and Europe, to secure emission reductions in the areas that they hold policy responsibility for. Key areas include: building regulations, energy policy, fiscal measures, emissions trading and air transport.



Adapting to impacts of climate change

The impacts of climate change for the next 30 - 40 years are largely set by emissions that have already occurred. Therefore we must plan and act to adapt to these impacts.

We will develop a climate change adaptation action plan setting out exactly what action that we, and our partners, will take.

This action plan will address:

- impact of increased flood risk on key assets like schools, hospitals, transport infrastructure, housing stock, businesses and industry and on land management
- impact of increased storminess, with a greater risk of property damage and land instability, on key assets like schools, hospitals, transport infrastructure, housing stock, businesses and industry and on land management

- public health impact of warmer summers, including fatalities due to very high temperatures and increased air pollution; as well as addressing possible increases in food poisoning, and possible risk of new diseases
- impact of thermal discomfort due to warmer summers in key assets like schools, hospitals, transport infrastructure, housing stock, businesses and industry
- impact of increased pressure on water resources at certain times of the year
- impact on biodiversity
- impact on agricultural and forestry practice
- opportunities, for example in developing and producing technology and services to deal with the impacts of climate change

We will also contribute to the UK Adaptation Policy Framework.



Spatial differences

Emissions of greenhouse gases affect the global climate largely regardless of where they occur, but the contribution of certain sectors will be particularly significant in different parts of Wales. In areas with large urban populations, transport, residential, industry and energy use related to all three will be significant; in areas which are largely rural, emissions from agriculture and land use change will be particularly significant.

Climate change adaptation has various spatial elements:

- climate change variations across Wales are expected to be small, the main feature being that south-east areas may become hotter and drier than north-west areas
- flood risk and water resources are clearly defined in spatial terms
- designated sites provide an indication of areas of particular biodiversity significance, however climate change demands a more dynamic and flexible approach to biodiversity
- the age and quality of buildings and other key infrastructure, and therefore their ability to cope with temperature extremes, in different parts of Wales will vary



Sustainable use of resources

We need to live within the limits that global resources can support.

Our challenge is to meet our aspirations for a better quality of life and economic prosperity without adversely impacting on our local, national and global environment and ultimately negatively affecting our living standards.

Resources are the natural assets we use directly or extract from our environment to consume and make into other things. Ecological footprinting shows that in Wales we use more than our fair share of global resources. It is in all of our interests to value the resources that our environment provides us with and manage them wisely.

We have already described the impacts of energy use on climate change and the need for sustainable use of our energy resources.

We consume resources everyday and, on average, every Welsh resident consumes almost 21 tonnes of materials and products each year.

The chapter considers four key resource issues in turn:

- Materials consumption and waste
- Water
- Soils
- Minerals and aggregates



Materials consumption and waste

Achieving a more sustainable pattern of consumption and production will help reduce the impact that economic activity has on the environment. This means we need to get more from less, focusing on the efficient production of goods and services. It also requires us to apply the proximity principle and seek to consume and dispose of materials as close to source as possible and minimise unnecessary transport.

We aim to encourage eco-design and sustainable production and consumption in Wales.

We aspire to there being no additional landfill for municipal waste in Wales by 2026. This means minimising waste, using and getting value from all materials throughout their life.

Sustainable waste management requires us to consider the wider impacts on the environment, including the energy inputs and impacts of reuse, recycling and reprocessing.

Outcomes

The amount of waste that is generated in Wales is minimised

Timeline: Ongoing

Indicators:

Quantity of municipal waste per person per annum
Quantity of industrial and commercial waste produced per annum
Public sector waste arisings indicator to be developed

Reduce, reuse and recycle is universally accepted in government, business, industry and home life

Timeline: By 2026

Indicators:

Proportion of municipal waste recycled or composted
Proportion of industrial and commercial waste recycled
Indicator of proportion of public sector waste recycled to be developed
Indicator of reuse to be investigated

Appropriate waste management facilities are in place to minimise the amount of waste going to landfill

Timeline: By 2013

Indicators:

Amount of municipal waste landfilled
Amount of industrial and commercial waste landfilled
Indicator of the amounts of public sector waste that is landfilled to be developed

Businesses produce well designed products that require less resources in their production, use and end of life, that create minimal waste and are easily reused or recycled

Timeline: 2026

Indicators:

Proportion of End of Life Vehicles waste re-used and recycled in the UK
Proportion of packaging waste recovered in the UK
Proportion of construction and demolition waste reused and recycled
Explore developing an indicator of uptake of lifecycle analysis in business

Fig 5

Baseline

In 2003/4 we landfilled 82 per cent of our municipal waste and only recycled or composted 18 per cent.

Waste in Wales comes from all sectors, fig 5 shows how much waste was produced from each source in 2003.

Within the construction and industrial sectors a good proportion of the waste generated is already recycled but more needs to be done on all sectors.

To achieve sustainable consumption and production and minimised waste to landfill we have adopted a holistic management approach looking at all aspects of resource use, this is highlighted in the waste hierarchy as follows:

Controlled waste arising by sector (2003)

Sector	Controlled Waste Arising (Million Tonnes)
Industrial - general	4.2
Industrial - special	0.3
Commercial	1.0
Household	1.6
Construction & demolition	6.0

Reduce material use and eliminate waste

Make most effective use of materials - minimise materials required and maximise the amount used productively

Reuse and repair

Design to facilitate this - support a culture change and move away from viewing materials and products as disposable or throwaway. Reuse and repair buildings, including, where appropriate the reuse of traditional materials

Recycle

Recover resources to reuse - waste as a potential source of materials for industry and business and composting of waste to return to the land in a beneficial form

Derive any other benefits

Manage the residual waste we cannot reduce, reuse or recycle by extracting energy

Landfill or incinerate without energy recovery

As a last resort

Addressing sustainable materials production and waste

Through this Strategy, the implementation of our *Wales Waste Strategy* and *Business and Environment Action Plan*, and providing support to Local Authorities, we aim to minimise the amount of waste we produce at source and work towards achieving minimised waste to landfill by 2026. This means:

- making more efficient use of resources at source
- encouraging the production of goods from sustainable raw materials and recycled materials
- continuing to drive increases in recycling and composting
- encouraging the development of markets for secondary materials
- putting in place the required waste management facilities

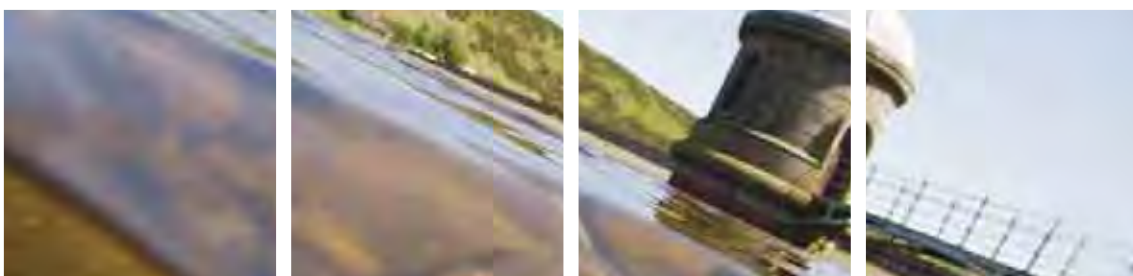
- producing energy from waste that cannot practically be recycled
- adopting appropriate measures to discourage fly-tipping and illegal dumping
- providing the public with information and education on ways to improve their purchasing and use of products and the responsibilities they have for managing their wastes

Spatial differences

The production of waste occurs across Wales but the amount and nature of the waste will differ. The regional waste plans identify and allocate between local authorities the capacities needed for the future management of waste in Wales. Local Development Plans identify sites for dealing with the waste allocated under the regional waste plans. The regional waste plans will be regularly updated to reflect progress in waste reduction and improvements in material processing facilities.

Water resources

We all use water; it is essential for life, but the way we use our water resources has a direct impact on our aquatic environment. Water's central role in our lives means that we must manage its use and the pressures that impact upon it. This section focuses particularly on water resources and drinking water; the quality of our water bodies including rivers, lakes, groundwater and bathing waters are discussed on pages 51-54.



Outcomes

Water resources are managed sustainably meeting the needs of society without causing damage to the environment

Timeline: By 2009/10

Indicators:

- Level of leakage
Number of water resource zones meeting target headroom requirements
Possible indicator of changes in river flows and of water availability to be explored

Water is used more efficiently across all sectors

Timeline: By 2009/10

Indicators:

Per capita consumption of water
Volume of water abstracted from the environment
Revised indicators will be selected following completion of work by Environment Agency

The high quality of our drinking water is maintained

Timeline: Ongoing

Indicators:

Compliance with standards for public drinking water
Compliance with standards for private water supplies tested annually

Baseline

Water is a valuable resource for industry, agriculture and use in our homes; it forms part of the habitats for plants and animals and has a profound aesthetic and cultural appeal.

In Wales, the water we use is abstracted from our environment and the amount of water in our environment is linked to the climate. The rainfall we receive each year fills up our rivers, streams, lakes and groundwater stores. The shape of the land in much of Wales means that many of our rivers start in the uplands and flow quickly to the sea, limiting the amount of natural surface storage. Wales also has limited groundwater storage because the underlying geology is generally impermeable to water. Due to the lack of natural water storage in Wales, historically, reservoirs have been built to help store water. These reservoirs, combined with direct

abstraction from our rivers, help to supply our needs throughout the year.

Climate change is the most important pressure facing the management of our water resources in the medium to long term. It may lead to a change in the amount of water available to use at different points in the year and may affect our demand for water.

Currently each person in Wales uses on average 150 litres of water every day. Modern appliances such as power showers and jet washers use large amounts of water. When high demands for water are combined with hot, dry summers this puts pressure on our water resources and the environment at a time when the river levels are naturally low. Management of water resources needs very careful planning to ensure that there is a reliable supply all year round, without causing damage to our environment and the habitats that rely on water.

Addressing the management of water resources

We will focus activity on the delivery of the existing duties under the Water Resources Act 1991 and the Water Act 2003 and the regulatory framework that supports it. This will include working with the regulators and the water companies to plan and manage sustainable water supply in Wales, maintaining and improving infrastructure, and implementing the new statutory provisions contained in the Water Act 2003 on water companies to prepare drought plans and water resource management plans. We will also place emphasis on increased water

efficiency across all sectors and make improvements to water use and wastage.

Spatial differences

The amount of water available for use varies across Wales depending on rainfall and storage. Demand for water also varies across Wales, depending on the population, the type and amount of industry in the area and the amount of tourism. Any new development or significant development changes in an area will impact on the demand for water and so water resources should be an important consideration in the planning stages.

Current planning and management of water resources considers the spatial variation of water availability.

Soils

Soil is a living medium, essential for supporting plant and animal life. Soil is the growing medium for food, acts as a crucial link between the atmosphere and water to absorb and neutralise pollutants and greenhouse gases, it decomposes and stabilises wastes, provides raw materials, protects our cultural heritage, and provides a platform for the built environment.

Soils take a long time to form and are vulnerable to loss through erosion, contamination and development.

Outcome

Soil is managed to safeguard its ability to support plants and animals, store carbon and provide other important ecosystem services

Timeline: By 2026

Indicators:

Change in soil carbon

Further indicators to be selected when the UK Soil Indicator Consortium reports

Baseline

The very small proportion of land that is classified as 'Best and Most Versatile' agricultural land in Wales makes it important to conserve it. Soils in upland Wales are particularly vulnerable to acidification

because of their poor neutralising capacity.

Soils in uplands and wetlands also contain high amounts of carbon which need to be protected, from the perspective of greenhouse gas emissions, and the plant communities that they support.

Soils are all vulnerable to degradation through erosion, contamination and a loss of nutrients, and this requires a risk-based approach to evaluate the state of Welsh soils. Soils can be restored and rehabilitated through land reclamation activity.

contamination, whether from wastes or atmospheric pollution.

We will work with partners within the UK Soil Indicator Consortium to establish the indicators which should be built into a soil monitoring scheme which meets the needs of Wales, UK and Europe.

What we will do to manage soil resources

We will focus on improving soil management through the reformed Common Agricultural Policy (CAP), through our agri-environment schemes and Farming Connect and through land use planning, particularly for non-agricultural soils.

We will establish a framework to identify the main risks to soils in Wales, based on physical risks (for example, erosion, soil structure) and chemical/biological risks from pollution/

Spatial differences

The soils in Wales vary around the country, and maps are available showing the different types of soils and their distribution across Wales. Agricultural soil maps are available which show the grade of soil according to agricultural value and are used for planning purposes when considering land allocations for inclusion in the Local Development Plan and in determining planning applications. Other maps show the areas where acidification exceeds deposition rates, and the distribution of soil organic matter.

Minerals and Aggregates

Minerals and aggregates are valuable resources for a variety of uses important to the Welsh economy. We will provide a framework for extraction that protects the environment and local communities from adverse impacts. Planning guidance is an important element of this framework.

Outcomes	
The extraction of minerals and aggregates minimises the impact on the environment and local communities	<p>Timeline: By 2026</p> <p>Indicator:</p> <p>Number of sites complying with standards as set out in Minerals Planning Policy and the associated Technical Advice Note for the protection of the environment and local communities (to be applied in 2007)</p>
The use of alternative materials, secondary and recycled aggregates is maximised where possible in the construction industry	<p>Timeline: By 2009</p> <p>Indicators:</p> <p>Proportion of construction and demolition waste that is reused and recycled</p> <p>The proportion of aggregates used from secondary and recycled sources (from 2009)</p>

The diverse geology of Wales provides a rich variety of minerals and aggregates. These are used in the construction industry, for various industrial processes and for energy production. It is important to ensure that these resources are used efficiently to avoid any unnecessary extraction and wastage and negative impacts on the environment. Mineral Planning Policy Wales and the Minerals Technical Advice Note: Aggregates (MTAN 1) identifies the levels of reserves available to date.

There is a need for a gradual change in the current supply of aggregates to reflect sustainable objectives. This needs to be combined with using aggregates more efficiently and making use of alternative materials, for example the reuse of demolition waste or materials from sustainable sources, such as timber. We have set a target to increase the proportion of aggregates from secondary and recycled sources to at least 25 per cent of total aggregates production in Wales by 2009. Progress on this target will be reported in the Regional Technical Statements prepared by the Regional Aggregates Working Party. These statements for North and South Wales will be produced at the end of 2006 and will be reviewed every five years.



Addressing sustainable minerals and aggregates

The land use planning system and the Interim Marine Aggregates Dredging Policy (IMADP) will be the focus for how we will achieve a more sustainable pattern of mineral and aggregate extraction based on environmental capacity. The impact of mineral and aggregate extraction on local communities and the surrounding environment will be reported in future as part of Local Authority reporting requirements for each site. From April 2006 these reports will be produced annually and will report on compliance with planning conditions set out for each site.

Another important focus will be encouraging recycled and secondary aggregate use. The role of the Regional Aggregates Working Party will be key in taking this forward. We will also support Wales Environment Trust to promote the use of recycled products through overcoming obstacles to their use.

Our policy for energy minerals is set out in Minerals Planning Policy for Wales, more detailed guidance will be set out in the draft Coal MTAN. It provides guidance on reducing the impacts of coal extraction to prevent unacceptable impacts on the environment and the amenity of nearby residents.

Spatial differences

Our approach to mineral abstraction in Wales needs to reflect the dispersed, but specifically located, nature of the resources in Wales and the impacts that the working of these resources have on the surrounding communities, their heritage and the wider environment and landscape.

Distinctive biodiversity, landscapes and seascapes

We recognise that the diversity of our landscapes and seascapes, and the variety of species and habitats make an important contribution in the quality of life for the people of Wales

The land and sea support a wide range of activities, many of which can put pressure on ecosystem function, biodiversity, landscapes and seascapes.

The biodiversity and historic character of our landscapes and seascapes are connected and the actions we take will impact on them all. In recognition of this connectivity we will deliver an integrated, flexible approach to the sustainable management and use of the land and sea to ensure that they can support our environmental, economic and social needs while maintaining ecosystem function and retaining their essential character and cultural significance. We are aiming to halt the loss of biodiversity and see a definite recovery from the losses that have already occurred.

The chapter considers:

- Biodiversity
- The marine environment
- Landscapes and seascapes and their historic component



Biodiversity

Biodiversity is 'the variety of life' on Earth. It includes all plants, animals and micro-organisms (species) and the places where they live (habitats). We value it for itself, as well as for the role it plays in many natural processes and its direct and indirect economic, social, aesthetic, cultural and spiritual benefits.

Biodiversity loss is continuing due to a range of pressures. We need to address these pressures to secure an improvement in Wales' biodiversity.

Outcomes

The loss of biodiversity has been halted and we can see a definite recovery in the number, range and genetic diversity of species, including those species that need very specific conditions to survive

The wider environment is more favourable to biodiversity through appropriate management, reduced habitat fragmentation and increased extent and interconnectivity of habitats

Sites of international, Welsh and local importance are in favourable condition to support the species and habitats for which they have been identified

Timeline: International commitment to halt loss of biodiversity by 2010. Recovery to be underway by 2026

Indicators:

Trends in key Biodiversity Action Plan species and habitats
Trends in wild birds population index
Indicators to illustrate range and genetic diversity to be developed

Timeline: 2010

Indicators:

Proportion of land under agri-environment agreement (by scheme), or which is organic or which is in conversion to organic
Proportion of woodland that is certified
Additional indicators to be identified following completion of research into biodiversity indicators

Timeline: By 2010, 95 per cent of international sites in favourable condition; by 2015, 95 per cent of Welsh SSSIs in favourable condition and by 2026, all sites to be in favourable condition

Indicator:

% of sites (of various types) in favourable condition

Baseline

Over the last 25 years, major changes have taken place in the abundance of wildlife and in the nature and health of habitats in Wales. It is a mixed picture, but there is no doubt that many species have declined dramatically and the condition of many habitats has deteriorated.

Key species and habitats in the UK are identified in the UK Biodiversity Action Plan (BAP). In Wales, the relevant species and habitats from the UK BAP, and additional species of importance for Wales, have been listed under section 74 of the Countryside and Rights of Way Act (CROW) in *Going Wild in Wales*. The BAP process ensures that action

plans are developed for each key species and habitat on land and in the sea. There is a four yearly programme for review of progress on each plan. In Wales, the Wales Biodiversity Partnership (WBP) provides the overall steer for this process. Local Biodiversity Action Plans are in place in each local authority area in Wales and these identify the important species and habitats in each area and how these will be protected and managed.

The results of the last UK Biodiversity Action Plan reporting for Wales showed that 46 per cent of priority habitats were declining and 30 per cent were stable or increasing; the same reporting showed that 7 per cent of species had been lost, 18 per cent were declining, 22 per cent stable or increasing and for 45 per cent there was no clear information.

The loss of biodiversity puts many key ecosystem services at risk.

Intensive use of land and water; inappropriate management of habitats; pollution and invasive plant species in addition to climate change all place pressure on biodiversity. These pressures need to be addressed by developing a more dynamic and flexible approach to managing biodiversity. In order to improve habitat management and reduce habitat fragmentation the wider environment needs to be more supportive of biodiversity.

Wales has a network of sites which have been identified as being of international or national importance for habitats and species. These sites are very special places for biodiversity, but the Countryside Council for Wales' *Rapid Review of SSSI Feature Condition in Wales 2003* indicated that, at the moment, almost two-thirds of Wales' SSSIs are not in favourable condition.

Marine environment

The seas around Wales are an important habitat, provide essential resources and are key transport routes. The highly dynamic nature of the marine environment, and our more limited knowledge of its operation, affects the way that we need to manage it compared to the environment on land. The resources it provides are limited and there is an increasing need to move away from a sectoral approach and towards a system that considers the effects of all human activities on marine ecosystems.

Our aim for Wales' marine environment is that:

it will be valued by all, understood and respected for what it contains and provides. Our seas will be clean, support vibrant economies and healthy and functioning ecosystems that are biologically diverse, productive and resilient, while being sensitively used and responsibly managed.

Outcome

Our seas will be clean and support healthy ecosystems that are biologically diverse, productive and managed sustainably

Timeline: To be defined following the publication of the Marine Bill

Indicators:

Indicators, including coastal zone indicators, to be reviewed in the light of the Marine Bill

Number of Marine Stewardship Council certified sustainable fisheries in Welsh waters

- Number of fisheries assessed by ICES and Sea Fisheries Committees to be in safe biological condition - based on stock assessments, fish catches and catch per unit effort

Input of hazardous substances to the marine environment

Additional indicators to be identified following completion of UK and CCW research on marine ecosystems and work to investigate possibility of developing a seabird indicator

Baseline

Wales' marine environment is very high quality and this is reflected in the five Marine Special Areas of Conservation (SACs), two proposed SACs, 15 Special Protection Areas and a Marine Nature Reserve, which together cover a large area of sea and coast.

However, the report *Charting Progress - An Integrated Assessment of the State of UK Seas* indicates that the sustainability of some marine ecosystems is at risk.

The marine environment faces a range of pressures and climate change will also have significant impacts. For example, climate change is already affecting the distribution of plankton species. Sea level rise will put pressure on coastal space and dynamics while the effects of ocean acidification are not yet well understood.

Human activity has resulted in adverse changes to marine life, and continues to do so. For example, widespread commercial fishing practices threaten many fish stocks

by over-exploitation and damage to the sea bed. There are also contamination problems, particularly in industrialised estuaries and areas close to past industrial activities.

There have already been significant changes in our waters, for example the disappearance of large oyster beds and the decline in the common skate. We have also seen the spread of some non native species, such as wireweed (*Sargassum muticum*) that threatens indigenous populations.



Landscapes and seascapes and their historic character

Our landscape and seascapes are dynamic and have been shaped over time by a combination of natural forces and human action. They will continue to evolve in the future as new demands are placed upon them. The landscape and its historic character is a reflection of our culture and history and our continuous interaction with the environment and the resources it provides. We recognise the contribution it makes to our identity as individuals and communities.

Our landscape must provide real places for people to live, work and enjoy recreation. As well as supporting communities, the land and sea provide us with key resources and support a variety of industries and economic activities. Landscapes and seascapes are also used for enjoyment and provide the scenic backdrop that attracts tourism and enhances the quality of life of the people of Wales.

The European Landscape Convention, which we support, will assist in setting out the principles for management at a landscape scale.

Outcome	
The quality and diversity of the natural and historic character of our landscape and seascape is maintained and enhanced	<p>Timeline: To be defined following completion of CCW landscape characterisation work</p> <p>Indicator: Indicators, measuring quality and diversity, to be selected on completion of CCW landscape characterisation work</p>

Baseline

Wales has three National Parks and five Areas of Outstanding Natural Beauty covering 25 per cent of Wales' land area, which are nationally and internationally recognised and protected for all to enjoy because of the outstanding quality of their landscapes. We have also defined 36 outstanding, and 22 special, historic landscape areas. Much of the wider landscape and seascape is also high quality and makes a significant contribution to quality of life.

Our rich heritage is reflected in around 30,000 listed buildings of special architectural or historic interest; approximately 3800 scheduled ancient monuments; two designated world heritage sites; six designated

historic wrecks; 514 designated conservation areas and historic parks and gardens and 128 monuments in Assembly Government care.

As well as heritage features, our landscape also contains a huge range of geodiversity. There are about 450 legally protected Geological Conservation Review Sites (geological SSSIs), and one of these, Forest Fawr in the Upper Swansea Valley, has just been designated as a European Geopark. The Countryside Council for Wales estimates that there are potentially up to a thousand Regionally Important Geological or Geomorphological Sites (RIGS) in Wales.

Our historic environment, landscapes and seascapes face a range of pressures from the varied demands we place upon them and from the impacts of climate change.

Addressing biodiversity, the marine environment, landscapes and seascapes and their historic character

The range of activities that the land and sea support, and the actions that we take, can place differing pressures on our environment that can impact in a negative way. We will develop an integrated approach to managing our impact and the effects of climate change, based on the identification of landscape zones and appropriate action in the zones, so that the land and sea can:

- enhance our quality of life
- support a range of recreation uses
- maintain the unique character of the historic and cultural features of Wales
- support building strong communities
- promote better conditions for biodiversity
- support economic development and economic opportunities for everyone
- be resilient to climate change

We will focus on:

- addressing damaging management practices
- ensuring that our policies and programmes relating to land use planning, agriculture, forestry and fisheries have a strong focus on delivering environmental benefits
- finding ways to deliver connectivity and environmental improvement at landscape scale, particularly in relation to biodiversity
- maintaining landscape character
- developing our understanding of biodiversity, landscapes and seascapes, the pressures on them and the most effective way of delivering improvement

Spatial differences

Biodiversity is an issue for every part of Wales, from our town parks, streets, gardens; the farmed and wooded landscape; rivers, lakes and the sea, and even brownfield sites, which were once home to heavy industry. Some species and habitats are specific to a very small area, while others are distributed more widely.

Local Biodiversity Action Plans identify key species and habitats for each local authority area and designated sites such as Special Areas of Conservation (SACs) and Sites of Special Scientific Interest (SSSIs) are spatially distributed.

Similarly, landscape and seascape designations, such as National Parks, the historic landscape register and the location of historic buildings, monuments and archaeological sites have a clear spatial distribution.

However, climate change and the imperative to adopt a more dynamic approach to land management means that a purely site based approach will not be appropriate.

LANDMAP is a methodology which evaluates the characteristics and quality of the landscape of Wales. It provides baseline information to help inform decision makers as to the impact development or change can have on the local landscape character of an area.

Also, most of the landscapes on the historic landscape register have been the subject of detailed landscape characterisation studies.

Our local environment

Environmental factors such as poorly maintained buildings, litter and other nuisance issues and a lack of green space can have a significant negative impact on quality of life.

We must deliver high quality places for people to live. This means a high quality built environment and opportunities to access green space and biodiversity, where environmental nuisances are minimised and where flood risk is understood and managed.

There is a clear social justice driver for activity in this area - local environmental quality is often worse in our most deprived

communities. Ensuring that all communities enjoy higher levels of environmental quality is crucial. Community Strategies and Local Development Plans have a key role to play.

The chapter considers:

- The built environment and access to green space
- Environmental nuisances
- Walkability in urban areas and improving access to the countryside and coast
- Flood risk management

The built environment and access to green space

Every community in Wales should have a high quality, vibrant, well planned and well maintained built environment. The built environment should secure efficient use of land including appropriate density of development, respect local distinctiveness and historic character and provide access to

green space, areas for recreation and support biodiversity.

Buildings meeting high environmental quality standards can contribute to mitigating climate change and improving resource efficiency.



Outcomes

The built environment is high quality and vibrant, reflecting local distinctiveness and supporting strong communities, which are actively engaged in the management of their local environment

New buildings in Wales meet high environmental quality standards and the environmental quality standards of existing building stock is improving

The historic building stock and character is maintained to a high standard

There is easy, equitable access to ample high quality green space

Timeline: Ongoing

Indicators:

Percentage of unfit dwellings
Percentage of people who feel safe in the local area from Living in Wales survey
Percentage of people volunteering formally or informally at least once a month

Timeline: 2026

Indicators:

Percentage of properties owned by local authority and registered social landlords that meet the Welsh Housing Quality Standard
Develop an indicator of energy savings from public sector buildings - local authority, NHS and Welsh Assembly Government

Timeline: By 2010

Indicator:

To be developed following work to establish baseline

Timeline: By 2023

Indicators:

Percentage of people stating that they could access a park easily in the Living in Wales survey
Additional indicator to be developed from rollout of CCW's green space toolkit

Baseline

Poor quality local environments, poorly maintained buildings and public spaces and a lack of parks and green spaces can have a detrimental effect on our health and wellbeing.

The quality of the built environment across Wales varies. The Living in Wales Survey 2004, found that 4.8 per cent of dwellings in Wales were unfit, the main reasons being disrepair, dampness or poor facilities for food preparation. Mid terraces and buildings classified as 'other', that is conversions or

residential parts of mixed use buildings, were most likely to be unfit. The tenure with the best condition of stock was Housing Association rented, this is linked to the fact that most of these dwellings were built after 1980. Privately rented properties were most likely to be unfit, and indeed, represent 25 per cent of all the unfit properties.

The survey also estimated that the total cost of bringing all occupied first homes in Wales up to the Welsh Housing Quality Standard would be £2.2 billion.

The Building Research Establishment Environmental Assessment Method

(BREEAM) is one method used to assess the environmental performance of new and existing buildings. There are currently fifty buildings with BREEAM ratings in Wales, the vast majority are industrial or office buildings. Just over half of the fifty have been given the highest rating of 'excellent'.

Strategy for Sport and Physical Activity: Climbing Higher sets out our commitment that, by 2023, no one should live more than a six minute walk / 300m from their nearest natural green space. Baseline information is being developed through the application of the Countryside Council for Wales' green space toolkit by local authorities in Wales.

Addressing the built environment and access to green space

We will focus our activity on:

- ensuring that the land use planning system maximises economic, social and environmental benefits when considering developments
- promoting better design and higher environmental standards for buildings - and ensuring that the public sector sets a positive example in this area
- supporting communities to take ownership of their local environment and making improvements to it
- ensuring that local environmental quality is improved in our most deprived communities
- supporting town centre regeneration, physical regeneration of communities, industrial areas and the improvement of prominent sites or buildings in dereliction or disuse, including through historic building conservation and reuse

- encouraging the retention or provision of green spaces in urban areas

We will work with the UK Government and other partners on areas that are not within the Assembly Government's remit currently, such as the Building Regulations.



Spatial differences

Wales is a diverse area with a distinctive settlement pattern, ranging from relatively small cities to towns, villages and dwellings in the open countryside. The population is concentrated in urban areas in the south east and valleys area, the north east and the south west around Swansea. Around 36 per cent of the population are located in rural towns, villages and the open countryside.

The nature and type of buildings and public space also varies across Wales and are central to the unique identity of communities. For example, through the use of locally distinctive materials and styles, such as the black and white houses of Radnorshire or the terraces of the South Wales Valleys.

Environmental nuisances

We aim to deliver a place where quality of life is not negatively affected by environmental nuisances.

Litter, flytipping, dog fouling and abandoned cars are highly visual environmental problems that negatively affect local environments. Solving these issues is often at the heart of encouraging people to engage more widely in environmental matters - certainly failure to address these issues can lead to disengagement and more serious social problems.

Noise issues can also affect quality of life; this includes 'neighbourhood noise' emanating from specific sources in the local environment as well as 'environmental noise' which is the background noise produced by a range of sources from our built environment such as industry and transport. We recognise noise as a serious environmental problem.

Light pollution reduces our ability to see the night sky and disrupts the natural rhythms of plants and animals. It can also affect quality of life through direct impact from light sources that can adversely affect adjacent properties and their occupiers.

Outcome

Environmental nuisances such as litter, flytipping, graffiti, dog fouling, fly-posting, noise pollution and light pollution are minimised

Timeline: Ongoing

Indicators:

Percentage of highways and relevant land inspected of a high or acceptable standard of cleanliness, from NAWPIs

Trends in level of flytipping

Indicators will be reviewed following consultation on NAWPI and proposal to adopt LEAMS measure

Baseline

The National Assembly for Wales Performance Indicators (NAWPIs) for 2004/05 showed that 94.63 per cent of highways and relevant land inspected were of a high or acceptable standard of cleanliness.

There are significant litter problems in Wales' rivers and on its beaches. The Marine Conservation Society's Beachwatch surveys record an 81 per cent increase in the density of beach litter between 1994 and 2004.

The most recent data on flytipping from the Flycapture database shows that there were over 54,523 incidents across Wales, which cost in excess of £3 million to clean up between April 2004 and November 2005.

Flycapture indicates that flytipping is more of a problem in urban areas, although around 25 per cent of the total occurred in coastal or countryside areas. Incidents were most commonly reported on highways (41 per cent) and council land (23.48). Black bags and other household waste are the most

reported incidents and they constitute over half of the total reported.

Neighbour noise and environmental noise are both a problem. The Chartered Institute of Environmental Health reported that, in 2002/03, 82 per cent of noise nuisance incidents in Wales were caused by domestic noise. Scientific studies have also shown that people subjected to long periods of above average levels of noise can suffer detrimental health effects.

Scramblers and other illegal off-road vehicle activities can cause noise pollution and environmental damage and impact on the quality of life of those living nearby.

The British Astronomical Association's Campaign for Dark Skies found that over 90 per cent of the UK population is unable to see the disk of the Milky Way due to light pollution. They also estimate significant greenhouse gas emissions, and wasted money, as a result of powering inefficient lighting.

Local authorities play a key role in dealing with these issues.

Addressing environmental nuisances

For all nuisance issues, we will focus our activity on:

- providing the statutory framework to enable local enforcement
- supporting education and awareness raising on these issues
- supporting activities aimed at improving performance on all these issues
- ensuring that our most deprived communities do not suffer any inequalities

in these issues compared to more affluent areas

On noise, we will also:

- focus on identifying the prevailing environmental noise sources by producing noise maps for Wales by 2007 which will help inform the development of a series of targeted action plans from 2008
- focus activity on key noise generating sectors such as transport to assess their impacts

On light pollution, we will also:

- use the land use planning requirements relating to new developments and minimise the amount of energy wasted

Spatial differences

Information on most of these issues is available for each local authority, but there is limited evidence of specifically spatial issues, apart from noise mapping, which is being introduced currently.



Walkability in urban areas and improving access to the countryside and coast

We are committed to increasing the number of people walking and cycling, and using the natural environment for physical activity and enjoyment. This will provide health, wellbeing and economic benefits, as well as encouraging people to value their environment.

We are determined to make walking and cycling safe and convenient alternatives to travelling by car.

Increased access must be managed properly to ensure that the very asset that we want people to use is not degraded.

Outcomes

There will be sustainable, widespread and equitable access to the countryside and coast, which recognises the need for a balance between tranquil areas and areas supporting larger numbers of people and a range of activities. Damaging access will be discouraged

The number of people choosing to walk or cycle as a means of transport is increasing

Timeline: By 2017

Indicators:

Percentage of total length of footpaths and other rights of way which were easy to use by the public, from NAWPIs
An indicator of damaging impacts of access will be developed
Change in number and extent of tranquil areas as defined in CCW mapping work
Additional indicator to be considered following the development of the new Outdoor Recreation Survey

Timeline: To be defined by the Walking and Cycling Forum

Indicators:

Percentage of people whose main mode of travel to work is (a) walking or (b) cycling
Percentage of pupils whose main mode of travel to school is walking

Baseline

In *Climbing Higher* we have set a target to increase the percentage of people using the natural environment for outdoor activities from 36 per cent to 60 per cent; and by 2023, 95 per cent of people in Wales will have a footpath or cycle path within a ten-minute walk.

There are 33,200km of rights of way in Wales and about 20 per cent of the Welsh countryside accessible for public access on foot. In 2004/05, the National Assembly for Wales performance indicators showed that 51.4 per cent of the total length of footpaths and other rights of way were easy to use by the public.

According to the Sports Council for Wales' 2002/03 adult participation survey, walking remains the most popular activity by a considerable margin. Nearly a third of all adults had walked for a distance of at least two miles in the four weeks prior to the survey.

Welsh Transport Statistics 2004 reported that in 2004, 11 per cent of people stated walking as their main mode of travel to work in Wales and one per cent stated cycling. It also reported that in 2002/03, 32 per cent of trips to schools by 5 to 16 year olds were made on foot; this is down from 48 per cent in 1989-93.

As well as health benefits, increased outdoor activities bring economic benefits to Wales. In *Sports tourism in Wales: a framework for action*, the Wales Tourist Board estimated the value of outdoor recreation, including walking, cycling, fishing and adventure sports, was worth over £1 billion to the Welsh economy.

The Sports Council for Wales' Adult Sports Participation and Recreation Survey 2002 - 2003 found that 27.4 per cent of people had been to a park or country park in the previous four weeks and 28.7 per cent had been to the countryside or seaside.

There are other types of access requirements, for example only a small proportion of rivers are accessible to canoeists, and other activities, for example caving, have a different set of access requirements.

Increased use will need to be managed to ensure that the quality of the environment is maintained, that areas of tranquillity still remain and habitats and species are not adversely affected.



Addressing walkability in urban areas and access to the countryside and coast

We will focus our activity on:

- improving walkability in urban areas to encourage walking and cycling
- increasing opportunities for access to the Welsh countryside and coast, for those living in, as well as for those visiting, Wales
- ensuring appropriate access, including managing the volume of people and the mode of access or transport in sensitive areas and ensuring that associated infrastructure minimises its impact on the environment
- working to increase equality of opportunity in physical access by identifying and removing inappropriate barriers to access

Spatial differences

Rights of way, and their condition, varies across Wales.

Flood and coastal erosion risk management

Flood and coastal erosion risk poses a significant threat to quality of life. Given the expected increase in flood risk due to climate change impacts, we recognise that we need to move away from our traditional flood defence approach and focus on managing the risks and consequences of flooding and coastal erosion.

In order to adapt to an increased risk of flooding due to climate change, individuals need to be aware of the risks that they face, understand the consequences and decide how to respond to these. We will help individuals by ensuring that they are put at the centre of service design for flood risk and coastal erosion.

To manage flood and coastal erosion risk to acceptable levels in the future we will require contributions across a spectrum of activities including land management, development control, emergency planning and improved property resilience in new development and in the refurbishment of existing development. This will require a clear understanding of the risks we face, an awareness of the measures available to address those risks and collaborative action by a wide range of organisations.

We will ensure that there is information about the risk of flooding, advice on how to cope with flood risk and the consequences of flooding, and ensure that adequate warning of flood incidents are made available.

Outcomes

Appropriate measures will be in place to manage the risk of flooding from rivers and the sea and help adapt to climate change impacts

Timeline: By 2008 measures defined and considered for all catchments and coastlines. By 2026 appropriate measures in place for all catchments and coastlines

Indicators:

Annual cost of damage due to flooding
Probability of flooding of assets at risk
Indicator of percentage of new development permitted in the floodplain to be developed

Everyone who lives in a flood risk area will understand the flood risk they are subject to, the consequences of that risk and how to live with that risk

Timeline: By 2008 plan for future public awareness activity in place

Indicators:

Level of use of Floodline
Households registered for flood warnings as a percentage of total number of households at risk of flooding
Indicators of trends in awareness of flood risk to be developed based on a new survey

Baseline

The National Appraisal of Assets at Risk of Flooding and Coastal Erosion in England and Wales estimated that without the existing flood defence infrastructure, the average annual cost of damage from flooding in Wales would be approximately £220 million. The presence of existing flood and coastal defences reduces this figure to approximately a third.

Over 150,000 residential properties are at risk of flooding, many commercial and industrial developments and other key infrastructure like power supplies, transport links and schools as well as important environmental sites are situated on land at risk from flooding. Around half a million people live and work on our flood plains and over £8 billion worth of assets are at risk. Flooding can also have a negative impact on agricultural land.

Climate change is expected to increase river flooding, cause sea level rise and increased storminess. Increases in flood risk will be

particularly significant in low lying coastal areas and river estuaries.

The Foresight programme, in a 2004 report on *Future Flooding* estimated annual economic damage in Wales in the range £121 million to £1,235 million by the 2080s an increase of 2 - 18 times compared with annual costs of £70 million currently. By adopting an integrated approach to flood risk management, expected annual damage in the 2080s could be reduced to within the range £77 million to £219 million.

The impact of flooding and coastal erosion is felt most directly by individuals, through property damage, increased insurance premiums, disruption, distress and even ill-health.

The impacts of internal or external sewer flooding of properties can also be a matter of considerable distress. While the causes of such flooding are often linked to heavy rainfall, they can also be caused due to sewers being overloaded, sewer blockages and collapse or equipment failure.





Addressing flood risk management

We will focus our activities on:

- improving our understanding of the range of measures available to manage flood and coastal erosion risks and consequences and implementing appropriate measures
- raising awareness of flood risk and the consequences of flooding and how best to address them
- directly supporting and encouraging operating authorities in managing flood and coastal erosion risk and consequences
- making emergency planning a high priority and ensuring that the safety of vulnerable groups is at the core of the emergency planning process
- developing technically, environmentally and economically sound and sustainable flood defence and coastal protection solutions
- supporting investment by the water industry which encourages a reduction in the number of properties at risk from sewer flooding

Spatial differences

Flood risk and coastal erosion is spatially defined. Detailed mapping has been carried out to identify areas at risk of flooding, and the parts within those areas that have some flood protection. Other spatial considerations include the location of key assets and infrastructure and vulnerable groups relative to areas of flood risk.

Environmental hazards

We want to minimise the risks posed by pollution and other environmental hazards. This is important for our health and the health of our environment.

The World Health Organisation and the European Commission have initiated programmes to investigate links between poor health in vulnerable members of society, especially children. Both initiatives highlight the need for better information systems to support policy making.

We are taking action to address health impact through the land use planning system. Draft policy guidance will be issued for consultation in Spring 2006 and technical advice will be issued in 2006/07.

This chapter covers:

- Pollution
- Chemicals and radioactivity



Pollution

We aim to minimise pollution and reduce its impact on the environment and on our health.

Outcomes

A reduction in air pollution leads to increased life expectancy and ecological protection

Timeline: By 2020 reduction in life expectancy due to air pollution cut

By 2010, for enhancing ecological protection

Indicators:

Trends in number of days when air pollution is moderate or higher in rural zones and urban agglomerations

Number of Air Quality Management Areas

Level of emissions from Wales of sulphur dioxide, ammonia, nitrogen oxides, fine particulates and volatile organic compounds from the National Atmospheric emissions inventory

Area of natural and semi-natural habitat where deposition of (a) acid and (b) nitrogen compounds exceeds critical loads

The extent of contaminated land is better understood and actions are being taken to remediate contaminated land for beneficial use where appropriate

Timeline: By 2026

Indicator:

Further work to be done to identify a suitable indicator for contaminated land

The quality of our groundwater, rivers, lakes and coastal waters is maintained and enhanced

Timeline: By 2015

Indicators:

River water quality - biological and chemical

- Bathing water quality

Compliance with 'good status' under the Water Framework Directive in due course

Diffuse pollution is better understood and action is being taken to reduce and manage diffuse pollution

Timeline: By 2015

Indicators:

River water quality - biological and chemical

- Bathing water quality

Compliance with 'good status' under the Water Framework Directive in due course

Area of Wales designated as nitrate vulnerable zones

Baseline

Pollution comes from different sources. Some comes from a 'point' source that is from a specific source or outflow: these are relatively easy to locate and therefore to manage.

Other sources of pollution are more 'diffuse' in their distribution, this means they are more difficult to tackle and manage, as there is no single location for the source for the pollution.

Pollution sources are inter-related. Air pollutants are deposited on the land where they can build up into higher concentrations; they can then be washed into streams and rivers causing water pollution.

European legislation relating to air and water quality and regulation of emission sources, sets clear standards which we are required to meet.

Progress has been made on improving air quality, but there are still some areas where local air quality is poor - mainly because of particulates, ozone and nitrogen oxides - leading to increased risks to human health and the environment.

The main causes of air pollution at urban sites are ozone and fine particles (PM10). PM10 levels exceeded the standard on up to a maximum of 38 days in urban parts of Wales in 2004. Ozone causes the great majority of pollution days in rural areas - a maximum of 12 in 2004. The number of days caused by ozone pollution has fluctuated in both rural and urban areas, with no clear overall trend. Production of ozone is strongly influenced by the weather, being created on sunny summer days.

Wales' industrial past has left many soils with a wide variety of long lasting contamination from toxic chemical pollution. A significant amount of this contamination has been

successfully addressed as part of large-scale land reclamation projects. Despite this, contamination does remain across Wales although detailed information about exactly what remains to be addressed requires detailed site investigation.

There has been good progress made on improving water quality. Environment Agency monitoring for 2004 showed that 94 per cent of monitored rivers in Wales were of good chemical quality and 79 per cent were of good biological quality. In 2005, all 80 bathing waters in Wales monitored by the Environment Agency met mandatory European standards and a record 91 per cent (73) met the more stringent guideline standards.

Key problems for water quality in Wales are caused by diffuse pollution and overflows from sewerage systems. In addition streams and lakes, particularly in upland areas of Wales are affected by acidification.

Addressing pollution

We will focus our activities to reduce air pollution on implementing European directives in this area and focusing on key emission sectors, such as industry and transport.

We will work with the UK and European partners in the context of an international framework for regulating air pollution and to address transboundary pollution.

We will focus our activities to reduce water pollution through implementation of the Water Framework Directive, managing diffuse pollution from agriculture, managing run-off in urban areas, improving water infrastructure and maintaining high standards of regulation for point source pollution.

In relation to contaminated land, we will focus our activities on identifying the extent of the problem and supporting remediation, where justified on economic, human health or environmental grounds.

Spatial differences

Spatial consideration of pollution issues is complex. Often the source of a pollution

problem may be at a different spatial level to the impact of the pollution problem, for example transboundary air pollution.

Spatial mapping of critical loads of certain pollutants is available. There is no comprehensive mapping of contaminated land sites, but local authorities do hold some data.

Chemicals and radioactivity

We support the regulatory framework for managing the potential risks to the environment and health posed by chemicals and radioactivity, while recognising their role in natural processes and significant contribution to the economy.

Outcomes

The risks posed by exposure to chemicals will be minimised with emphasis on protecting vulnerable members of society

Timeline: Ongoing

Indicators:

Emissions of toxic air pollutants, and concentrations in the air (compared with standards)
Intake of persistent organic chemicals and metals via food intake in relation to WHO guidelines
Following implementation of REACH, appropriate revised indicators to be developed

Those at risk from radon will be aware of the risk that they face and what they can do to minimise that risk

Timeline: Ongoing

Indicators:

Number of houses with radon levels above the Action Level
Number of houses where radon remediation has been completed

Radioactive discharges in Wales and doses to the public will be minimised. Discharges to the marine environment will be minimised to the extent that additional concentrations in the marine environment above historic levels are close to zero

Timeline: Ongoing (for doses to public) and by 2020 for discharges to the marine environment

Indicators:

Trends in radioactive discharges from major sources in Wales
Doses to most exposed members of the public

Baseline

Chemicals are fundamental to many natural processes and occupy a central role in many consumer and industrial products and the generation of economic wealth.

However, some chemicals can pose a risk to human health and the environment if their use, and exposure to them, is not managed properly.

About 100,000 chemical substances are registered on the European Inventory of Existing Commercial Chemical Substances (EINECS); of which about 30,000 are believed to be in active use, and 10,000 are marketed in quantities greater than 10 tonnes each year.

There is a strong regulatory system for chemicals, which has led to a reduction in emissions of many hazardous chemicals through regulation. In turn, this has led to a reduction in the quantity of some of these chemicals in the environment. However, there is a legacy of historic chemical contamination and we are also unclear about the long term impact of various chemicals in combination.

The UK national strategy for the sustainable use of plant protection products covers all uses of plant protection products in agriculture, horticulture, floriculture; in domestic gardens, on railways, roads and runways; in the leisure industry; and in amenity areas such as parks and playing fields.



Everyone is exposed to ionising radiation, most of which is of natural origin. On average, about 85 per cent of radiation we are exposed to comes from natural sources (principally radon), 14 per cent from medical exposure and about one per cent from weapons test fall-out, occupational and other exposures.

Radon is a naturally occurring radioactive gas that is found in small quantities in all soil and rocks, but it can build up in enclosed spaces. Radon mapping across Wales has identified areas at highest risk. About 10,000 homes in Wales are estimated to be above the radon Action Level, and of these, about 10 per cent have been identified so far.

Three sites in Wales are licensed to discharge low level radioactivity under strict conditions - these are in Cardiff, Gwynedd and Anglesey. There are 182 non-nuclear sites registered to use radioactive material and 54 sites authorised to dispose of radioactive material.

Deposition of caesium following the accident at Chernobyl in 1986 continues to affect parts of upland north-west Wales where restrictions remain in place.

Addressing chemicals and radioactivity

We will focus our activity on effective implementation of the regulatory framework, including new developments such as the European REACH proposal and on supporting clear information based on proper risk analysis to inform the public. We will continue to place public protection at the centre of our actions. We will also seek to develop our understanding of the impacts on the environment and human health and make information available to the public and to health professionals.

Spatial information

We are supporting the development of a database of emissions data for health professionals to aid their assessment of health impacts that might be linked to particular sites. There is also some data available about levels of certain chemical pollutants in different areas, for example, the prevalence of PCBs in the Severn Estuary.

Spatial information is available on radioactivity in the form of radon mapping, areas still affected by caesium deposition and monitoring of doses associated with regulated sites.



Monitoring and evaluation

Monitoring and evaluation of progress in delivering the vision and outcomes in this document will be very important.

In future, state of the environment reporting carried out on behalf of the Assembly Government will be directly linked to reporting progress on delivering the Strategy. It will also look at wider indicators of the state of the environment.

The Strategy will be reviewed periodically to ensure that the vision it sets out, and the outcomes it seeks to deliver, remain relevant and challenging.

The action plan will be subject to more frequent review and this review process will seek comments from interested parties.

The Environment Strategy Reference Group will meet once a year to review progress on delivering the Strategy and to consider updates to the Action Plan.

Evaluation of the Strategy will be completed in conjunction with the monitoring of the Action Plan, and may be supported by surveys of stakeholders to assess effectiveness for example, policy focus and delivery.





Summary of Outcomes

- 1 The Assembly Government provides clear leadership on environmental issues through its policies, programmes and the way that it conducts its business
- 2 Wales demonstrates the contribution that a small developed nation can make to global sustainable development and environmental improvement
- 3 Environmental considerations are integrated in all policies, programmes and service delivery and that high quality and consistent environmental evidence is available to inform the decision making processes
- 4 The roles and responsibilities of organisations are understood, leading to better integration for the delivery of environmental protection and enhancement
- 5 Appropriate education about our environmental impacts is in place and good quality information is available at the point where people make decisions
- 6 Individuals understand and are enabled to take responsibility for their environmental impact; changes in behaviour are apparent that help reduce negative environmental impacts
- 7 Greenhouse gas emissions are minimised, consistent with Wales contributing fully to meeting UK-wide targets and in line with more specific Wales targets that are under development
- 8 Wales has improved resilience to the impacts of climate change. A clear flexible programme of measures is in place to enable Wales to respond and adapt to climate change
- 9 The amount of waste that is generated in Wales is minimised
- 10 Reduce, reuse and recycle is universally accepted in government, business, industry and home life
- 11 Appropriate waste management facilities are in place to minimise the amount of waste going to landfill
- 12 Businesses produce well designed products that require less resources in their production, use and end of life, that create minimal waste and are easily reused or recycled
- 13 Water resources are managed sustainably meeting the needs of society without causing damage to the environment
- 14 Water is used more efficiently across all sectors
- 15 The high quality of our drinking water is maintained
- 16 Soil is managed to safeguard its ability to support plants and animals, store carbon and provide other important ecosystem services
- 17 The extraction of minerals and aggregates minimises the impact on the environment and local communities
- 18 The use of alternative materials, secondary and recycled aggregates is maximised where possible in the construction industry

- 19 The loss of biodiversity has been halted and we can see a definite recovery in the number, range and genetic diversity of species, including those species that need very specific conditions to survive
- 20 The wider environment is more favourable to biodiversity through appropriate management, reduced habitat fragmentation and increased extent and interconnectivity of habitats
- 21 Sites of international, Welsh and local importance are in favourable condition to support the species and habitats for which they have been identified
- 22 Our seas are clean and support healthy ecosystems that are biologically diverse, productive and managed sustainably
- 23 The quality and diversity of the natural and historic character of our landscape and seascape is maintained and enhanced
- 24 The built environment is high quality and vibrant, reflecting local distinctiveness and supporting strong communities, which are actively engaged in the management of their local environment
- 25 New buildings in Wales meet high environmental quality standards and the environmental quality standards of existing building stock is improving
- 26 The historic building stock and character is maintained to a high standard
- 27 There is easy, equitable access to ample high quality green space
- 28 Environmental nuisances such as litter, graffiti, dog fouling, fly-posting, noise pollution and light pollution are minimised
- 29 There is sustainable, widespread and equitable access to the countryside and coast, which recognises the need for a balance between tranquil areas and areas supporting larger numbers of people and a range of activities. Damaging access will be discouraged
- 30 The number of people choosing to walk or cycle as a means of transport is increasing
- 31 Appropriate measures are in place to manage the risk of flooding from rivers and the sea and help adapt to climate change impacts
- 32 Everyone who lives in a flood risk area understands the flood risk they are subject to, the consequences of that risk and how to live with that risk
- 33 A reduction in air pollution leads to increased life expectancy and ecological protection
- 34 The extent of contaminated land is better understood and actions are being taken to remediate contaminated land for beneficial use where appropriate
- 35 The quality of our groundwater, rivers, lakes and coastal waters is maintained and enhanced
- 36 Diffuse pollution is better understood and action is being taken to reduce and manage diffuse pollution
- 37 The risks posed by exposure to chemicals is minimised with emphasis on protecting vulnerable members of society
- 38 Those at risk from radon are aware of the risk that they face and what they can do to minimise that risk
- 39 Radioactive discharges in Wales and doses to the public will be minimised. Discharges to the marine environment will be minimised to the extent that additional concentrations in the marine environment above historic levels are close to zero

