Department of the Environment
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Northern Ireland Environmental Statistics Report

January 2010

Northern Ireland Statistics & Research Agency

Contents

Introduction

Welcome to the second annual Northern Ireland Environmental Statistics Report.

This report is intended to be the first reference point for a range of environmental indicators and will provide annual updates on all of the indicators contained within it. It is of both public and academic interest and provides a valuable resource across government in providing links to government strategies.

This report follows on from 'Our Environment, Our Heritage, Our Future: State of the Environment Report for Northern Ireland' which was published by the Northern Ireland Environment Agency (NIEA), formally the Environment & Heritage Service (EHS), in April 2008. The State of the Environment report (SOE) should be referenced for additional context.

The indicators that have been chosen for inclusion in this report, in most instances, complement those that were reported on in the State of the Environment report. Additional indicators have been added, particularly with regard to demographics, environmental pressures and public opinion. Some of the indicators reported in the State of the Environment report have not been continued in this report. This is either because there is no further up-to-date data available, or because the indicator is not suitable for annual updates.

The first report included 50 separate data sets. The indicators that were included were determined in agreement with key data providers, policy colleagues and other interested parties. This year there are 7 new indicators, including water pollution incidents, the condition of priority habitats and species, seal population, wetland bird population, marine water quality and sea temperature. There are a couple of indicators not included in this year's report that were included previously, namely; eutrophication in rivers and

marine survival rates. The inclusion / omission of each of these indicators is dealt with in the introduction to their respective chapters.

In all, there are 55 separate data sets, which cover 8 main topics; Demographics, Transport & Public Opinion, Air & Climate, Water, Marine, Land, Biodiversity, Built Heritage and Waste. Each of these data sets reports the most recently available data for each indicator, and most provide data on trends over time and, where applicable, performance against quantified targets.

This report provides some commentary on each of the data sets and describes any trends that they illustrate. There are also links to be found in the appendix of this report which will provide further detail on any of the indicators included in the report.

This report is updated annually and each year the indicators will be reviewed for their usefulness and relevance, and additional indicators will also be considered for future years. Any comments on the indicators currently published or suggestions for future reports will be gladly received and should be forwarded to:

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As this is an environmental publication, no hard copies have been published. However, hard copies and alternative formats are available on request. Such requests should be directed as above.

Statistical Note

This report has been prepared by Central Statistics and Research Branch, Department for Regional Development, along with NIEA.

The name of the department or organisation responsible for providing each series of statistics is shown under the appropriate table. There may be slight discrepancies between totals and the sum of their constituent items due to rounding. The data used are what was available up until November 2009. Any updates after that date will be included in the next report.

The following symbols are used throughout the report:

n/a = not available

0 = nil

Also, where a vertical, dashed line appears in a chart, this is to indicate a change in methodology.

Acknowledgements

Central Statistics and Research Branch would like to acknowledge the assistance of all those data providers and consultees who participated in the preparation of this report, from colleagues in government departments and agencies, to those in non-departmental public bodies and external organisations, and would like to thank them for their valued contributions.

1. Demographics, Transport & Public Opinion

People and households use up significant levels of resources, such as water, energy, and food, and can exert pressure on the environment. Our lifestyle choices also impact upon the state of the environment. This chapter will look at Northern Ireland's changing population and environmental pressures, as well as our changing attitudes towards the environment.

Northern Ireland's population has been steadily increasing since the early 1970s. In 2008, the population was 6% greater than it had been 10 years previous and 15% greater than it was in 1971. The projected population indicates that this trend is estimated to continue over the next 20 - 25 years.

As the population increases, the number of households has also increased. The number of households has increased at a faster rate than the population; as a result the number of people per household is declining.

Environmental pressures such as the way we travel and how often we travel are becoming increasingly important. Air travel has almost doubled in Northern Ireland in the last 10 years with the advent of low-fare airlines a major factor in this. Car travel continues to dominate the way we do most of our day-to-day travelling, with 71% of our journeys being made by car.

The level of public concern for our environment has increased in the last five years with people taking more actions in order to protect the environment. In particular, public concern about climate change has increased dramatically and is now the biggest environmental concern for the Northern Ireland public.

Demographics

Figure 1.1 Northern Ireland population, estimated (1971 – 2008) and projected (2009 – 2031)

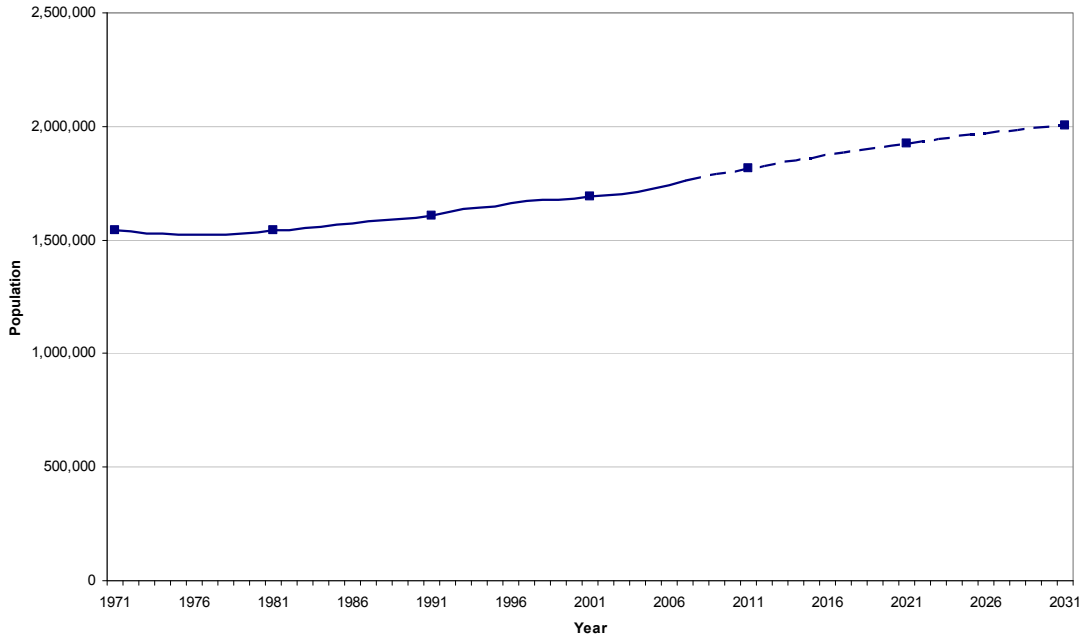


Table 1.1 Northern Ireland population, estimated (1971 – 2008) and projected (2009 – 2031)

						Unit: Population	
	1971	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**
Northern Ireland population	1,540,400	1,543,000	1,607,300	1,689,300	1,815,100	1,926,900	2,004,700
Source: NISRA							

- Northern Ireland population figures, whether estimated or projected are based on the figures collected during the census of population which is carried out every ten years by the Census Office for Northern Ireland.
- The most recent census was carried out in 2001 with the next one scheduled for 2011.
- Between 1971 and 2008, the Northern Ireland population has increased by 15%
- By 2031, the population is expected to grow by another 13%, to just over 2 million.

Demographics

Figure 1.2 Northern Ireland households, estimated (1971 – 2008) and projected (2009 – 2031)

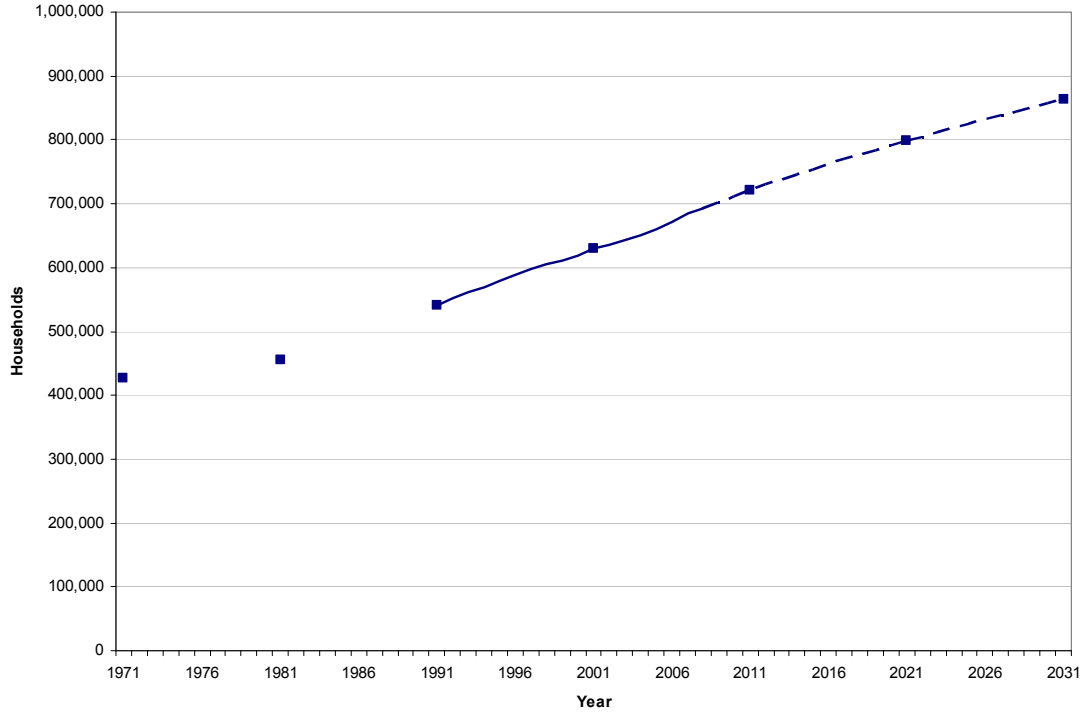


Table 1.2 Northern Ireland households, estimated (1971 – 2008) and projected (2009 – 2031)

							Unit: Households
	1971	**1981**	**1991**	**2001**	**2011**	**2021**	**2031**
Northern Ireland households	427,400	456,300	540,700	629,100	721,100	798,300	863,200
Source: NISRA							

- The historic data on the number of households in Northern Ireland are taken from the census of population.
- The projected number of households in Northern Ireland is derived using a series of assumptions on household formation and the 2006-based population projections.
- Between 1971 and 2008, the number of households had increased by 62%.
- By 2031, the number of households in Northern Ireland is projected to increase by 25% on 2008 figures.

Environmental Pressures

Figure 1.3 Northern Ireland airport passenger numbers, 1999 – 2008

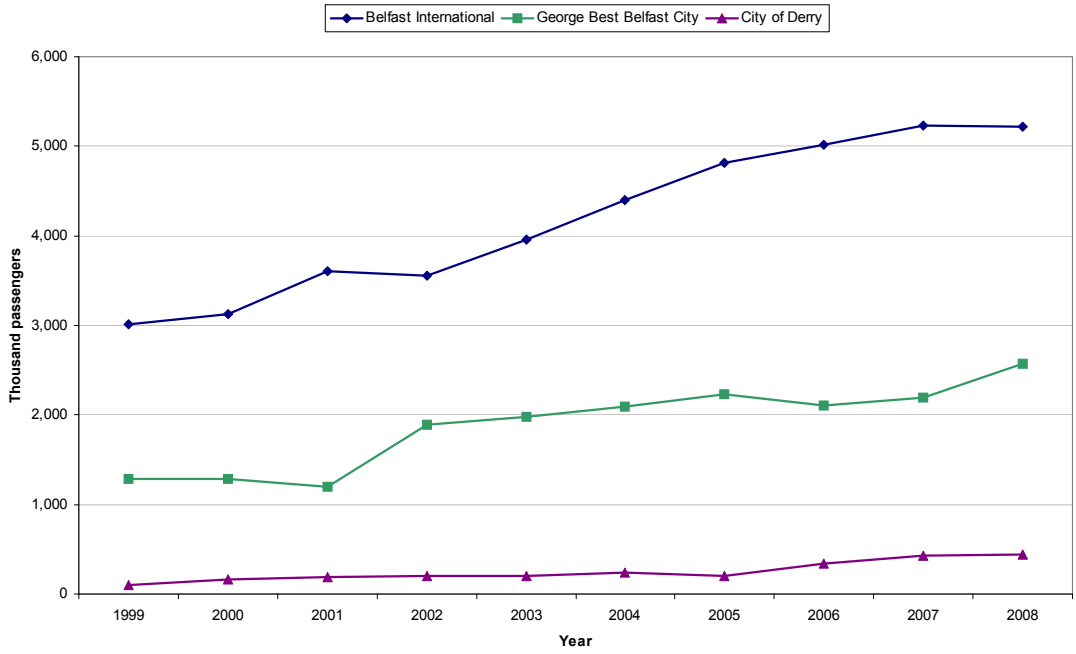


Table 1.3 Northern Ireland airport passenger numbers, 1999 – 2008

Unit: Thousand passengers

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belfast International	3,012	3,128	3,603	3,551	3,954	4,403	4,820	5,015	5,236	5,223
George Best Belfast City	1,282	1,290	1,192	1,890	1,974	2,091	2,237	2,106	2,187	2,571
City of Derry	104	163	188	199	206	234	199	342	428	439
All Airports	**4,398**	**4,581**	**4,983**	**5,640**	**6,134**	**6,728**	**7,256**	**7,463**	**7,851**	**8,233**

Source: Civil Aviation Authority

- Northern Ireland's airports continue to handle increasing numbers of passengers each year.
- Since 1999, airport passenger numbers have increased by 87% in Northern Ireland, increasing from approximately 4.4 million in 1999 to approximately 8.2 million in 2008.
- The number of airport passengers at Belfast International has increased by 73% in the last 10 years, from 3.0 million in 1999 to 5.2 million in 2008.
- In 2008, Belfast International accounts for almost two-thirds of all airport passengers in Northern Ireland, with George Best Belfast City accounting for 31% of all airport passengers.

Environmental Pressures

Figure 1.4 Numbers of journeys per person by mode of transport, 2001-03 to 2006-08

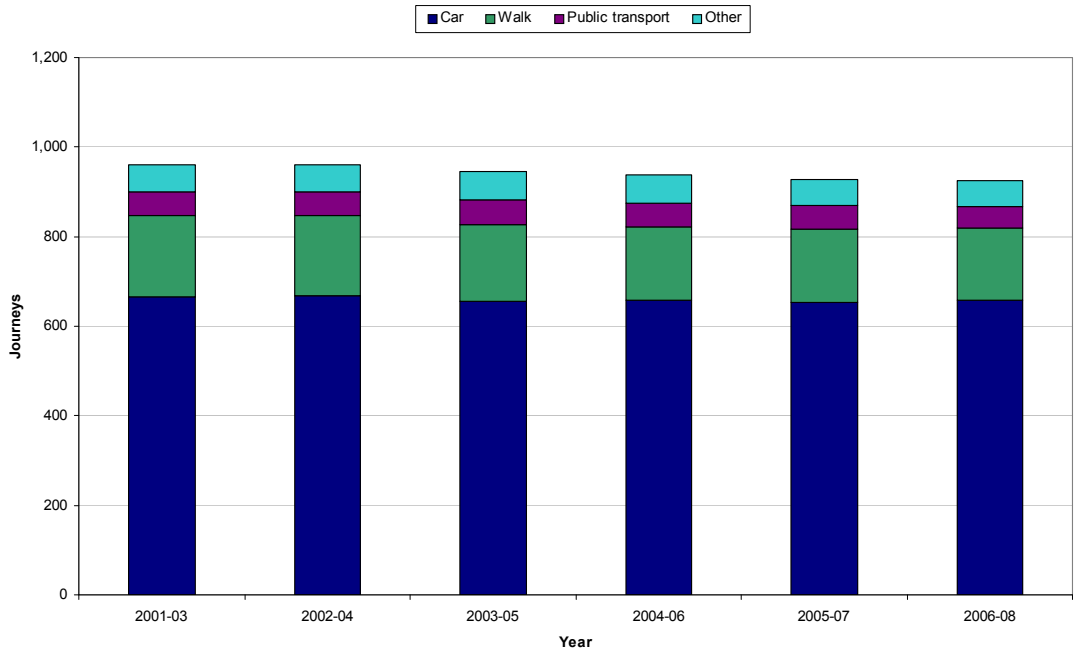


Table 1.4 Numbers of journeys per person by mode of transport, 2001-03 to 2006-08

					Unit: Journeys	
	2001-03	**2002-04**	**2003-05**	**2004-06**	**2005-07**	**2006-08**
Car	665	668	655	657	654	659
Walk	182	179	172	165	164	160
Public transport	54	54	55	54	51	48
Other	60	60	63	62	59	58
All modes (3 year average)	**960**	**963**	**947**	**937**	**929**	**926**
Source: Travel Survey for Northern Ireland, DRD						

- There has been little change in the pattern of journeys made by mode of transport, with the average number of journeys per person between 2006 and 2008 being 926.
- On average, between 2006 and 2008, 71% of all journeys were made by car, either driving the car or as a passenger. This has not changed significantly over the course of the last 5 surveys.
- In the same period, 17% of all journeys made were by walking.
- Public transport only accounts for 5% of all journeys made in the same 3-year period.

Environmental Pressures

Figure 1.5 Average distance travelled per person by mode of transport, 2001-03 to 2006-08

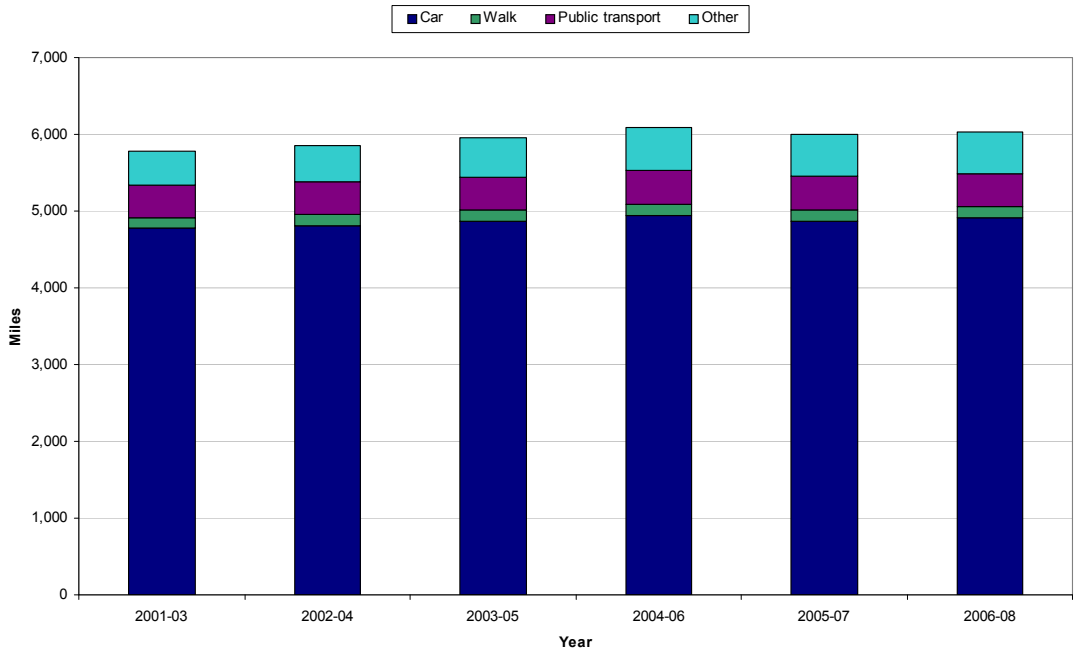


Table 1.5 Average distance travelled per person by mode of transport, 2001-03 to 2006-08

Unit: Miles

	2001-03	2002-04	2003-05	2004-06	2005-07	2006-08
Car	4,777	4,816	4,870	4,943	4,864	4,916
Walk	142	137	139	138	144	143
Public transport	426	429	431	446	442	430
Other	441	477	509	567	549	544
All modes (3 year average)	**5,786**	**5,861**	**5,951**	**6,094**	**5,999**	**6,033**

Source: Travel Survey for Northern Ireland, DRD

- During the period 2006 - 08, the average distance travelled per person each year was just over 6,000 miles.
- Car travel made up just over four fifths (81%) of the total distance travelled.
- People travelled on average 143 miles per year by walking, just 2% of the total distance travelled.
- Public transport accounted for 7% of the total distance travelled each year.

Public Opinion

Figure 1.6 Level of concern for the environment, 2003/04 – 2008/09

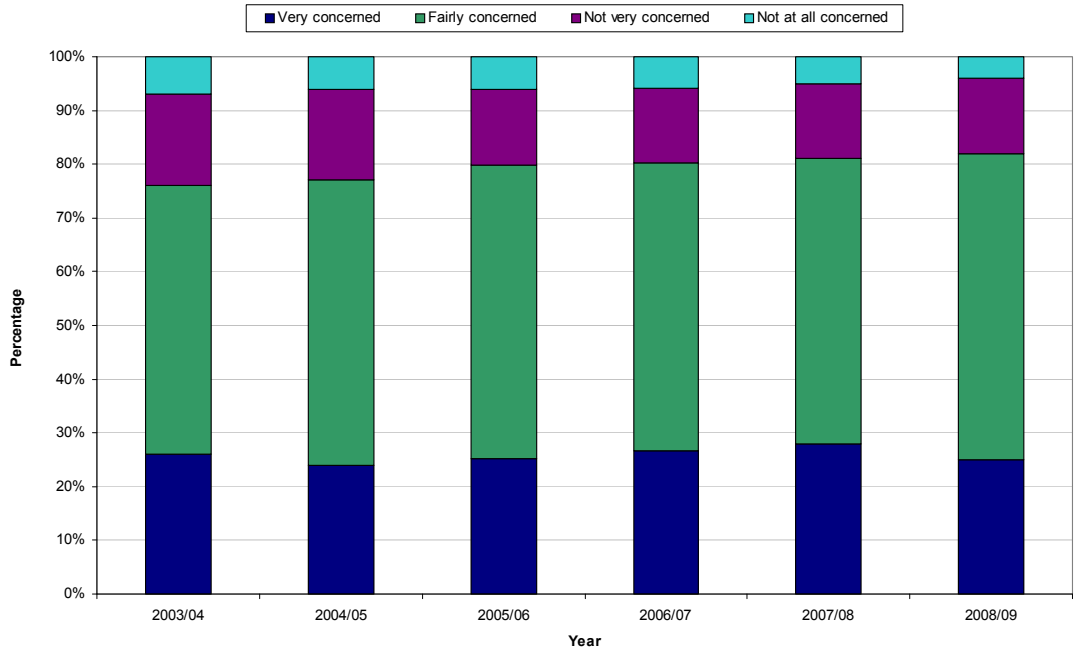


Table 1.6 Level of concern for the environment, 2003/04 – 2008/09

					Unit: Percentage	
	2003/04	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**
Very concerned	26	24	25	27	28	25
Fairly concerned	50	53	54	54	53	57
Not very concerned	17	17	14	14	14	14
Not at all concerned	7	6	6	6	5	4
All Households	**2,528**	**2,761**	**2,586**	**2,686**	**2,559**	**2,471**

- Members of the public were asked to provide their views on environmental issues in NISRA's Continuous Household Survey (CHS).

- There was a significant increase in the number of people who are either very concerned or fairly concerned about the environment between 2003/04 and 2005/06. From then on the figures are not significantly different.

- In 2003/04, 76% of people were very or fairly concerned about the environment. By 2008/09, this figure had increased to 82%.

Public Opinion

Table 1.7 Types of environmental concern, 2003/04 – 2008/09

Unit: Percentage

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Pollution in rivers	30	30	30	29	28	34
Pollution in bathing waters and beaches	21	23	23	23	22	23
Traffic exhaust fumes and urban smog	35	33	32	32	31	31
Loss of plants and animals in Northern Ireland	13	15	15	15	16	18
Ozone layer depletion	22	26	27	27	24	22
Tropical forest destruction	9	8	10	12	13	12
Climate change	13	19	29	34	39	37
Loss of trees and hedgerows in Northern Ireland	16	17	15	16	16	19
Fumes and smoke from factories	14	16	15	14	13	12
Traffic congestion	27	28	26	28	30	28
Use of pesticides and fertilisers	17	16	18	15	13	15
Acid rain	3	2	2	3	2	3
Household waste disposal	31	33	34	33	34	31
Noise	7	7	6	6	5	4
None of these	8	9	5	4	5	4
Other	1	2	2	1	1	1
All Households	**2,718**	**2,766**	**2,594**	**2,675**	**2,562**	**2,464**

Source: Continuous Household Survey, NISRA

Note: Base does not equal 100% - Multiple responses permitted

- Members of the public were asked to provide their views on what were their three main environmental concerns in NISRA's Continuous Household Survey (CHS).

- Results show that in 2008/09, the four main environmental concerns for Northern Ireland residents were climate change (37%), pollution in rivers (34%) and traffic exhaust fumes and urban smog and household waste disposal (both 31%).

- Since 2003/04, climate change has become a significantly bigger concern. In 2008/09, 37% of people mentioned climate change compared with 13% of people in 2003/04.

- Traffic congestion, ozone layer depletion, pollution in bathing waters and beaches, loss of trees and hedgerows and the loss of plants and animals are all mentioned by approximately a fifth or more of people as one of their three most important environmental concerns.

Sustainability of Lifestyle

Table 1.8 Actions taken to protect the environment, 2003/04 – 2008/09

					Unit: Percentage	
	2003/04	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**
Reduced amount of energy used in home	26	26	31	37	40	41
Reduced amount of water used in home	22	24	27	30	31	33
Used public transport for environmental reasons	16	16	16	18	18	18
Reduced the use of the car	17	19	18	19	19	22
Took action to protect wildlife	31	33	33	30	31	30
Recycled paper, glass	35	33	32	32	34	34
Not bought something because of packaging	9	9	10	11	13	14
Bought organic food	25	24	26	26	28	24
Used energy saving light bulbs	41	42	43	47	51	55
All Households	**2,535**	**2,768**	**2,592**	**2,687**	**2,560**	**2,471**
Source: Continuous Household Survey, NISRA						
Note: Base does not equal 100% - Multiple responses permitted						

- Members of the public were asked what actions they had taken in the last 12 months to protect the environment in NISRA's Continuous Household Survey (CHS).

- Results indicate that in 2008/09, the most common actions taken by individuals to protect the environment were using energy saving light bulbs (55%), reducing the amount of energy used in the home (41%), recycling paper and glass (34%) and reducing the amount of water used in the home (33%).

- Since 2003/04, reducing the amount of energy used in the home, reducing the amount of water used in the home, using energy saving light bulbs and not buying something because of the packaging have all increased significantly.

- In the last year, there has been a significant increase in the percentage of people reducing their use of the car.

2. Air & Climate

The air that we breathe is vital to our health and wellbeing. Good air quality is essential for human health, the climate, habitats and the built environment. Pollutants from human activity are present in our atmosphere which may adversely impact our health and natural environment. This chapter will report on the quality of our air, on greenhouse gas emissions, renewable energy, environmental installations and the climate.

There are more than 30 air quality monitoring stations in Northern Ireland. Levels of carbon monoxide, nitric oxides, sulphur dioxide, particles, ozone, benzene, 1,3-butadiene and polycyclic aromatic hydrocarbons are monitored across a range of these.

Northern Ireland's air quality has shown substantial improvement in recent years, with most measures well within the national air quality objectives. In particular, levels of pollutants associated with coal and oil combustion have reduced over the past decade.

Weather conditions can be a contributing factor to some periods of poor air quality and subsequent elevated levels. This is true of hot, sunny weather which can lead to higher levels of ozone, and winter weather where temperature inversions can lead to increased pollutant levels at ground level.

Greenhouse gas emissions in Northern Ireland have decreased since 1990, with a 13% fall in emissions achieved by 2007. The Programme for Government has a target of a 25% decrease in greenhouse gas emissions by 2025. Greenhouse gas emissions are calculated annually, with revisions made for previous years.

Climate change is of increasing concern to the Northern Ireland public, and some of the climate records for Northern Ireland do suggest that the average temperature in Northern Ireland has increased since the start of the 20th century. There is also some evidence of changing seasonal distribution of our rainfall with the proportion of annual rainfall falling in winter increasing, while summer rainfall has been decreasing since the start of the 20th century.

Nitrogen Oxides

Figure 2.1 Annual mean concentration of nitrogen dioxide (NO_2), 1999 – 2008

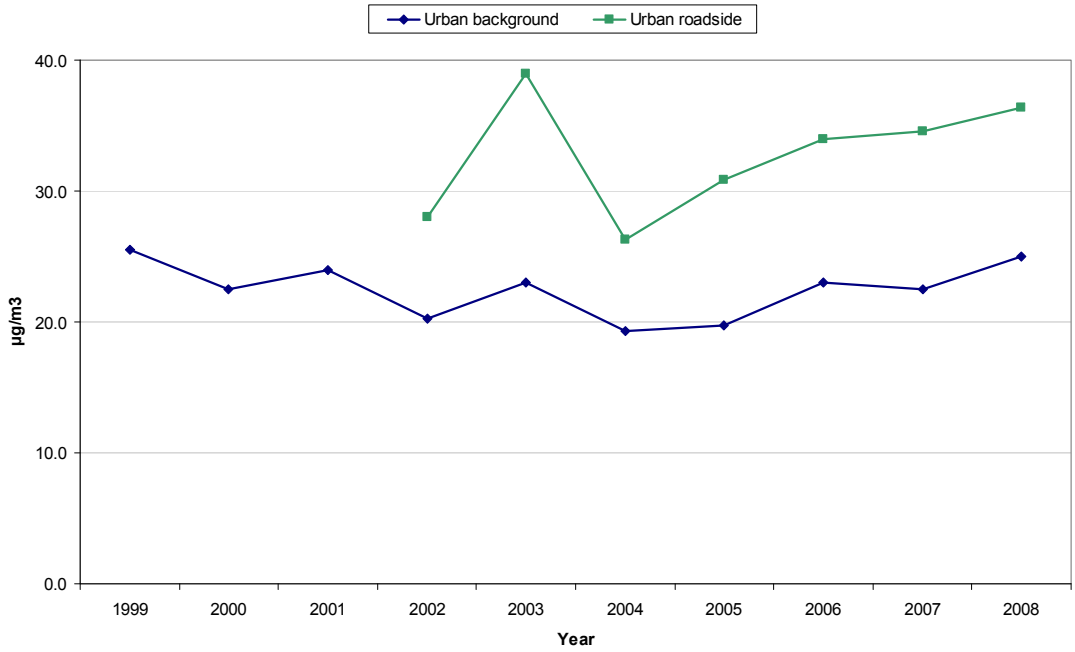


Table 2.1 Annual mean concentration of nitrogen dioxide (NO_2), 1999 – 2008

Unit: µg/m^3

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Urban background	25.5	22.5	24.0	20.3	23.0	19.3	19.7	23.0	22.5	25.0
Urban roadside				28.0	39.0	26.3	30.9	34.0	34.6	36.4

Source: AEA Technology

- Nitrogen dioxide is monitored using automatic techniques at 17 urban sites across Northern Ireland.
- The annual mean background concentration of NO_2 in urban areas, for Northern Ireland has been 25µg/m^3 or less since the year 2000. This average is well within the National Air Quality objective for $NO_2$of 40µg/m^3.
- The annual average concentrations of NO_2 in urban areas have been generally declining over the long term. This is due primarily to the increased use of catalytic converters in cars and a move from domestic coal burning to gas heating.
- In the last 10 years the background level of NO_2 in urban areas has remained relatively stable, but the roadside levels, which have been monitored since 2002, have been more variable.

Particulate Matter

Figure 2.2 Urban and rural annual mean particulate matter of less than 10 microns, 1999 – 2008

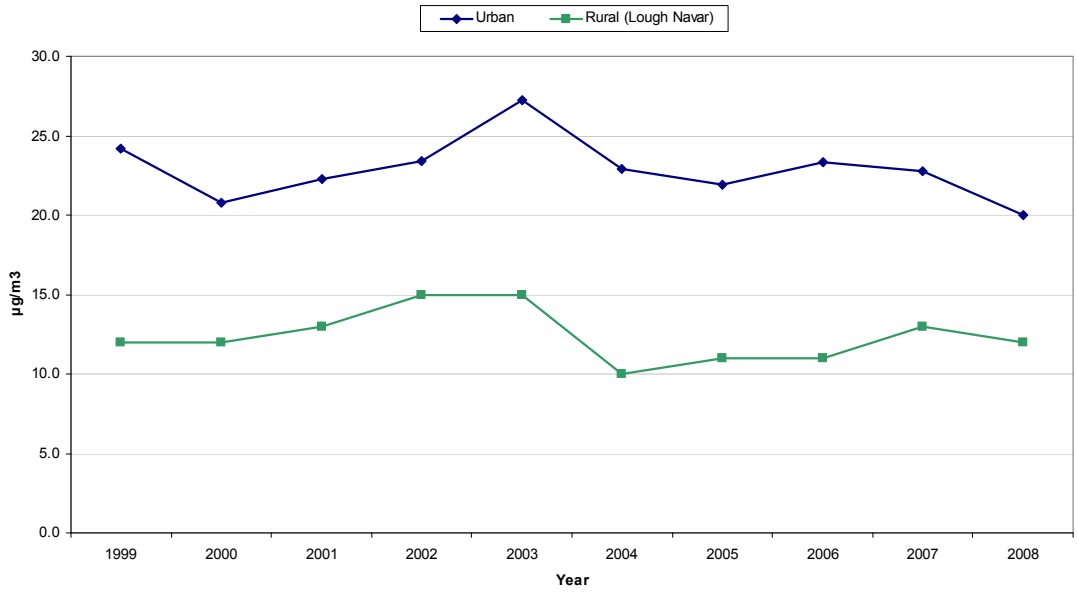


Table 2.2 Urban and rural annual mean particulate matter of less than 10 microns, 1999 – 2008

Unit: µg/m^3

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Urban	24.2	20.8	22.3	23.4	27.2	22.9	21.9	23.3	22.8	20.0
Rural (Lough Navar)	12.0	12.0	13.0	15.0	15.0	10.0	11.0	11.0	13.0	12.0

Source: AEA Technology

- Particulate matter in the atmosphere with a diameter of less than or equal to 10 microns (PM_{10}) arises from both man made and natural sources. Road transport and fossil fuel combustion produce the majority of particulate matter found in urban locations.

- In 2008, the annual mean concentration of PM_{10} in urban areas was 20.0µg/m^3 and at the Lough Navar rural background monitoring site, it was 12.0µg/m^3.

- In the last ten years, the rural concentration of PM_{10} has been no higher than 15µg/m^3 and the urban concentration has been less than 28µg/m^3.

- All the readings in the last 10 years have been well below the 40µg/m^3 level that has been set as the UK Air Quality objective for the protection of human health for PM_{10}.

Air Quality Trends

Figure 2.3 Average number of days per year of moderate or worse air quality, 1999 – 2008

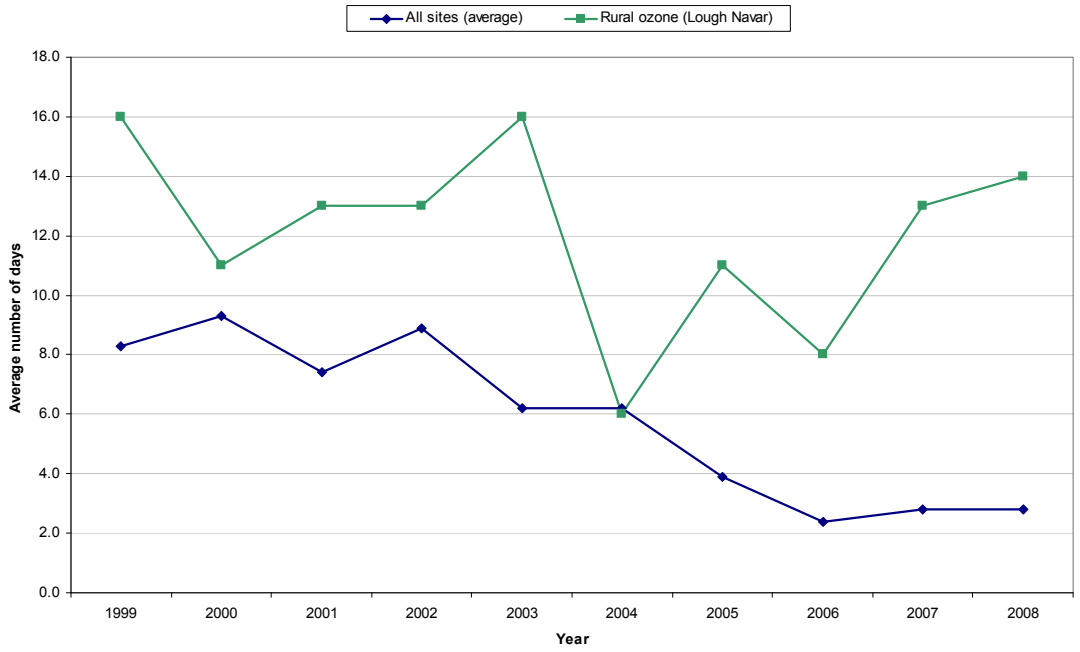


Table 2.3 Average number of days per year of moderate or worse air quality, 1999 – 2008

								Unit: Average number of days		
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
All sites (average)	8.3	9.3	7.4	8.9	6.2	6.2	3.9	2.4	2.8	2.8
Rural ozone (Lough Navar)	16.0	11.0	13.0	13.0	16.0	6.0	11.0	8.0	13.0	14.0
Source: AEA Technology										

- The average number of days of moderate or worse air quality in 2008 was 2.8 days across all sites, and 14 days at the Lough Navar rural background site.

- The average number of days of moderate or worse air quality across all sites in Northern Ireland has decreased in the last ten years from 8.3 days in 1999 to 2.8 days in 2008.

- In general, there has been a long term decline in the average number of air pollution days in Northern Ireland. This is largely because of a reduction in emissions of particles and sulphur dioxide, but deviations from this trend may be seen in certain years. For example in 2003 it was due to particular weather characteristics.

Ground Level Ozone

Figure 2.4 Urban and rural annual ozone exceedences, 1999 – 2008

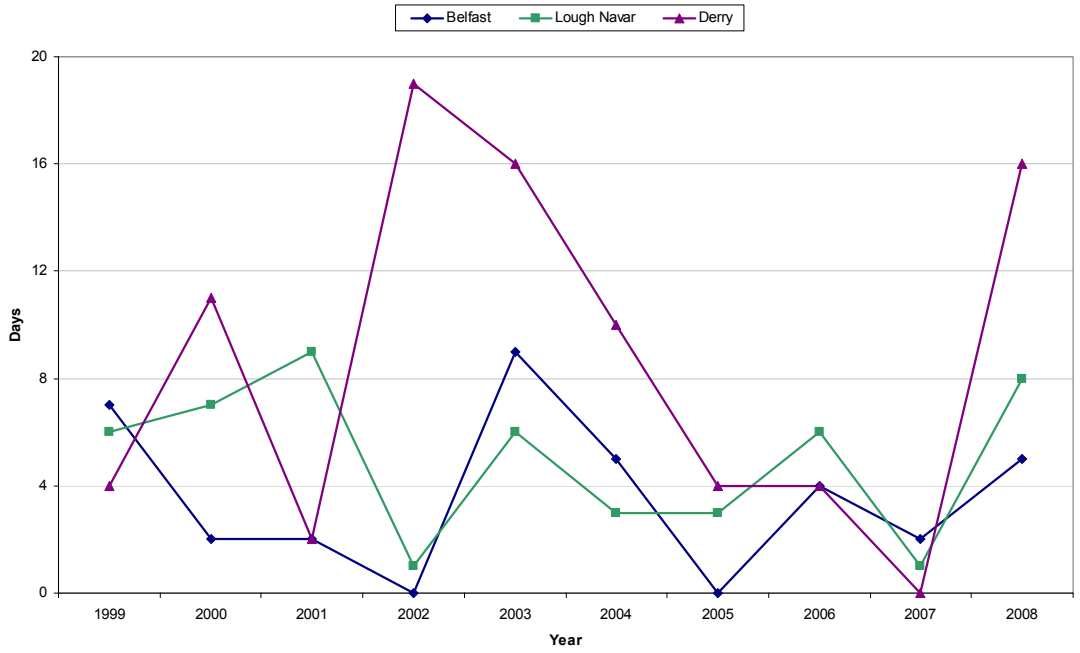


Table 2.4 Urban and rural annual ozone exceedences, 1999 – 2008

									Unit: Days	
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Belfast	7	2	2	0	9	5	0	4	2	5
Lough Navar	6	7	9	1	6	3	3	6	1	8
Derry	4	11	2	19	16	10	4	4	0	16
Source: AEA Technology										

- Ozone is monitored using automatic sites at Belfast, Londonderry and Lough Navar.
- The National Air Quality Strategy sets an objective for an eight hour mean of 100µg/m^3 ozone not to be exceeded more than 10 times per year.
- Unlike some other pollutants, levels of ozone in Northern Ireland do not appear to be decreasing, but remain variable from year to year, depending on weather conditions. Therefore, ozone exceedences remain a possibility.
- The objective has been exceeded in Derry in five of the last ten years.

Ammonia

Figure 2.5 Annual mean ammonia emissions from agriculture, 1999 – 2008

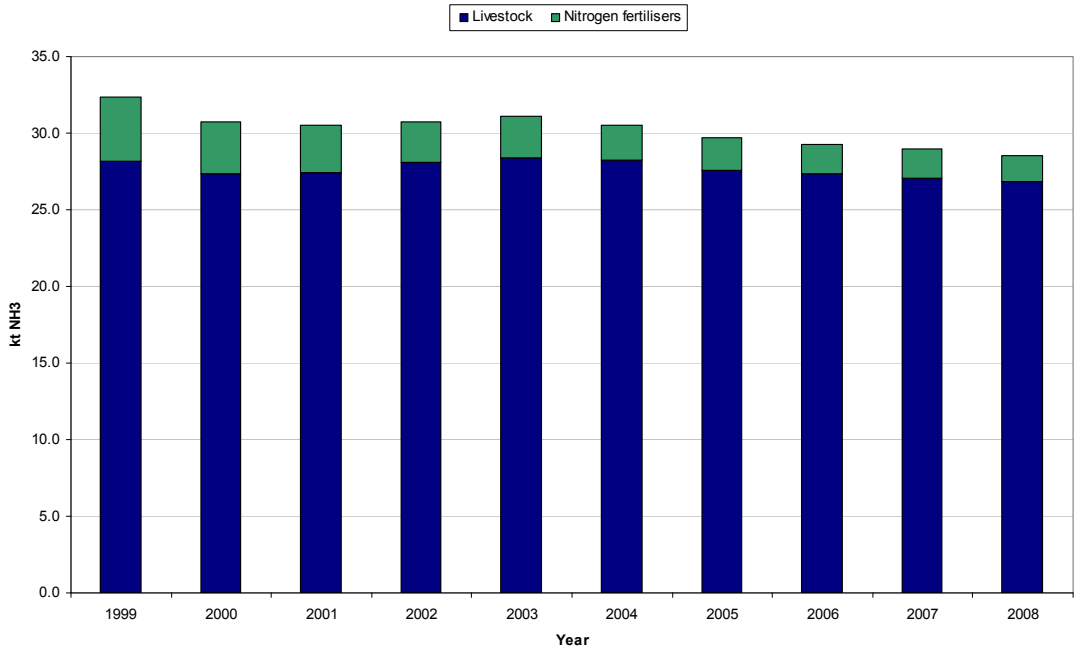


Table 2.5 Annual mean ammonia emissions from agriculture, 1999 – 2008

									Unit: kt NH_3	
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Livestock	28.2	27.4	27.4	28.1	28.4	28.2	27.6	27.4	27.1	26.8
Nitrogen fertilisers	4.2	3.3	3.1	2.7	2.7	2.3	2.1	1.9	1.9	1.7
Total agriculture	**32.4**	**30.7**	**30.5**	**30.7**	**31.1**	**30.5**	**29.7**	**29.3**	**28.9**	**28.6**
Source: North Wyke Research										

- Ammonia is an air pollutant mainly associated with agricultural practices.
- Estimates of total ammonia emissions from agriculture are based on numbers of cattle, sheep, pigs, poultry, horses, goats, deer and the use of fertilisers.
- Ammonia emissions from agriculture have decreased slightly in the last 10 years, with a 4kt decrease since 1999. This equates to a 12% decrease in that time period.
- Of the ammonia emissions from agriculture in 2008, 94% is derived from livestock, and only 6% from the application of fertilisers containing nitrogen.

Greenhouse Gas Emissions

Figure 2.6 Total greenhouse gas emissions, 1998 – 2007

Table 2.6 Total greenhouse gas emissions, 1990 – 2007

										Units: kt CO_2 equivalent		
	1990	**1995**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Total GHG emissions	24,885	24,473	23,950	24,091	23,607	23,880	21,899	21,893	21,670	22,500	23,142	21,776
Source: AEA Technology												

- Greenhouse gas emissions for England, Scotland, Wales and Northern Ireland are published annually, detailing estimates of greenhouse gas emissions since 1990. The estimates are consistent with the United Nations Framework Convention on Climate Change reporting guidelines.

- In 2007, Northern Irelands total greenhouse gas emissions accounted for 3.4% of the UK total.

- Since 1990, Northern Ireland's total greenhouse gas emissions have decreased by 12.6%. This is less than the reduction seen for the UK as a whole, which has seen a decrease of 18.4% on 1990 levels.

- In January 2008, OFMDFM published the 2008 - 2011 Programme for Government which set a target for a 25% decrease in Northern Irelands total greenhouse gas emissions by 2025.

Greenhouse Gas Emissions

Figure 2.7 Total greenhouse gas emissions by sector, 1990 & 2007

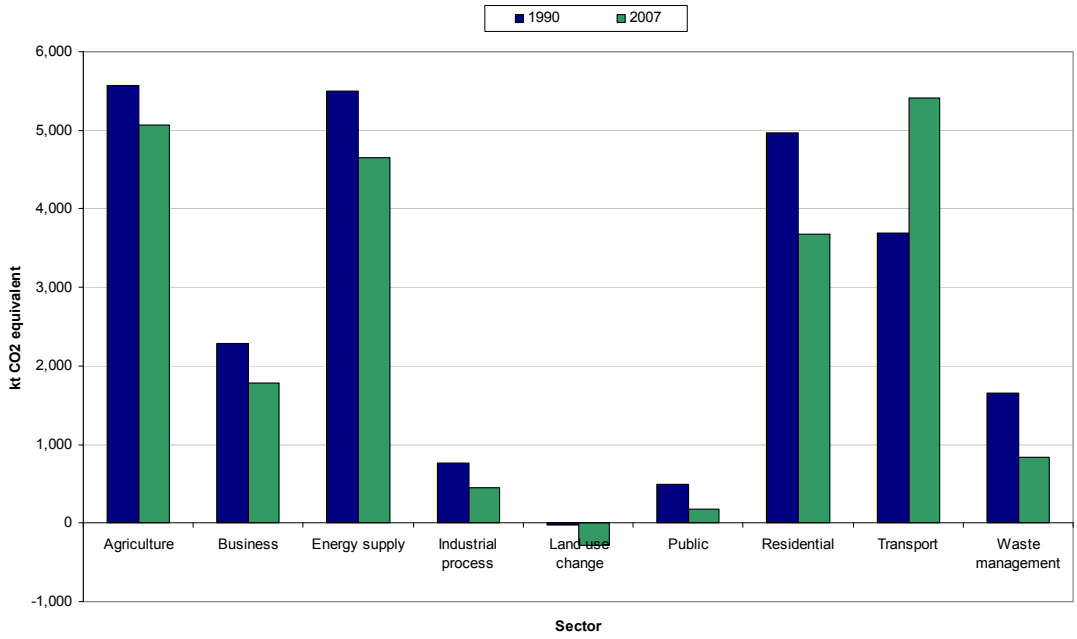


Table 2.7 Total greenhouse gas emissions by sector, 1990 & 2007

									Units: kt CO_2 equivalent
	Agriculture	**Business**	**Energy supply**	**Industrial process**	**Land use change**	**Public**	**Residential**	**Transport**	**Waste management**
1990	5,574	2,289	5,493	761	-28	490	4,967	3,692	1,647
2007	5,068	1,782	4,658	450	-285	178	3,677	5,413	835
Source: AEA Technology									

- Transport, agriculture and energy supply were the 3 main contributors to greenhouse gas emissions in Northern Ireland in 2007, contributing 70% of Northern Ireland's total greenhouse gas emissions.
- In 1990, agriculture, energy supply and residential combustion were the 3 main contributors to greenhouse gas emissions in Northern Ireland, contributing 64% of Northern Ireland's total greenhouse gas emissions, with a lesser contribution from the transport sector (15%).
- Most sectors have shown a decrease on 1990 levels, with the exception of transport. In 1990, transport accounted for 3,692kt CO_2 equivalent. By 2007, this figure was 5,413kt CO_2 equivalent, an increase of 47%

Carbon Dioxide Emissions

Figure 2.8 Carbon dioxide (CO_2) emissions by sector, 1990 & 2007

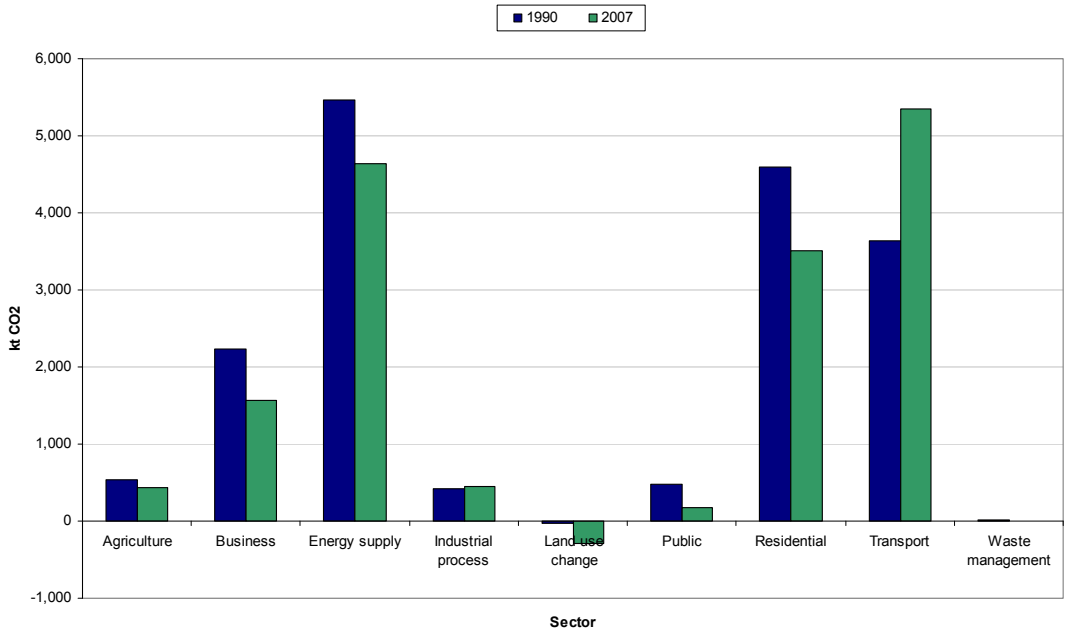


Table 2.8 Carbon dioxide (CO_2) emissions by sector, 1990 & 2007

									Units: kt CO_2
	Agriculture	**Business**	**Energy supply**	**Industrial process**	**Land use change**	**Public**	**Residential**	**Transport**	**Waste management**
1990	543	2,233	5,463	416	-30	485	4,597	3,637	8
2007	431	1,564	4,640	450	-286	177	3,509	5,351	6
Source: AEA Technology									

- In 2007, Northern Ireland emissions of CO_2 amounted to 15,842kt, a decrease of 8.7% on 1990 emissions. The Sustainable Development strategy for Northern Ireland gives a target to reduce CO_2 by 30% below 1990 levels by 2025.

- Energy supply and transport were the most significant contributors to CO_2 emissions, being responsible for 63% of all the CO_2 produced in Northern Ireland in 2007.

- Northern Ireland CO_2 emissions in 2007 represented 2.9% of UK CO_2 emissions, the same as the proportion in 1990.

- The CO_2 reduction achieved in the residential sector could be attributed to the increasing numbers of households on the natural gas network and improvements in home energy efficiency, such as double glazing, cavity wall insulation and roof insulation.

Energy

Figure 2.9 Percentage of electricity produced from indigenous renewable sources, 2000/01 - 2008/09

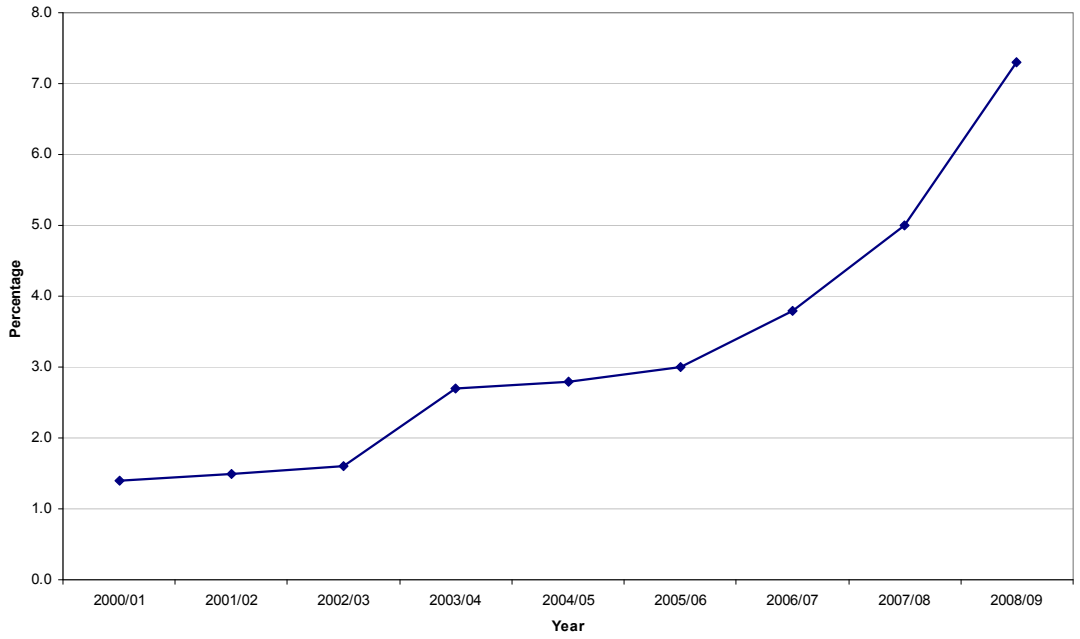


Table 2.9 Percentage of electricity produced from indigenous renewable sources, 2000/01 - 2008/09

	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Total renewables (excluding imports) (MWh)	118	128	136	233	249	275	345	441	596
Total renewables as a % of total consumption	1.4	1.5	1.6	2.7	2.8	3.0	3.8	5.0	7.3
Source: DETI									

- The Northern Ireland Renewables Obligation, published in October 2004, sets a target that by 2012, 12% of all electricity consumed in Northern Ireland is generated from indigenous renewable sources, for example wind farms.

- In 2008/09, 596 MWh of electricity in Northern Ireland was produced from renewable sources. This was equivalent to 7.3% of the total electricity consumption in that period.

- There has been a sizable increase in the amount of electricity produced from renewable sources since 2000/01, when only 118MWh (1.4% of total electricity consumed) was renewable.

Environmental Installations

Figure 2.10 Planning applications for environmental installations, 2002/03 – 2008/09

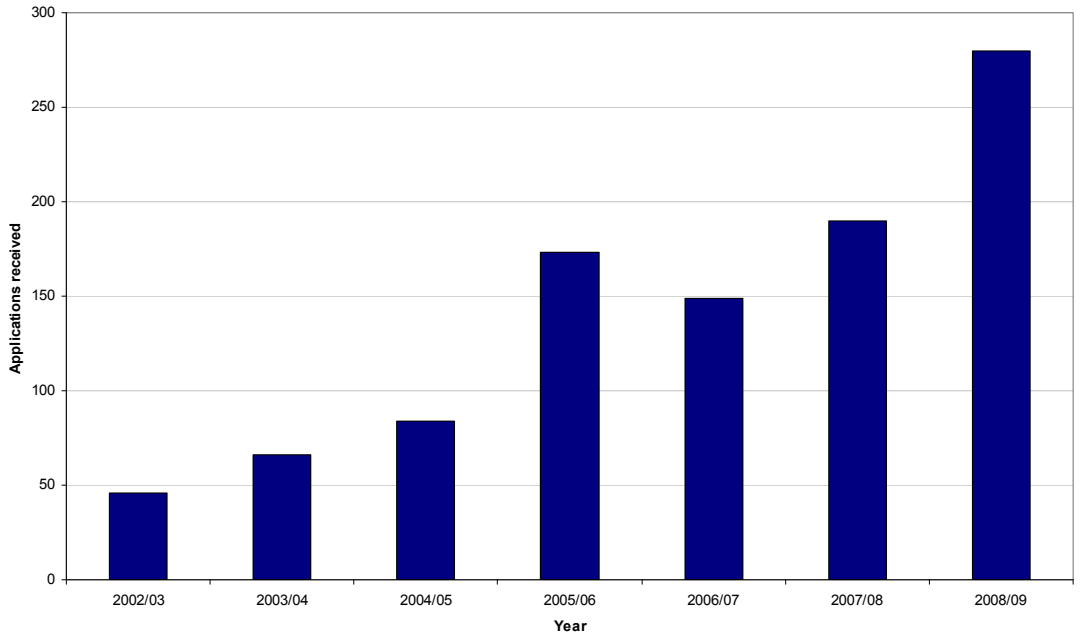


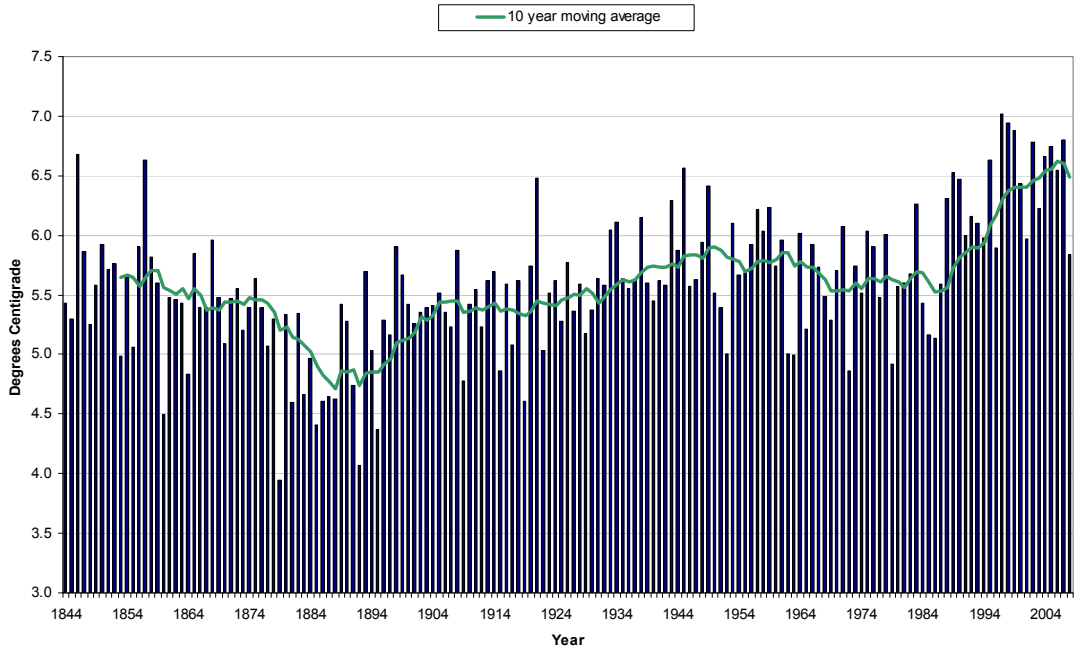
Table 2.10 Planning applications for environmental installations, 2002/03 – 2008/09

	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Received	46	66	84	173	149	190	280
Decided	33	32	35	89	93	218	299
Approved	32	31	35	88	87	210	281
Percentage approved	97	97	100	99	94	96	94
Source: Planning Service							

- Planning Service monitor the number of applications for environmental installations. These include wind turbines, solar water heating panels, wood pelletising plants and solar panels.
- There has been a marked increase in the number of applications received in the last 7 years.
- In 2002/03, Planning Service received 46 applications for such installations.
- In 2008/09, 280 applications were received, more than six times as many applications as were received in 2002/03.

Climate Change

Figure 2.11 Mean annual minimum temperature, 1844 – 2008

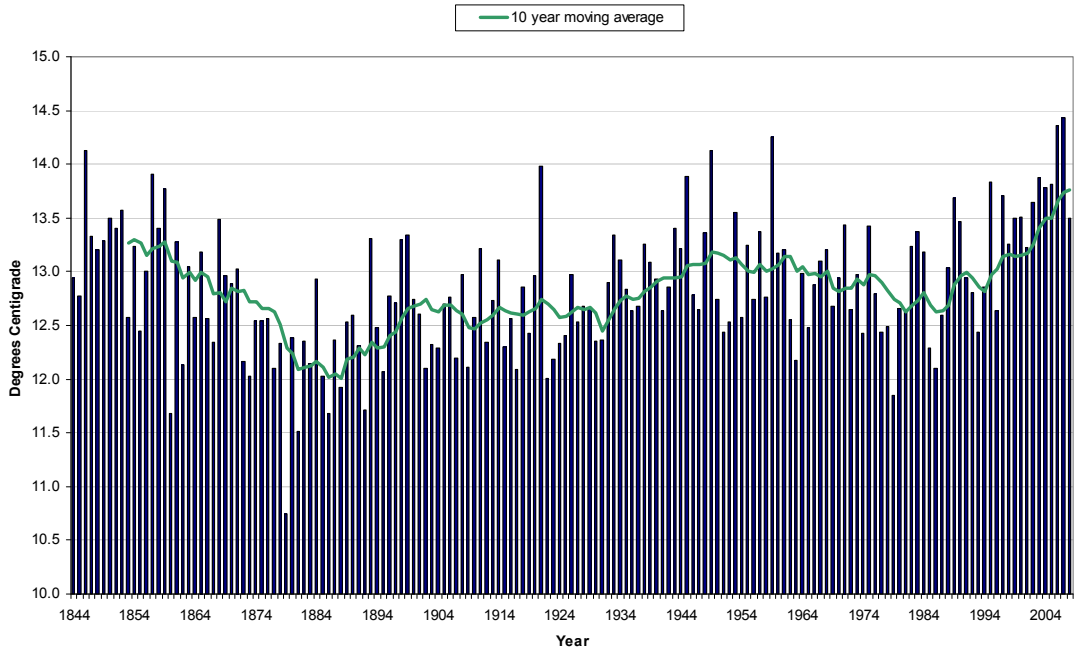


Source: Armagh Observatory

- The mean annual minimum temperature for Northern Ireland has been calculated from the Armagh Observatory temperature records.
- The 10 year moving average trend line shows that the annual minimum temperature reached a low towards the end of the 19th century, and has been steadily increasing since.
- Since 1990, the 10 year moving average mean annual minimum temperature has risen to its highest levels since the temperature records began.
- 1997 had the highest mean annual minimum temperature recorded in the period up to 2008 (7.02°C).
- The lowest mean annual minimum temperature (3.95°C) recorded in the period up to 2008 was recorded in 1879.

Climate Change

Figure 2.12 Mean annual maximum temperature, 1844 – 2008

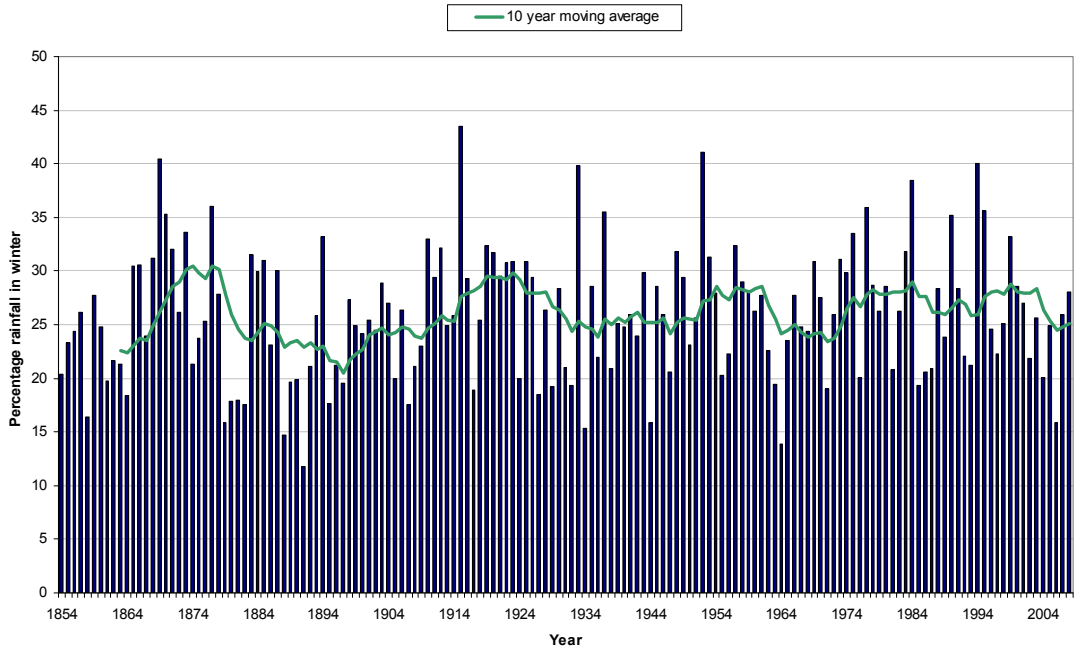


Source: Armagh Observatory

- The mean annual maximum temperature for Northern Ireland has been calculated from the Armagh Observatory temperature records.
- The 10 year moving average trend line shows that the annual maximum temperature reached a low towards the end of the 19th century, and has been steadily increasing ever since.
- In the last 10 years, the average annual maximum temperature has continued to slowly increase..
- 2007 had the highest mean annual maximum temperature recorded in the period up to 2008 (14.44°C).
- The lowest mean annual maximum temperature (10.74°C) in the period up to 2008 was recorded in 1879.

Climate Change

Figure 2.13 Percentage annual winter rainfall, 1854 – 2008



Source: Armagh Observatory

- Rainfall records are also kept at Armagh Observatory. The amount of rainfall observed in winter (December to February) is calculated as a percentage of annual rainfall (December to November).

- The 10 year moving average for the percentage of annual rainfall in winter shows only a slightly evident trend towards a higher percentage of mean annual rainfall falling in the winter months.

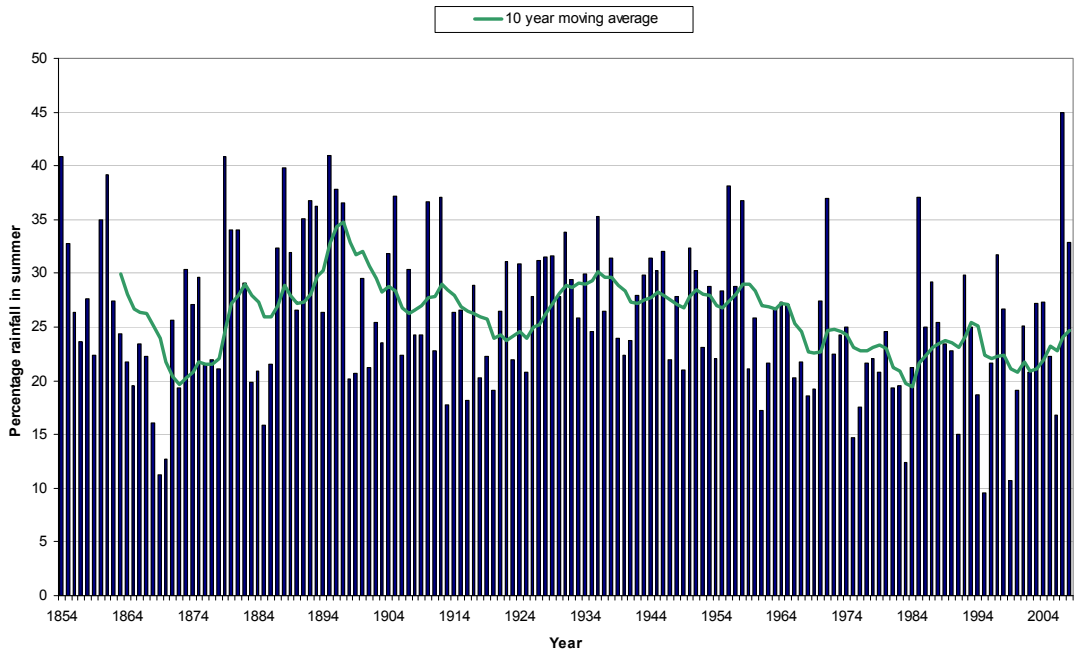
- In the last 10 years the average winter rainfall percentage has fallen from 29% to 25%.

- The wettest winter on record was 1915, when 43.5% of the year's rainfall fell in the three winter months.

- The lowest level recorded was in 1891, when just 12% of the annual rainfall fell between December and February.

Climate Change

Figure 2.14 Percentage annual summer rainfall, 1854 – 2008



Source: Armagh Observatory

- Rainfall records are also kept at Armagh Observatory. The amount of rainfall observed in summer (June to August) is calculated as a percentage of annual rainfall (December to November).

- The 10 year moving average for the percentage of annual rainfall in summer shows only a slightly evident trend towards a lower percentage of mean annual rainfall falling in the summer months.

- In the last 10 years the average summer rainfall percentage has increased from 21% to 25%.

- The highest level recorded until 2008 was in 2007, when 45% of the year's rainfall fell in the three summer months.

- The driest summer on record was 1995, when less than 10% of the annual rainfall fell between June and August.

3. Water

Water is an essential natural resource and plays a vital role in maintaining biodiversity, our health and social welfare and our economic development. Our rivers, lakes, estuaries, seas and groundwater provide water to sustain many of our core social and economic activities, and also provide drinking water for our population. This chapter will report on the condition of Northern Ireland's inland waters, and on the levels of compliance with waste water standards and our drinking water standards. Indicators on the state of the marine environment are covered in Chapter 4.

There have been a number of changes in the indicators included in this chapter from last year's report. These mainly are to do with the change in river and lake quality monitoring. The Water Framework Directive uses a different classification system than that which was used previously, and this does not allow for comparison between years, therefore the biological river quality, chemical river quality and lake quality indicators now only report one year's worth of monitoring data. These indicators will be developed for trend analysis over the coming years. Also, the 'Eutrophication in Rivers' indicator that was included in the 2009 report has been removed, as soluble reactive phosphorus is one of the parameters included in the chemical river quality indicator. One additional indicator has been included, and that presents the number of water pollution incidents each year, broken down by their severity.

There are over 15,000km of rivers and streams in Northern Ireland, of which approximately one third is monitored annually. Monitoring is carried out routinely against national standards for the Water Framework Directive (WFD). The majority (58%) of monitored river waterbodies are of at least a good chemical standard (Class B and above), although biological standard is lower (41%). The level of compliance for rivers designated as salmonid under the EC Freshwater Fish Directive has increased in recent years, whereas the level has decreased for the relatively small length of cyprinid designated rivers.

Lakes are a significant source of drinking water supplies. Lough Neagh and Upper and Lower Lough Erne make up over 90% of the total hectarage of lakes greater than 50 hectares in Northern Ireland. There are 27 lakes currently monitored in Northern Ireland, and those lakes perform well on chlorophyll and dissolved oxygen standards, but not so well on phosphorus standards.

Groundwater is currently of a high quality, with less than 2% of monitoring sites having an annual mean concentration of less than 40mg NO_3/l. However, due to a major review of the monitoring network, it is not possible to draw comparisons with groundwater quality figures from previous years.

Effluent discharges to our water environment can affect its quality and come from many different sources such as commercial and industrial premises, wastewater and water treatment works and private dwellings. These discharges are controlled by the Department of the Environment through the granting of consents and permits under the Water (NI) Order 1999 and the Pollution Prevention and Control Regulations (NI) 2003. Industrial discharge quality and water utility discharge quality continue to improve with both measures at their highest level since the turn of the century. Drinking water quality is also at the highest level recorded since 2004.

Water pollution incidents are investigated by, or on behalf of, NIEA. In 2008, 2,244 incidents were reported to NIEA, of which 1,237 were substantiated as having an impact on the water quality of the receiving watercourse. Of these 20% were considered to be of high or medium severity.

Chemical River Quality

Figure 3.1 Water Framework Directive (WFD) chemical classification (% river waterbodies), 2008

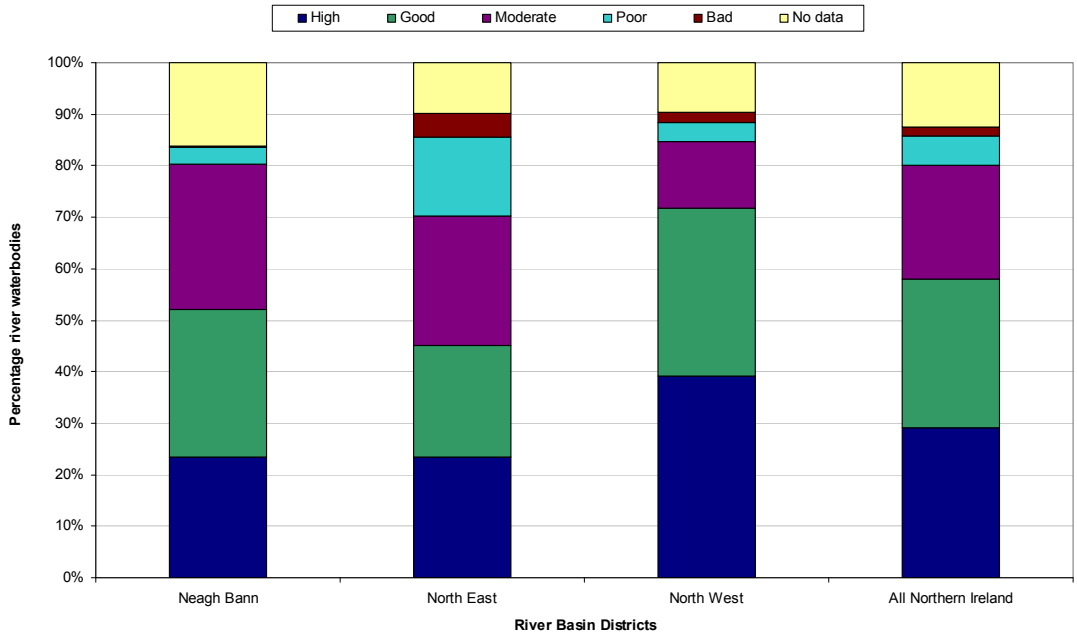


Table 3.1 Water Framework Directive (WFD) chemical classification (% river waterbodies), 2008

								Unit: River waterbodies
	Neagh Bann		North East		North West		All Northern Ireland	
	rwbs	% rwbs	rwbs	% rwbs	rwbs	% rwbs	rwbs	% rwbs
High	60	23.5	26	23.4	82	39.2	168	29.2
Good	73	28.6	24	21.7	68	32.6	165	28.7
Moderate	72	28.2	28	25.2	27	12.9	127	22.1
Poor	8	3.2	17	15.3	8	3.8	33	5.7
Bad	1	0.4	5	4.5	4	1.9	10	1.8
No data	41	16.1	11	9.9	20	9.6	72	12.5
Source: NIEA								

- The river waterbody classification has been produced using the results from dissolved oxygen, soluble reactive phosphorus, pH and ammonia on a three year rolling sampling period to assign status of river quality in one of five classes from High through to Bad.
- WFD requires NIEA to protect the status of waterbodies from deterioration and, where necessary and practicable, to restore waterbodies to good status
- The environmental objectives established in the river basin plan set the water status to be achieved for surface waterbodies for each six year planning cycle starting from 2009.
- A unit of area, a ‘waterbody’ is now the classification unit rather than discrete stretches of individual rivers used in previous classification systems such as the General Quality Assessment (GQA).
- In 2008, 58% of river waterbodies were classified as ‘High’ or ‘Good’.

Chemical River Quality

Figure 3.2 Freshwater Fish Directive compliance failure summary, 1999 – 2008

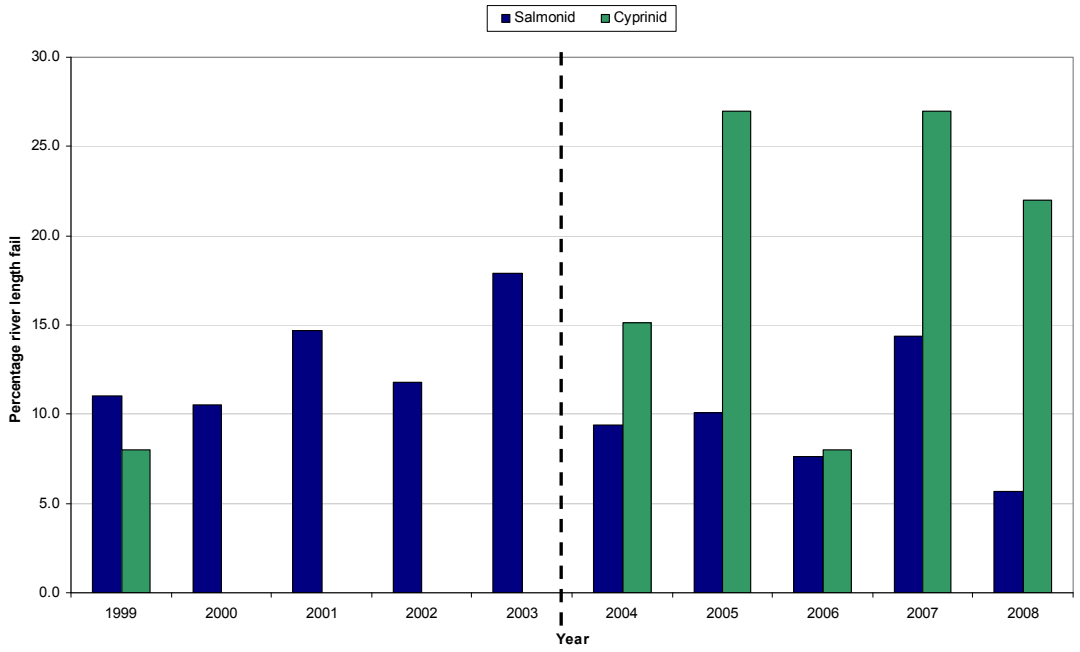


Table 3.2 Freshwater Fish Directive compliance failure summary, 1999 – 2008

								Unit: Percentage river length fail		
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Salmonid	11.0	10.5	14.7	11.8	17.9	9.4	10.1	7.6	14.4	5.7
Cyprinid	8.0	0.0	0.0	0.0	0.0	15.1	27.0	8.0	27.0	22.0
Source: NIEA										

- The Freshwater Fish Directive requires the designation of waters needing protection or improvement in order to support fish life. They are divided into two categories: suitable for salmonids (salmon & trout) and suitable for cyprinids (coarse fish).

- The length of designated rivers in Northern Ireland increased from almost 1,200km in 2003 to just less than 4,300km in 2004. This is made up of 4,154km of salmonid rivers and 126km of cyprinid. These rivers are monitored and compliance is measured against water quality standards set by the Directive.

- The majority of cyprinid rivers were re-designated as salmonid at the start of 2004 and around 100km of new river lengths were designated as cyprinid. This led to an increase in the percentage failure recorded for cyprinids (although the overall river length of cyprinid designations is low).

- In 2008, 6% of salmonid river length and 22% of cyprinid river length failed to meet the standards set by the Directive.

Biological River Quality

Figure 3.3 Water Framework Directive (WFD) biological classification (% river waterbodies), 2008

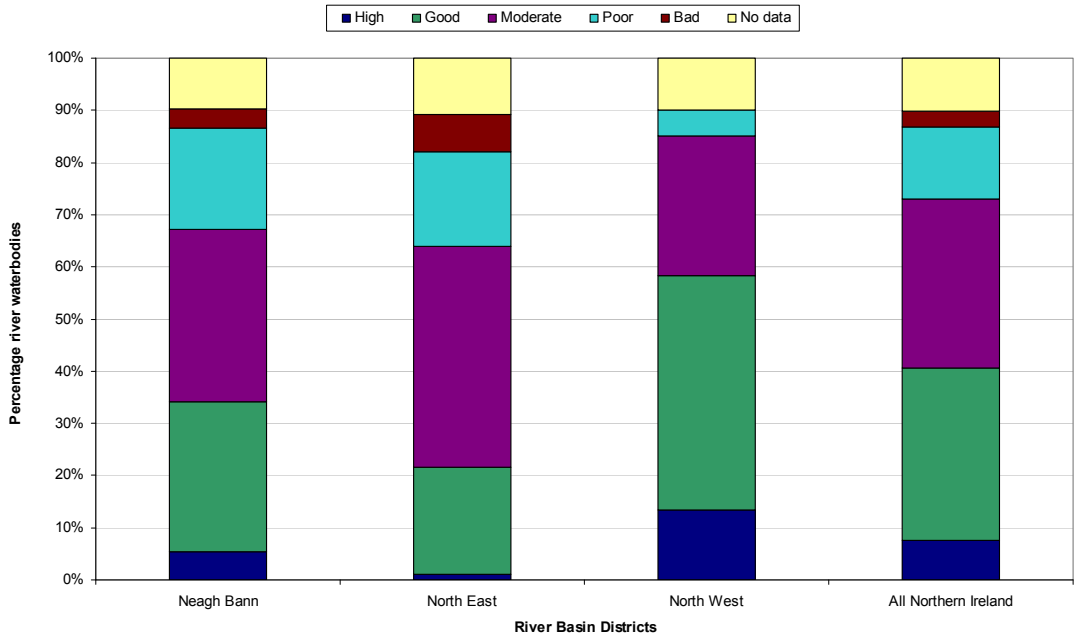


Table 3.3 Water Framework Directive (WFD) biological classification (% river waterbodies), 2008

								Unit: River waterbodies
	Neagh Bann		North East		North West		All Northern Ireland	
	rwbs	% rwbs	rwbs	% rwbs	rwbs	% rwbs	rwbs	% rwbs
High	14	5.5	1	1.0	28	13.4	43	7.5
Good	73	28.6	23	20.7	94	45.0	190	33.0
Moderate	84	33.0	47	42.3	56	26.8	187	32.5
Poor	50	19.6	20	18.0	10	4.8	80	13.9
Bad	9	3.5	8	7.2	0	0.0	17	3.0
No data	25	9.8	12	10.8	21	10.0	58	10.1
Source: NIEA								

- Macroinvertebrate monitoring for WFD classification involves determination of the diversity of macroinvertebrates (such as insect larvae, molluscs and shrimps) that live in the river, to assign status of river quality in one of five classes from High through to Bad.
- WFD requires NIEA to protect the status of waterbodies from deterioration and, where necessary and practicable, to restore waterbodies to good status.
- The environmental objectives established in the river basin plan set the water status to be achieved for surface waterbodies for each six year planning cycle starting from 2009.
- Macro-invertebrate monitoring is just one of the WFD biological quality elements that may be monitored in the river waterbody.
- In 2008, 41% of river waterbodies monitored were classified as ‘High’ or ‘Good’.

Lake Quality

Figure 3.4 Number of lakes in each WFD class based on annual mean figures (2006-2008) for total phosphorus, dissolved oxygen and chlorophyll

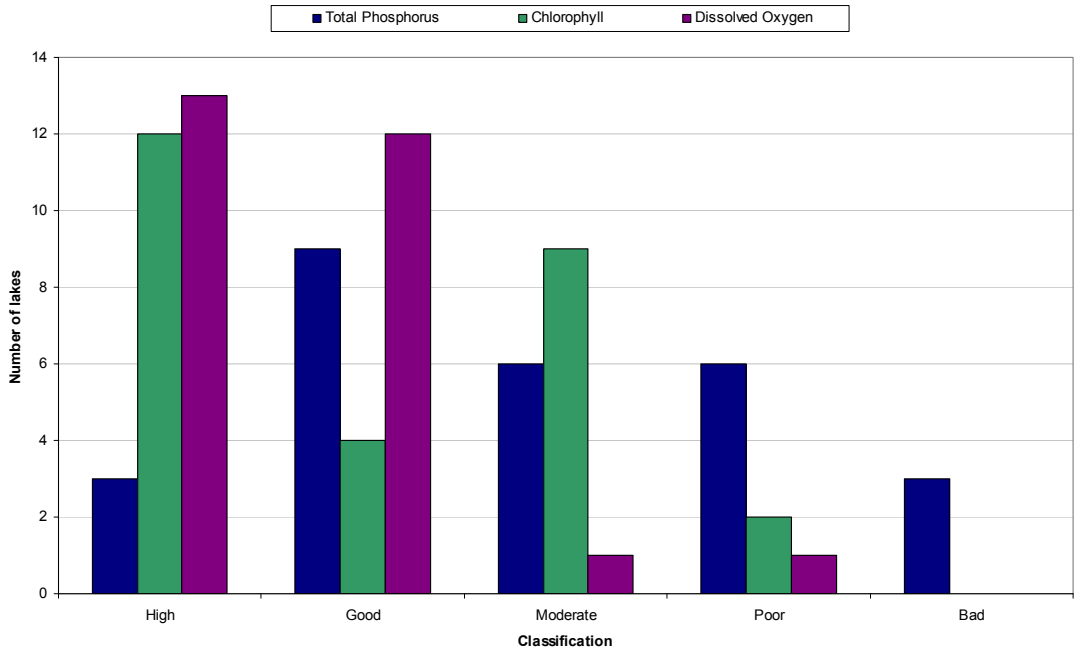


Table 3.4 Number of lakes in each WFD class based on annual mean figures (2006-2008) for Total Phosphorus, Dissolved oxygen and Chlorophyll

				Unit: Number of lakes	
	High	**Good**	**Moderate**	**Poor**	**Bad**
Total Phosphorus	3	9	6	6	3
Chlorphyll	12	4	9	2	0
Dissolved Oxygen	13	12	1	1	0
Source: NIEA					
Note: Results are based on the mean of 12 monthly samples					

- The WFD requires that lakes are classified as high, good, moderate, poor or bad, based on three parameters; total phosphorus, dissolved oxygen and chlorophyll. Each class describes how the ecology of the lake differs from what would be expected if the lake was in a natural unpolluted state.
- All of the Northern Ireland lakes of an area greater than 50 hectares and some smaller selected lakes are sampled each month for a range of physicochemical parameters.
- The data show that the majority of lakes have dissolved oxygen conditions of high or good quality. The same is true, to a slightly lesser extent, for chlorophyll.
- However, more than half the lakes surveyed had a total phosphorus class of moderate, poor or bad indicating excessive nutrient conditions including three lakes which are hyper eutrophic, i.e. excessive algae growth.

Groundwater Quality

Figure 3.5 Annual mean nitrate concentrations, 2000 – 2008

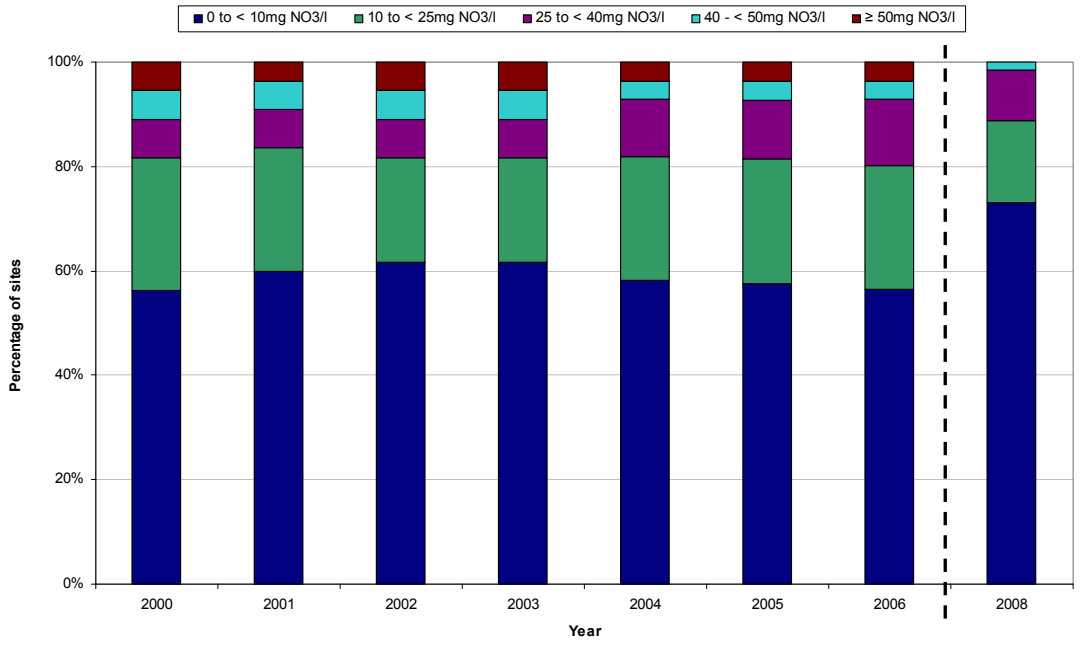


Table 3.5 Annual mean nitrate concentrations, 2000 – 2008

						Unit: Percentage of sites		
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2008**
0 to < 10mg NO_3/l	56.4	60.0	61.8	61.8	58.2	56.4	56.4	73.0
10 to < 25mg NO_3/l	25.5	23.6	20.0	20.0	23.6	23.6	23.6	15.9
25 to < 40mg NO_3/l	7.3	7.3	7.3	7.3	10.9	10.9	12.7	9.5
40 - < 50mg NO_3/l	5.5	5.5	5.5	5.5	3.6	3.6	3.6	1.6
≥ 50mg NO_3/l	5.5	3.6	5.5	5.5	3.6	3.6	3.6	0.0
Source: NIEA								

- Regional monitoring of nitrate concentrations in groundwater across Northern Ireland began in 2000. In the period of 2000 to 2006 approximately 90% of sites had an annual mean concentration of less than 40mg NO_3/l and approximately 81% less than 25mg NO_3/l.

- Regional monitoring re-commenced in 2008, after a major review of the network was undertaken. The review ensured that the groundwater monitoring network was fit-for-purpose for the requirements of the Water Framework Directive (2000/60/EC). The related Groundwater Daughter Directive (2006/118/EC) sets the groundwater quality standard at 50mg NO_3/l.

- Sixty-three boreholes and springs were monitored in 2008, 20 of which were part of the old network. In 2008 98% of sites had an annual mean concentration of less than 40mg NO_3/l and 89% less than 25mg NO_3/l.

Industrial Discharge Quality

Figure 3.6 Trends in annual private and trade discharge consent compliance (EA 95-percentile), 2000 - 2008

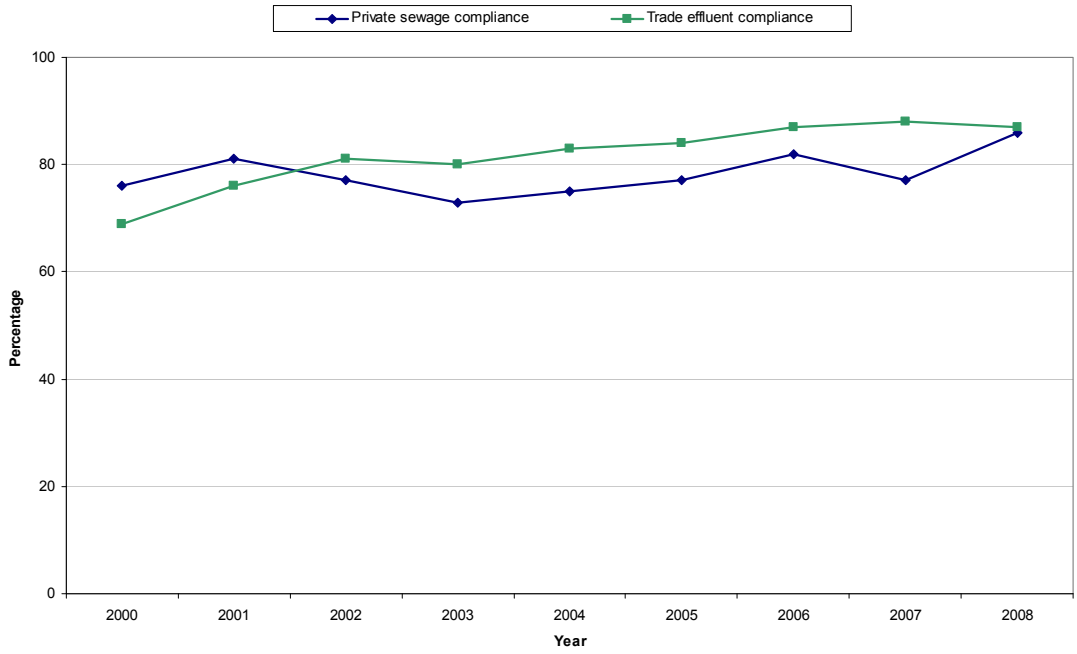


Table 3.6 Trends in annual private and trade discharge consent compliance (EA 95-percentile), 2000 – 2008

Unit: Percentage

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Private sewage compliance	76	81	77	73	75	77	82	77	86
Trade effluent compliance	69	76	81	80	83	84	87	88	87
Source: NIEA									

- The monitoring of effluent discharges gives an indication of levels of pollution to the water environment and improvements in controls.
- Numerical limits on Water Order consents for private sewage and trade discharges are set as absolute standards. However, compliance is assessed on a 95-percentile basis, i.e. a discharge must be within its consent conditions 95% of the time to comply.
- Compliance for private sewage reached it's highest level in 2008 (86%).
- There has been a steady increase from 69% in 2000 to 87% in 2008 for trade effluent compliance.

Water Utility Discharge Quality

Figure 3.7 Compliance of water utility discharges (95-percentile), 1999 – 2008

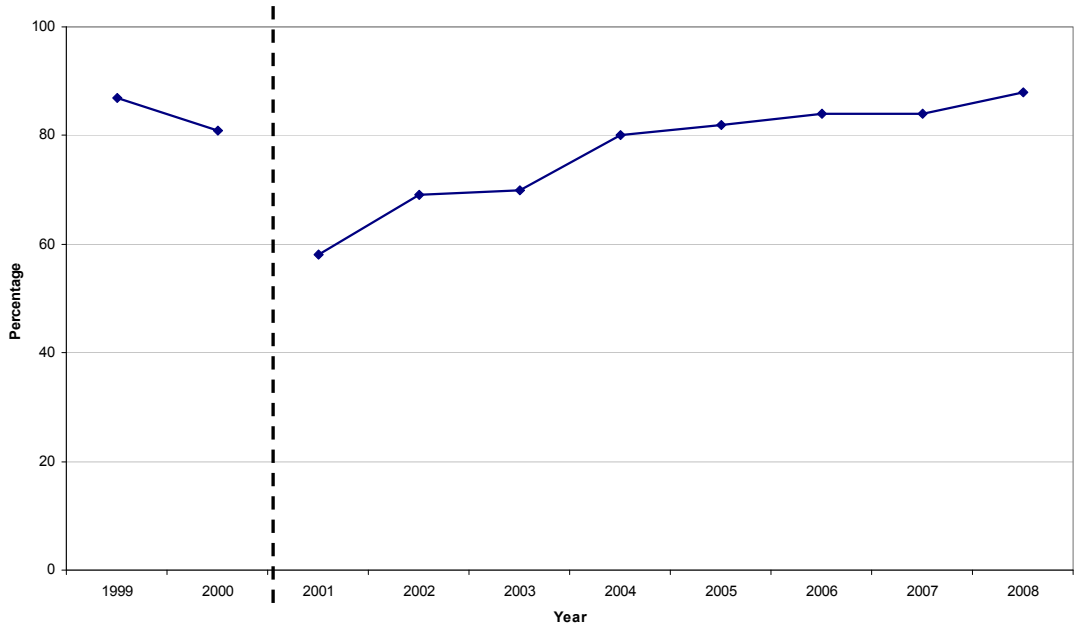


Table 3.7 Compliance of water utility discharges (95-percentile), 1999 - 2008

									Unit: Percentage	
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Overall compliance with WWTW discharge standards	87	81	58	69	70	80	82	84	84	88
Source: NIEA										

- NIEA monitors the compliance of Water Utility discharges from Waste Water Treatment Works (WWTW) and Water Treatment Works (WTW). Compliance assessment includes discharges from both Northern Ireland Water (NIW) and the Private Public Partnership schemes. Prior to April 2007, NIW was known as the Water Service and compliance was assessed against registered standards. On the 1 April 2007, NIW was for the first time required to have consents issued under The Water Order (NI) 1999 in respect of all discharges. These consent conditions take into account the requirements of the Urban Waste Water Treatment (UWWT) Regulations. Some WWTW have been identified as discharging to sensitive areas and their effluent will require more stringent treatment.

- Compliance levels fell to 58% in 2001. This decrease can be explained by an increase in the number of sites between 2000 and 2001. In 2000, there were 160 sites, but the following year there were 268. This was due to the addition of those works to the public register with population equivalent down to 250.

- Overall compliance with WWTW registered standards has since recovered, and the 2008 level of 88% is comparable to that in 1999 (87%).

Drinking Water Quality

Figure 3.8 Percentage mean zonal compliance failure with Northern Ireland water quality regulations drinking water standards, 2004 - 2008

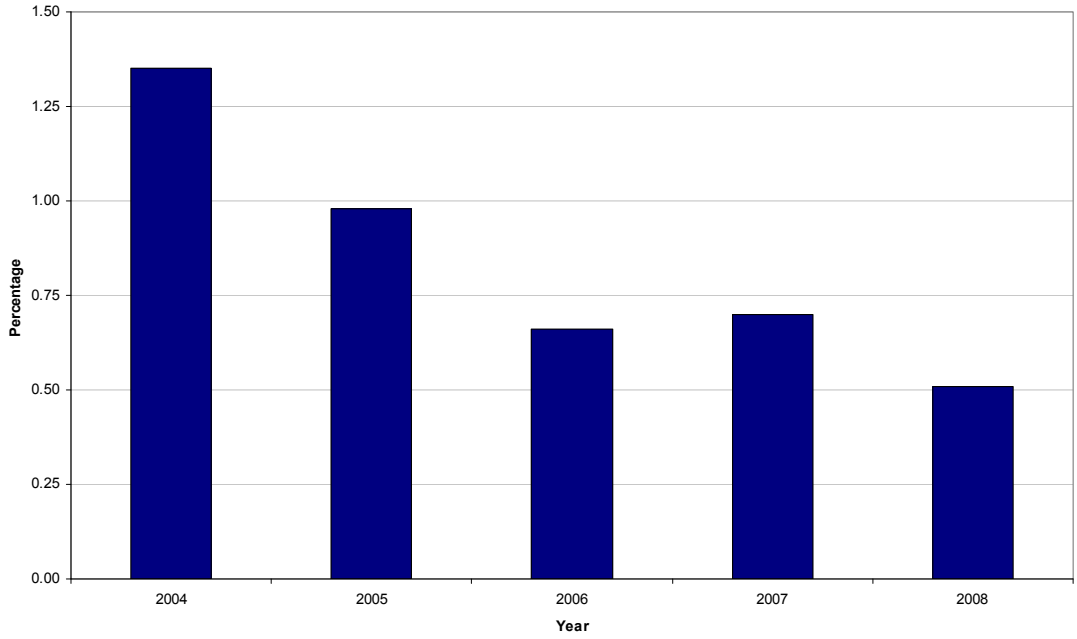


Table 3.8 Percentage mean zonal compliance failure with Northern Ireland water quality regulations drinking water standards, 2004 - 2008

				Unit: Percentage	
	2004	**2005**	**2006**	**2007**	**2008**
Mean zonal compliance	98.65	99.02	99.34	99.30	99.49
Mean zonal compliance failure	1.35	0.98	0.66	0.70	0.51
Source: NIEA					

- Drinking water quality at consumer taps is assessed using 'mean zonal compliance', an index which is calculated using 40 parameters from the public water supplies regulatory sampling programme undertaken by NI Water.

- The results for mean zonal compliance are based on upwards of 50,000 samples taken at consumers' taps across Northern Ireland throughout the year.

- In 2008, the mean zonal compliance for Northern Ireland was 99.49%, a significant improvement on the level in 2004 of 98.65%.

- Currently, 1,283 private water supplies are included in the regulatory sampling programme. In 2008, the overall compliance with the regulatory standards for private water supplies was 96.80%.

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Water Pollution Incidents

Figure 3.9 Severity of substantiated water pollution incidents, 2001 – 2008

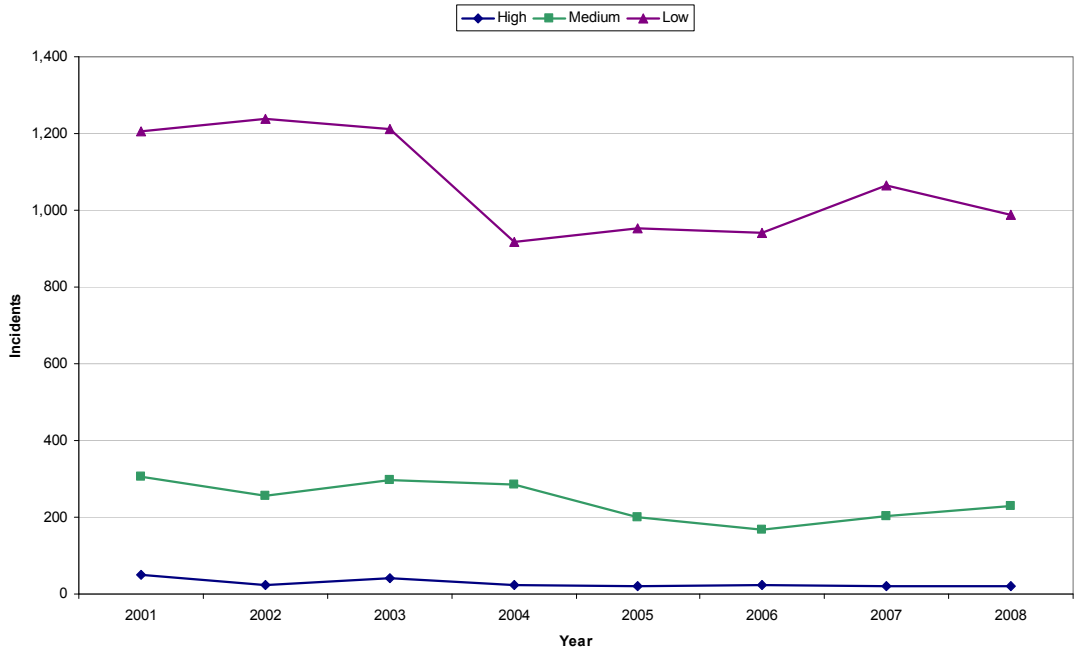


Figure 3.9 Severity of substantiated water pollution incidents, 2001 – 2008

							Unit: Incidents	
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
High	49	24	42	23	20	23	22	20
Medium	306	256	297	286	200	168	204	229
Low	1,206	1,237	1,213	918	954	942	1,066	988
Total	**1,561**	**1,517**	**1,552**	**1,227**	**1,174**	**1,133**	**1,292**	**1,237**
Source: NIEA								

- Water pollution incidents are investigated by, or on behalf of, NIEA. In 2008, 2,244 incidents were reported to NIEA, of which 1,237 were substantiated as having an impact on the water quality of the receiving watercourse.

- The total number of substantiated incidents has fallen from the levels recorded in 2001 – 2003. The number of substantiated incidents in 2008 is 21% less than the number recorded in 2001.

- Pollution incidents are then classified according to their severity. In 2008, 20% were classified as high or medium. This is an increase on the 2007 level of 17%.

4. Marine

The majority of Northern Ireland's 650km of coastline is protected for its special interest and a number of our coastal species and habitats are recognised as internationally important. The marine life in the seas surrounding Northern Ireland is rich and varied and includes marine mammals such as common seals, whales and dolphins, seabirds, waterfowl and other species that migrate here. Our coastline also includes productive and biologically diverse ecosystems, with features which serve as critical natural defences against storms, floods and erosion. This chapter looks at the quality of our estuarine and coastal water quality, fish stock levels and our marine survival rates.

There are two new indicators in this chapter, with the loss of one indicator. The new indicators are an overall measure of marine water quality, which is based on the Water Framework Directive (WFD) classification scheme, and a sea temperature indicator. In addition, the winter nutrient concentration indicator has changed as a result of the implementation of the WFD, and now reports on the level of dissolved inorganic nitrogen in all Northern Ireland's coastal waters, and not just the 5 sea loughs as previously reported. The indicator for the marine survival rates of salmon in the River Bush has been removed due to a lack of updated data.

Bathing water quality is measured against mandatory and guideline standards. In 2009 only two beaches (out of 24 monitored) in Northern Ireland failed to meet the mandatory standards, as stated by EC Bathing Water Directive, however less than half satisfied the guideline standards.

Dissolved inorganic nitrogen (nitrate, nitrite and ammonium (DIN)) is an important indicator of marine nutrient status, as nitrogen is the most important nutrient in limiting marine algal growth. Monitoring has shown that just over half of Northern Ireland's marine water bodies are classified as high or good in terms of their winter nutrient concentrations.

Overall status of marine water bodies is also measured, and this accounts for both the ecological and chemical status of each water body. Eight of the 27 marine water bodies around Northern Ireland's shores are classified as high or good.

Sea temperatures are subject to change throughout the year. During the autumn and winter months there is generally little difference between the surface and seabed temperatures, however between April – September there is a divergence between the two temperatures with the surface temperature moving above that of the seabed.

Bathing Water Quality

Figure 4.1 Bathing water compliance for microbial standards of EC Bathing Water Directive, 2000 - 2009

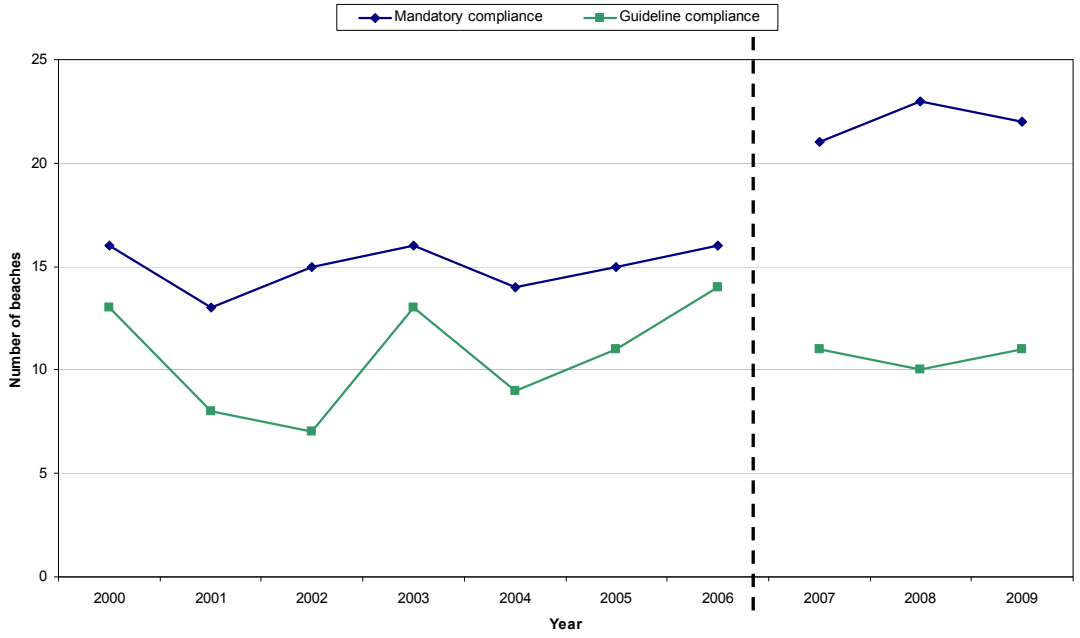


Table 4.1 Bathing water compliance for microbial standards of EC Bathing Water Directive, 2000 - 2009

								Unit: Number of beaches		
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Mandatory compliance	16	13	15	16	14	15	16	21	23	22
Guideline compliance	13	8	7	13	9	11	14	11	10	11
Source: NIEA										
Note: Up until 2006, there were 16 identified bathing waters in Northern Ireland. This increased to 23 in 2007 and to 24 in 2008.										

- The Bathing Waters Directive mandatory standard requires that 95% of samples collected throughout the bathing season must not exceed the limits set for total and faecal coliforms which are 10,000 and 2,000 colony forming units (cfu)/100ml respectively.

- To comply with guideline values, 80% of samples should not exceed 500 cfu/100ml for total coliforms and 100 cfu/100ml for faecal coliforms, and 90% of samples must not exceed 100 cfu/100ml for faecal streptococci.

- Up until 2006, there were 16 identified bathing waters in Northern Ireland. This increased to 23 in 2007 and to 24 in 2008.

- In 2009 two beaches (out of 24 monitored) in Northern Ireland failed to meet the mandatory standards, eleven achieved the higher guideline standard.

Winter Nutrient Concentrations

Figure 4.2 Water Framework Directive Winter Dissolved Inorganic Nitrogen (% water body area), 2008/09

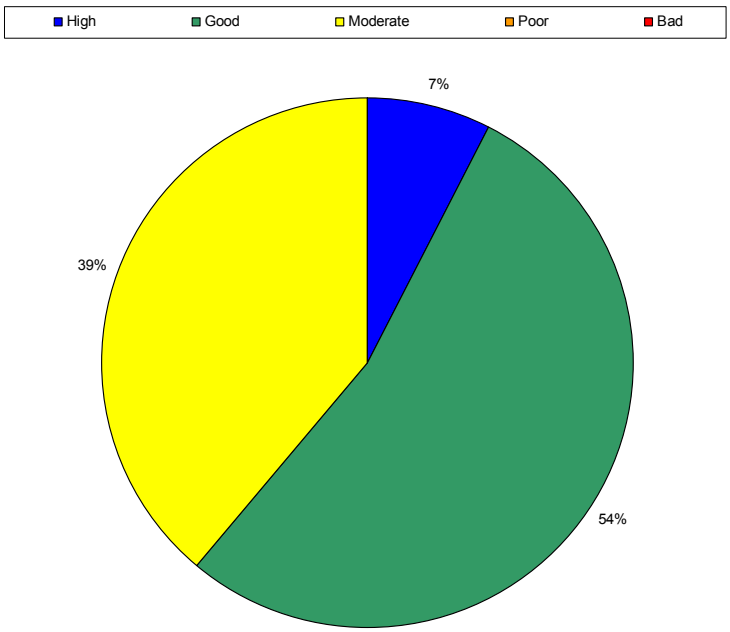


Table 4.2 Water Framework Directive Winter Dissolved Inorganic Nitrogen, 2008/09

	High	Good	Moderate	Poor	Bad
	<12	≥12 ≤18	>18 ≤30	>30 ≤40.5	>40.5
Water bodies	3	10	14	0	0
% water body area	7.4%	53.6%	39.0%	0.0%	0.0%
Source: NIEA					

- Dissolved inorganic nitrogen is one of the key environmental variables controlling the growth of phytoplankton in coastal waters. It is measured during the winter period, when algal activity is minimal and nutrient concentrations are most stable.

- Dissolved inorganic nitrogen is one element of ecological status which is measured for the EC Water Framework Directive (WFD).

- The WFD has a key aim of all waters achieving at least good ecological standard by 2015. Table 4.2 shows that 13 out of 27 coastal waters are at least of a good standard based on their winter nutrient concentration.

- A complete assessment of status incorporating both ecological and chemical status is also provided, and is covered in the next indicator.

Marine Water Quality

Figure 4.3 Water Framework Directive Overall Status (% water body area), 2008/09

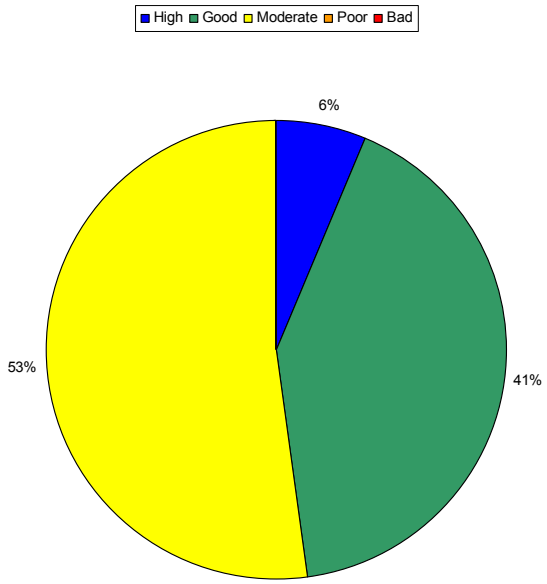


Table 4.3 Water Framework Directive Overall Status, 2008/09

	High	Good	Moderate	Poor	Bad
Water bodies	2	6	19	0	0
% water body area	6.4%	41.4%	52.2%	0.0%	0.0%
Source: NIEA					

- The Water Framework Directive requires NIEA to classify the 'surface water status' of Northern Irelands water bodies. Surface water status is determined by the lower of a water body's 'ecological status' and its 'chemical status'.

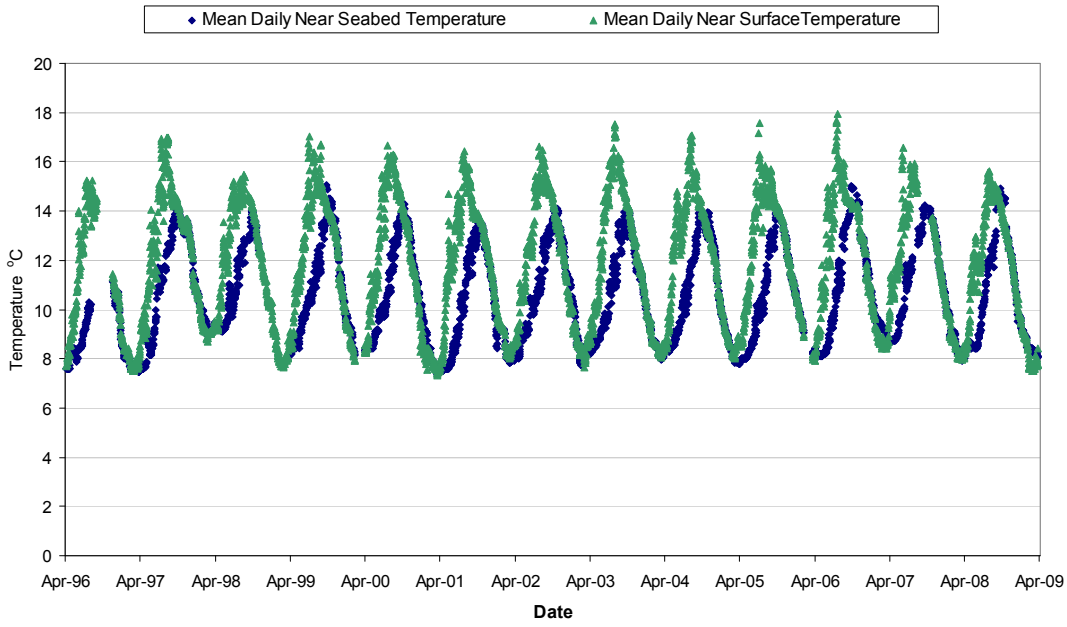
- There are five classes for ecological status; 'high', 'good', 'moderate', 'poor' and 'bad'. The Directive requires that the overall ecological status of a water body be determined by the results for the biological or physicochemical quality element with the worst class.

- Eight of the 27 marine water bodies in Northern Ireland are classified as high or good.

- The predominant determining parameters in Northern Ireland marine waters are primary and secondary indicators of eutrophication; including dissolved inorganic nitrogen (DIN) and dissolved oxygen (DO).

Sea Temperature

Figure 4.4 Daily sea temperature trends, April 1996 – March 2009



- Daily sea temperature levels are recorded every 3 hours and from these readings a daily mean is calculated.

- The temperature is recorded by two moored thermistors. One of the thermistors is located close to an anchor on the seabed at a depth of 100m, while the other is attached to the underside of a moored buoy. These moorings are permanent and share the same grid reference point.

- During the autumn and winter months there is generally little difference between the surface and seabed temperatures. Between April – September there is a divergence between the two temperatures with the surface temperature moving above that of the seabed.

- The highest recorded difference was in July 2005 and July 2006, when on occasions there was as much as a 7°C difference.

5. Land

Land and landscape management have the greatest visual impact on our environment and our appreciation of it. Whether the land is used for agriculture, housing or forestry its value is immense and perhaps most importantly, it is a limited resource. This chapter examines soil quality, forest and woodland plantings, the role of agri-environment schemes on our land, housing completions and designations of townscape and villagescape.

Soil quality in Northern Ireland decreased this year. In 2008/09, 39% of soils would be considered to be over-enriched with phosphorus compared to 21% in 2007/08.

Agri-environment schemes are schemes that attempt to manage our agricultural land in a more sustainable way. At the end of 2008, 443,000 hectares of land in Northern Ireland were under agri-environment scheme management.

Forests and woodlands provide important habitats, natural resources and diversity to landscapes. In Northern Ireland in 2008, there were almost 300 hectares of new plantings, the majority of which were broadleaf plantings.

The number of new dwellings dropped sharply in 2007/08, with housing completions in 2007/08 falling by 30% on 2006/07 figures. Housing completions in greenfield areas have increased since 2000/01, up from 1,182 completions in 2000/01 to 1,618 in 2007/08.

Soil Quality

Figure 5.1 Soil phosphorus (as Olsen-P) by P-index for managed grassland soils, 2004/05 – 2008/09

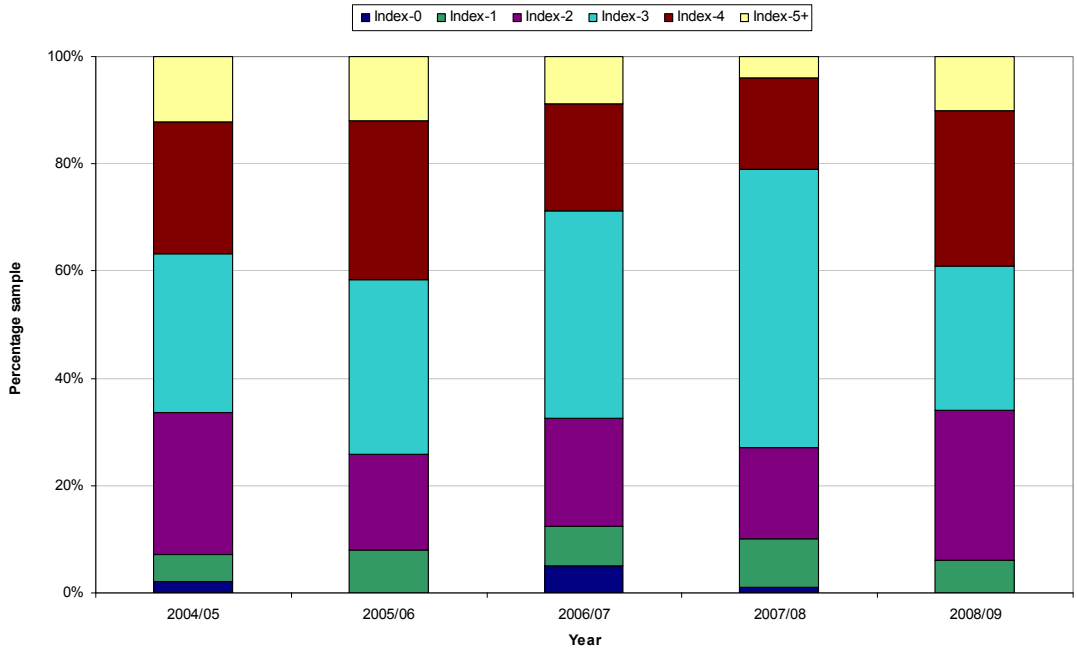


Table 5.1 Soil phosphorus (as Olsen-P) by P-index for managed grassland soils, 2004/05 – 2008/09

					Unit: Percentage sample	
	Index-0	**Index-1**	**Index-2**	**Index-3**	**Index-4**	**Index-5+**
	Low or deficient		**Sufficient**	**High**	**Excessive**	
2004/05	2.0	5.1	26.5	29.6	24.5	12.2
2005/06	0.0	7.9	17.8	32.7	29.7	11.9
2006/07	5.0	7.5	20.0	38.8	20.0	8.8
2007/08	1.0	9.0	17.0	52.0	17.0	4.0
2008/09	0.0	6.0	28.0	27.0	29.0	10.0
Source: AFBI						

- The winter 2008/09 sampling programme completed the first 5-yr cycle of AFBI's Representative Soil Sampling Scheme (RSSS) with sets of 100 managed grassland soils sampled at random each year.

- The 2008/09 RSSS data for soil-P (Olsen-P) are very similar to that for 2004/05. The trend of declining numbers of soils that were excessively enriched with phosphorus (above P-index 3) observed to 2007/08 was reversed in 2008/9 with 39% of soils falling into this category in 2008/09. This reversal may have been caused by the weather conditions and the subsequent lateness of the spreading season for slurry in 2008.

- The 2009/10 RSSS survey will resample the first batch of 100 soils (those from 2004/05) and this will indicate the true changes in soil-P that have taken place in the intervening 5 years.

Sustainable Land Management

Figure 5.2 Northern Ireland agri-environment schemes, area under agreements, 2000 – 2008

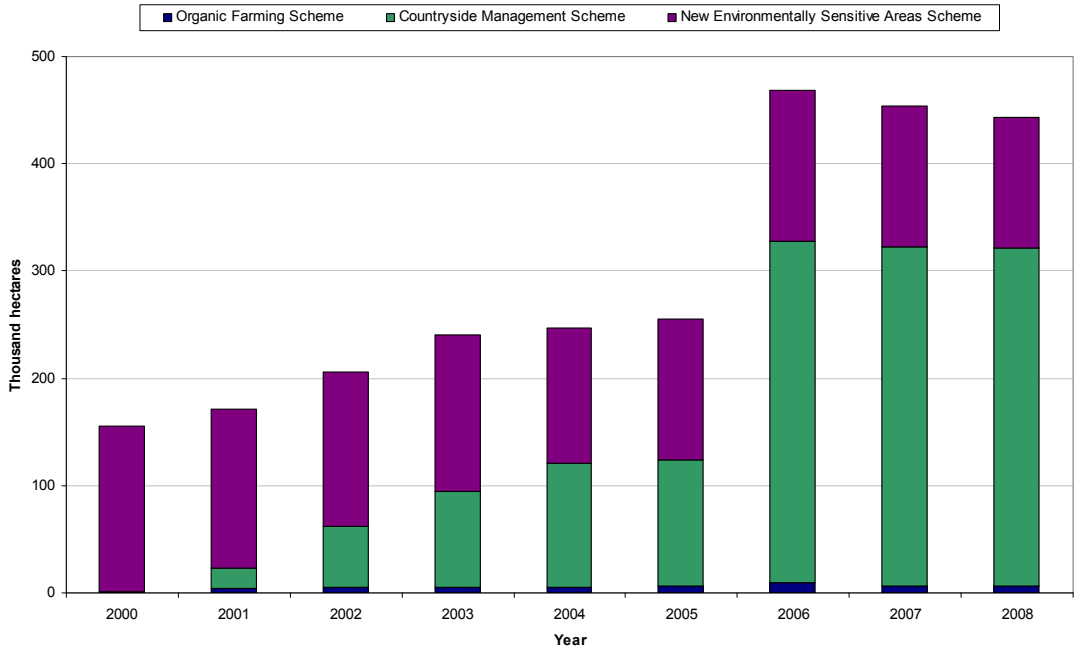


Table 5.2 Northern Ireland agri-environment schemes, area under agreements, 2000 – 2008

Unit: Thousand hectares

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Organic Farming Scheme	1	4	5	5	5	6	10	6	6
Countryside Management Scheme	n/a	19	57	90	116	118	318	317	315
New Environmentally Sensitive Areas Scheme	154	148	144	146	126	131	141	131	122

Source: DARD

- The aim of agri-environment schemes is to enhance biodiversity, water quality, landscape and heritage features, and mitigate climate change by integrating sustainable environmental management into the everyday workings of the farm. In return for this, farmers and landowners receive a payment, based on the area of habitat and archaeological features present on the farm, and the area/length of habitat enhancement options carried out.

- In 2008, 443,000 hectares (approximately 42%) of the farmed area in Northern Ireland was managed through the Countryside Management Scheme (CMS), the Environmentally Sensitive Areas Scheme (ESAS) and the Organic Farming Scheme (OFS).

- New CMS and Organic Farming Schemes (OFS) were launched in June 2008, with approximately 4,500 CMS applications being received during July and August 2008, and 102 OFS applications being received during September and October.

Area of Woodland

Figure 5.3 Area of new forest and woodland plantings, 1999/2000 – 2008/09

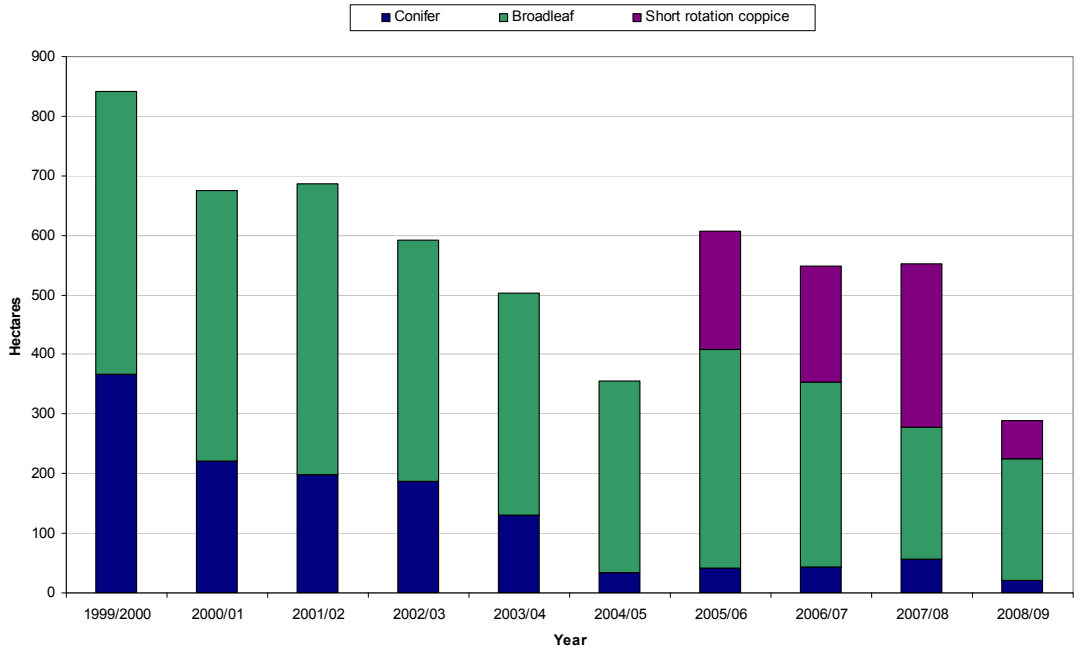


Table 5.3 Area of new forest and woodland plantings, 1999/2000 – 2008/09

Unit: Hectares

	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Conifer	366	222	198	187	130	34	41	44	56	20
Broadleaf	476	453	488	405	373	321	367	310	221	205
Short rotation coppice	n/a	n/a	n/a	n/a	n/a	n/a	198	195	275	64

Source: Forest Service of Northern Ireland

- In Northern Ireland, over 70% of the woodlands and semi-natural forests are owned and managed by the Forest Service. The remainder is managed mostly by private landowners.

- In 2008/09, there were 289 hectares of new plantings. Of these, 100% were planted by the private sector supported by grant aid from the Forest Service.

- Short rotation coppice (SRC) is the practice of planting woody crops at high density which is harvested every 2 – 5 years. In Northern Ireland, SRC plantings have been counted separately since 2005, due to the introduction of a challenge fund specifically for SRC. These crops are grown for renewable energy purposes and they accounted for 22% of all new plantings in 2008/09.

- There has been a dramatic decrease in conifer plantings in the past 10 years. A shortage of suitable land at affordable prices has resulted in fewer conifer plantings by Forest Service in recent times. New planting is now generally restricted to smaller scattered areas of the countryside and broadleaves are normally preferred for landscape and environmental reasons.

Housing

Figure 5.4 Housing completions, 2000/01 – 2007/08

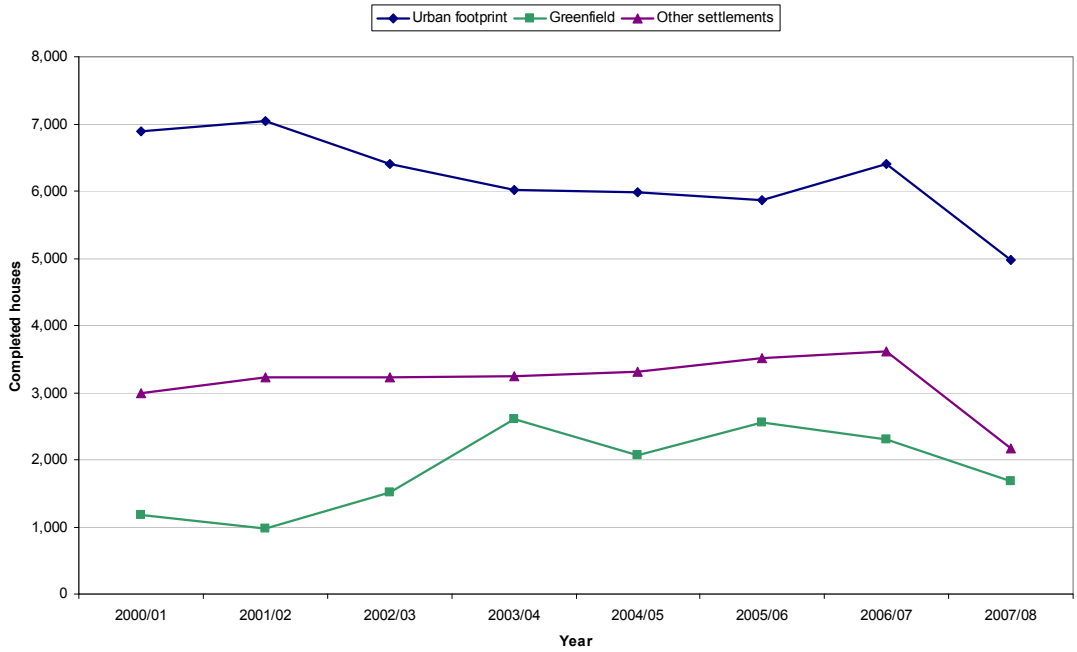


Table 5.4 Housing completions, 2000/01 – 2007/08

							Unit: Houses	
	2000/01	**2001/02**	**2002/03**	**2003/04**	**2004/05**	**2005/06**	**2006/07**	**2007/08**
Urban footprint	6,894	7,043	6,403	6,009	5,978	5,858	6,401	4,977
Greenfield	1,182	973	1,505	2,604	2,061	2,563	2,306	1,675
Other settlements	2,994	3,226	3,232	3,244	3,305	3,515	3,617	2,175
Source: Planning Service								

- Housing completions and the residual land available for housing in settlements across Northern Ireland are monitored annually in accordance with the provisions of prevailing development plans.

- The data shows for each year, from 2000/01, the total number of housing completions within all settlements with a population greater than 5,000. These are broken down in terms of those completed within the urban footprints of settlements and those completed on greenfield sites, which are outside of urban footprints but within settlement limits.

- The data also shows the total number of houses completed in other settlements, which have a population less than 5,000.

- There was a steep decline in housing completions in 2007/08, with 28% fewer completions than in 2006/07, and the number of completions was the lowest this century.

- There has been a rise in the proportion of housing completed on greenfield sites, increasing from 11% in 2000/01 to 19% in 2007/08.

6. Biodiversity

Biodiversity describes the vast range of living organisms on earth. Biological diversity has been defined as:

> "The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems."
>
> *Convention on Biological Diversity, 1992*

The state of our biodiversity is a cumulative measure of the relative state of our air, water and land environments. This chapter reports on the extent of nature conservation designations in Northern Ireland, the condition of some of these designations, wild bird populations, and the number of tree preservation orders imposed annually.

In addition to those indicators included in last year's report, there are an additional four indicators in this year's report. These are; wetland bird populations, the condition of priority habitats, the condition of priority species and common seal populations.

Habitats and species in Northern Ireland are protected by a series of statutory designations. These include Areas of Special Scientific Interest (ASSI), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites (areas of wetland and waterfowl conservation), National Nature Reserves, Marine Nature Reserves, and Local Nature Reserves. Protection is also afforded by non-statutory Sites of Local Nature Conservation Importance (SLNCI).

Wild bird populations are considered to be a good indicator of the broad state of the wildlife and the countryside. Figures over the last ten years indicate that Northern Ireland's wild bird population has increased by 21%. On the other hand the wetland bird population has decreased by 17% between 1998/99 – 2006/07.

Tree preservation orders (TPO) are used by Planning Service to protect trees from being cut down or damaged. Trees provide a valuable habitat to a wide variety of species, and therefore the number of TPOs issued each year can be regarded as an indicator of one method of maintaining biodiversity.

Priority habitats and species are monitored over a 3-year period by NIEA as an indicator of biodiversity. The overall status and trends of priority habitats and species, for which information is available, has remained relatively unchanged between 2005 and 2008.

Seal populations are regularly monitored across Northern Ireland, with the longest record held at Strangford Lough. Common seal populations at Strangford Lough have fluctuated over recent years, but the 2008 population of 294 was well above the average for the last ten years (261).

Nature Conservation Designations

Figure 6.1 Area of nature conservation designations, 1999/2000 – 2008/09

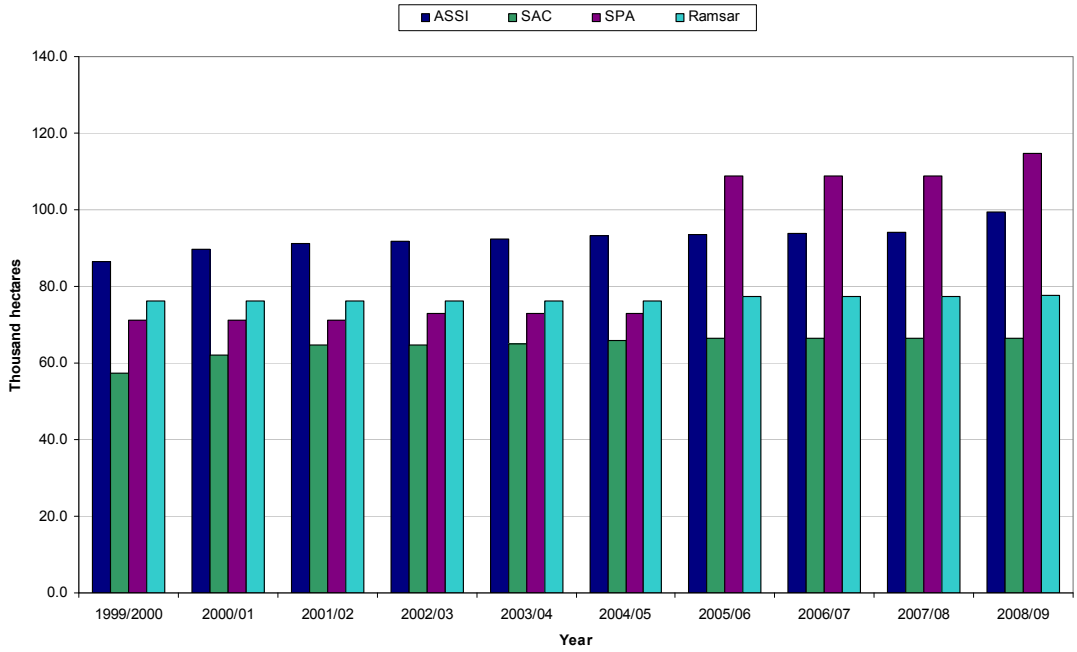


Table 6.1 Area of nature conservation designations, 1999/2000 – 2008/09

Unit: Thousand hectares

	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
ASSI	86.4	89.6	91.1	91.9	92.4	93.1	93.5	93.8	94.2	99.3
SAC	57.4	62.1	64.6	64.6	65.1	65.9	66.4	66.4	66.4	66.4
SPA	71.3	71.3	71.3	72.8	72.8	72.8	108.8	108.8	108.8	114.6
Ramsar	76.1	76.1	76.1	76.2	76.2	76.2	77.4	77.5	77.5	77.7

Source: NIEA

- Identifying and protecting areas of natural and semi-natural scientific interest and the flora and fauna they support has been a cornerstone of nature conservation action in the UK during the last 50 years. Some sites are deemed of such importance that they are formally designated under a number of pieces of national and international legislation

- Many areas in Northern Ireland have been designated to protect their nature conservation value. Sites include land, freshwater, coastal and marine areas.

- At 31 March 2009, a total of 99,300 hectares had been declared as ASSIs, 66,400 hectares as SACs, 114,600 hectares as SPAs and 77,700 hectares as Ramsar sites. There is some overlap of area between these different types of designation and therefore, these cannot be totalled to give an absolute figure on the extent of designations.

- In 2005/06, two large SPAs were declared, adding a total of 36 thousand hectares to the SPA designation.

Nature Conservation Designations

Figure 6.2 Condition of features within Areas of Special Scientific Interest (ASSI), for the 6 year rolling period ending March 2009

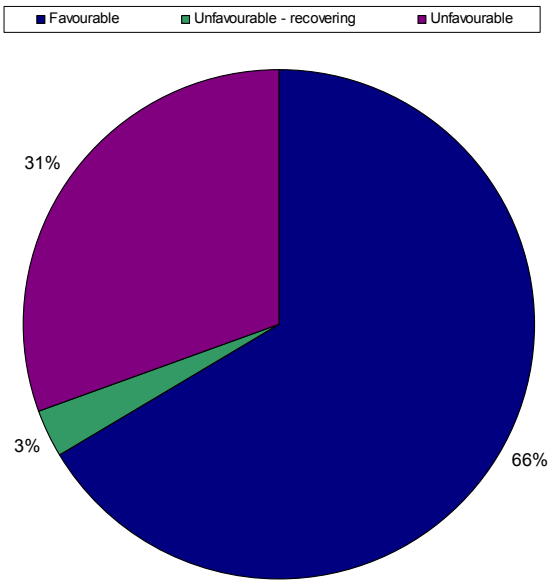


Table 6.2 Condition of features within Areas of Special Scientific Interest (ASSI), for the 6 year rolling period ending March 2009

	Favourable	Unfavourable - recovering	Unfavourable	All conditions
Number of features	608	28	280	916
Percentage	66	3	31	100
Source: NIEA				

- Areas of Special Scientific Interest (ASSIs) are designated sites which are protected under Northern Ireland law for their nature and earth science value. They are selected based on specific qualifying features which include earth science features, habitats and species. The condition of these features is assessed over a six year monitoring programme.

- The first full cycle was completed in March 2008, during which 916 features from 195 ASSIs were assessed. These data have been updated with the results from the 2008-9 monitoring year, when the second cycle of monitoring began. Just over 60 features have been reassessed as a result of this new monitoring work.

- The results are very similar, with two-thirds of the features in favourable condition and 31% of features in an unfavourable condition.

- As the second cycle of monitoring has only started, no definitive comments about trends can be made. However, the condition of features is not expected to improve rapidly, as restoring features to favourable condition will take time.

Wild Birds

Figure 6.3 Wild bird populations in Northern Ireland, 1999 – 2008

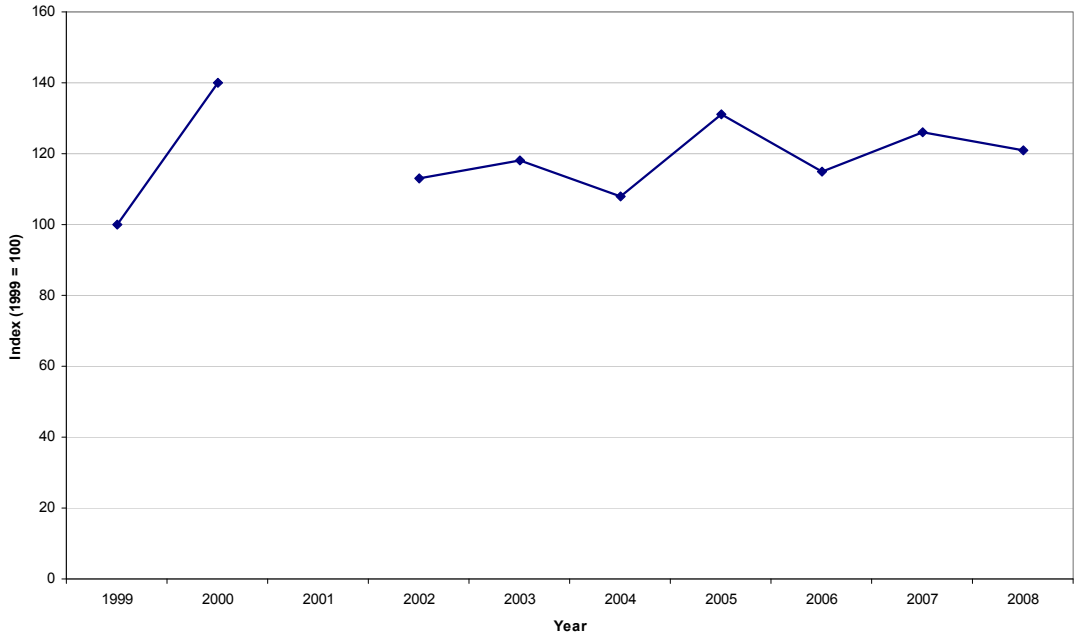


Table 6.3 Wild bird populations in Northern Ireland, 1999 – 2008

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Index (1999 = 100)	100	140		113	118	108	131	115	126	121
Source: British Trust for Ornithology										

- Northern Ireland's wild bird population is monitored as part of the UK Breeding Bird Survey, which is undertaken annually at nearly 3,000 sites across the UK.
- In Northern Ireland, information on trends is only available for the 28 most common species.
- The wild bird population in Northern Ireland is estimated to have increased by 21% in the last 10 years.
- There is no figure for 2001, due to the impact that the foot and mouth outbreak had on the collection of data, i.e. monitors not being able to access many rural areas, and as such a much smaller sample being taken.

Wetland Birds

Figure 6.4 Wetland bird populations in Northern Ireland, 1998/99 – 2006/07

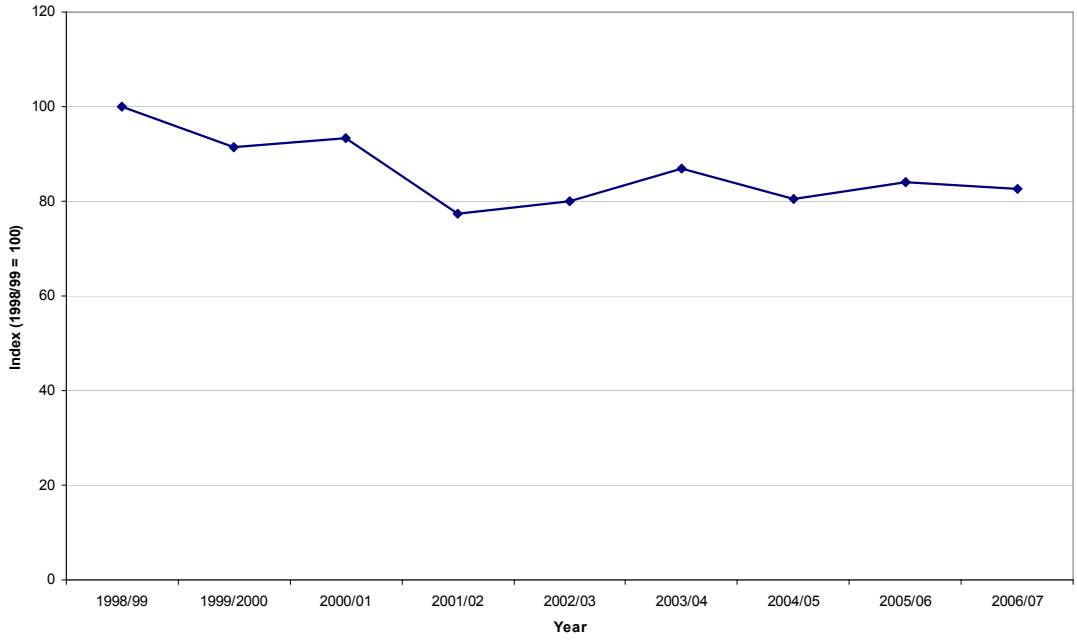


Table 6.4 Wetland bird populations in Northern Ireland, 1998/99 – 2006/07

	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
Index (1998/99 = 100)	100	91	93	77	80	87	80	84	83
Source: BTO									

- Northern Ireland's wetland bird population is monitored as part of the Wetland Bird Survey (WeBS). This survey monitors non-breeding waterbirds across the UK, identifying population sizes at local and regional scales, determining trends in numbers and identifying important sites for waterbirds.

- The index above is based on the 7 main sites for waterbirds in Northern Ireland, i.e. Strangford Lough, Loughs Neagh and Beg, Lough Foyle, Belfast Lough, Outer Ards shoreline, Carlingford Lough and Upper Lough Erne.

- Between 1998/99 and 2006/07, the wetland bird population is estimated to have decreased by 17%. This is principally due to the decline in Lough Neagh's winter diving duck population in recent years.

Sites of Local Nature Conservation Importance

Figure 6.5 Number of Sites of Local Nature Conservation Importance (SLNCI) adopted or proposed in area plans, 2000 – 2008

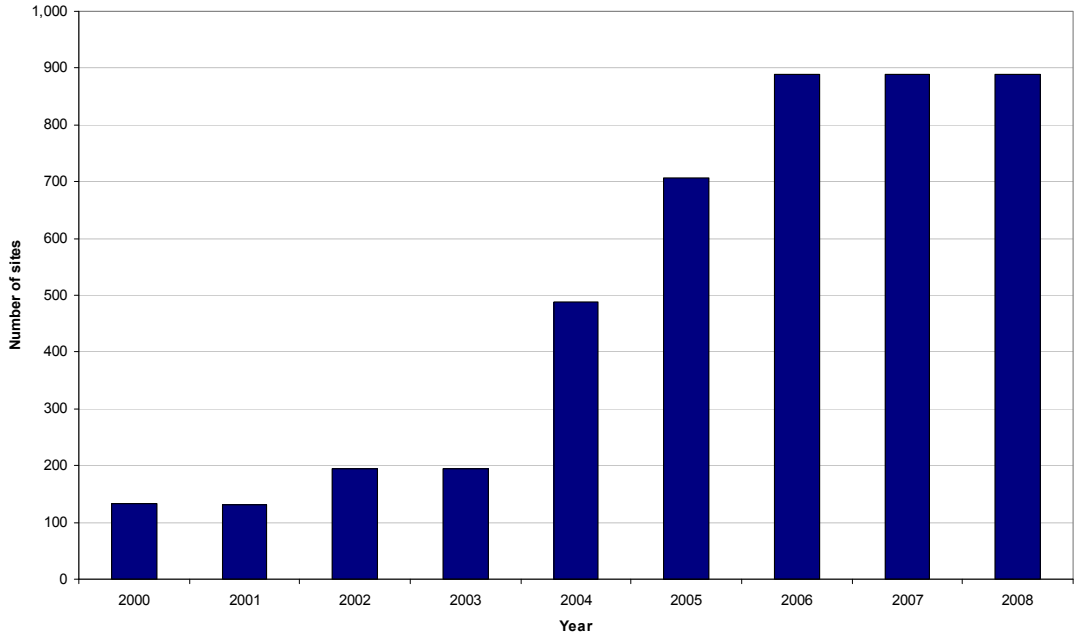


Table 6.5 Number of Sites of Local Nature Conservation Importance (SLNCI) adopted or proposed in area plans, 2000 – 2008

								Unit: Number of sites	
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Cumulative total	133	130	194	194	488	706	889	889	889
Source: NIEA									

- Sites of Local Nature Conservation Importance (SLNCIs) are published in development / area plans and are afforded protection under Planning Policy Statement (PPS) 2.

- Prior to an area plan being published, Planning Service request that NIEA provide information on sites which contain substantive local nature conservation value. Where such sites are identified, area plans will set out specific planning policies which will apply to development proposals on those sites.

- Unlike ASSIs, the condition of SLNCIs is not routinely monitored.

- The number of SLNCIs has increased from 133 in 2000 to 889 in 2008. The number of proposed or adopted SLNCI's is linked to the publication of area plans. Subsequently, as future area plans are published, the number of SLNCI's will possibly change.

Tree Preservation Orders

Figure 6.6 Number of imposed Tree Preservation Orders (TPO), 2003 – 2008

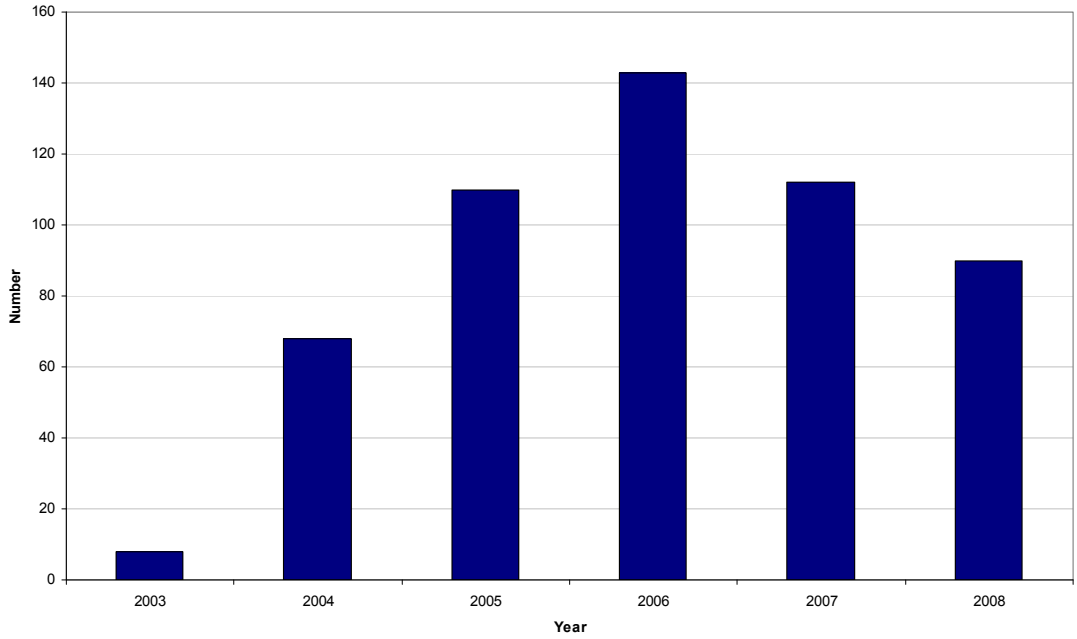


Table 6.6 Number of imposed Tree Preservation Orders (TPO), 2003 – 2008

					Unit: Number	
	2003	**2004**	**2005**	**2006**	**2007**	**2008**
TPOs imposed	8	68	110	143	112	90
Source: Planning Service						

- Planning Service has a statutory duty to protect trees by making Tree Preservation Orders (TPO). The issuing of a TPO makes it an offence to cut down, top, lop, uproot, wilfully damage or destroy any protected tree(s) without first having obtained permission from the Planning Service.

- All types of tree can be protected in this way, whether as single trees or as part of a woodland, copse or other grouping of trees. Protection does not extend to hedges, bushes or shrubs.

- Between 2003 and 2008, Planning Service have imposed a total of 531 TPOs. Of those, 90 were imposed in 2008.

- The reason for the marked increase in the numbers of TPOs issued in more recent years may be due to a variety of different factors, such as Local Landscape Policy Areas designations; increasing public awareness in the value of trees within the environment; or an increase in the amount of development applications within the country generally.

Priority Habitats

Figure 6.7 Trend for priority Biodiversity Action Plan habitats, 2005 & 2008

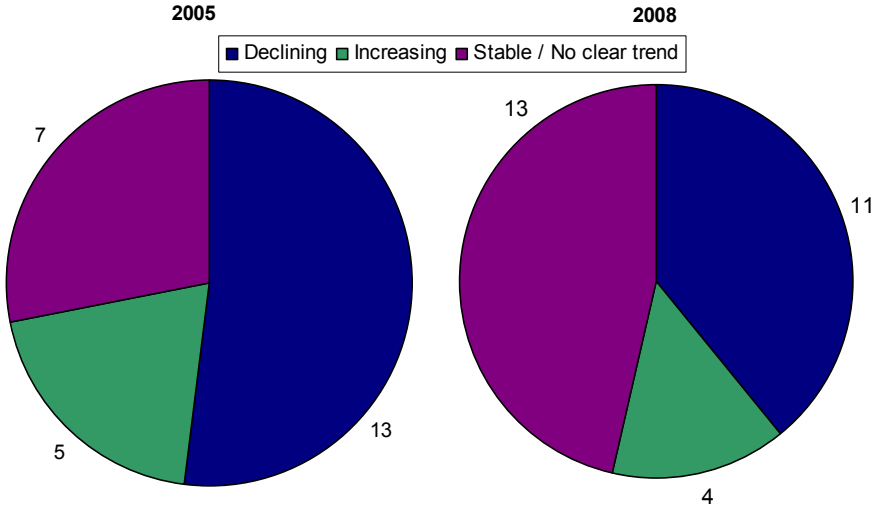


Table 6.7 Trend for priority Biodiversity Action Plan habitats, 2005 & 2008

			Unit: Priority habitats	
	Declining	**Increasing**	**Stable / No clear trend**	**No. of habitats reported**
2005	13	5	7	25
2008	11	4	13	28
Source: NIEA				

- The status and trends in priority habitats provide an indicator of habitat changes in Northern Ireland.
- NIEA has published 37 habitat action plans which are used as a focus for the maintenance and enhancement of these habitats.
- As part of a three-year reporting cycle, 35 of these habitats were included in the UK Biodiversity Action Plan reports of 2005 and 2008.
- Of the 35 habitats reported in 2008 (for which the status and trend where known), 11 were considered to be declining, four were classified as increasing and 13 were stable or showed no clear trend.

Priority Species

Figure 6.8 Trend for priority Biodiversity Action Plan species, 2005 & 2008

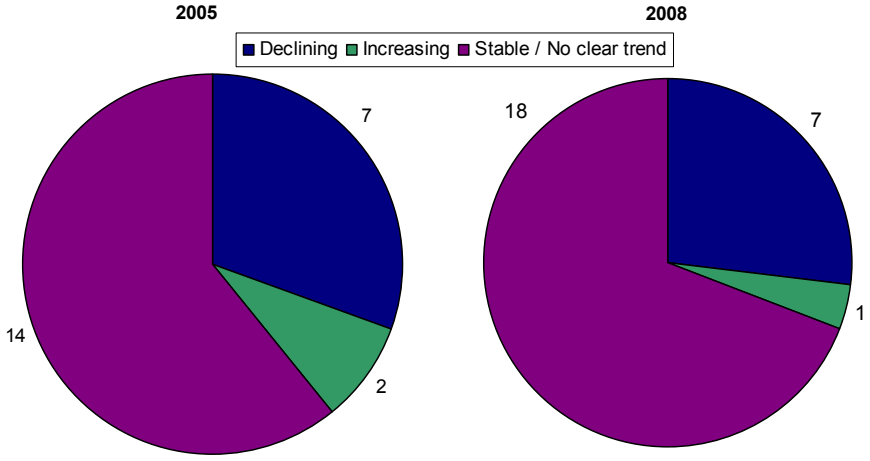


Table 6.8 Trend for priority Biodiversity Action Plan species, 2005 & 2008

			Unit: Priority species	
	Declining	**Increasing**	**Stable / No clear trend**	**No. of species reported**
2005	7	2	14	23
2008	7	1	18	26
Source: NIEA				

- The status of priority species provides an indicator of change for a wide range of ecosystems and natural processes throughout the UK and thus an indirect indicator of biodiversity.

- As part of a three-year reporting cycle, a number of priority species were included in the UK Biodiversity Action Plan reports of 2005 and 2008.

- Of the species reported in 2008 (for which the status and trend was known), only one was considered to be increasing. Seven were declining and 18 were stable or showed no clear trend.

Seals

Figure 6.9 Strangford Lough common seal population, adults and pups, 1999 – 2008

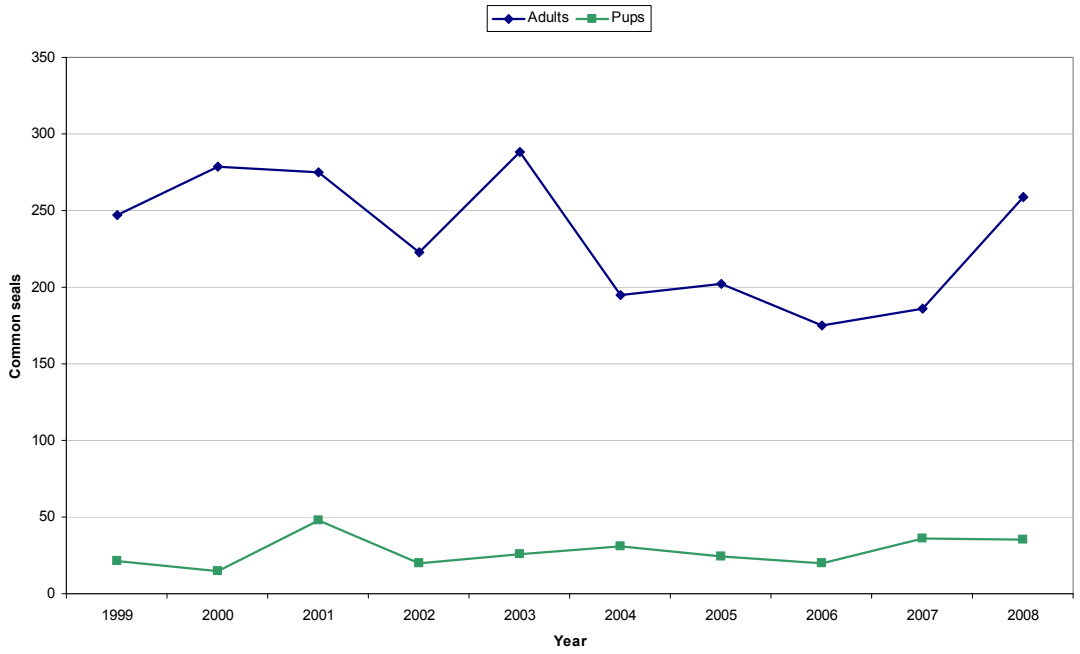


Table 6.9 Strangford Lough common seal population, adults and pups, 1999 – 2008

									Unit: Common seals	
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Adults	247	279	275	223	288	195	202	175	186	259
Pups	21	15	48	20	26	31	24	20	36	35
Source: NIEA										

- NIEA monitor the seal population of Strangford Lough throughout the year. The highest count recorded each year is taken to be the population for that year.

- Under the NI Seal Monitoring Programme, NIEA and National Trust staff undertake boat-based and shore-based observations of both common seals and grey seals within Strangford Lough. Adults and pups are counted, along with records of any anthropogenic disturbance and the associated environmental data.

- After a dip in the adult population between the years 2004 – 2007, the adult common seal population was monitored at 259 for 2008. The highest population in the last ten years was 288 in 2003.

- The number of pups recorded in 2008 was 35. The pup population is more consistent than the adult population over the last ten years.

7. Built Heritage

Northern Ireland has a rich heritage of archaeological sites, monuments and buildings representing the aspirations and achievements of past societies, providing evidence of settlement, agricultural, industrial and ritual activity from 9,000 years ago to the present day. This chapter looks at the numbers of scheduled monuments and listed buildings in Northern Ireland, including those which are at risk, and the number of conservation areas.

There are upwards of 35,000 archaeological sites and monuments in Northern Ireland dating from 9,000 years ago to the recent past. Monuments are selected from this group each year for scheduling under article 3 of The Historic Monuments and Archaeological Objects (NI) Order 1995 and some of the masonry structures are entered into the Built Heritage at Risk in Northern Ireland (BHARNI) register.

In 2008/09, there were a total of 1,803 scheduled monuments. Their condition is assessed regularly, and they were judged to be better managed than most non-scheduled sites in a survey “The Condition and Management Survey of the Archaeological Resource (CAMSAR) for Northern Ireland” published by NIEA in 2009.

Listed buildings are those of special architectural or historic interest, and provide an indication of the extent of this historical architectural resource. Since 2003 there has been a modest increase in the number of listed buildings with a total of 8,350 buildings recorded by the NIEA in 2008/09. Because some listings include multiple buildings the total number of buildings protected in this way is estimated to be around 8,500 structures.

Buildings classified as at risk in Northern Ireland and recorded on the NIEA online database BHARNI, are those most at risk from deterioration or demolition. In 2008/09, there were 437 listed buildings and structures on the BHARNI database.

There are currently 60 designated conservation areas in Northern Ireland. These are defined as areas of special architectural or historic interest.

Monuments

Figure 7.1 Number of scheduled monuments, 1999/2000 – 2008/09

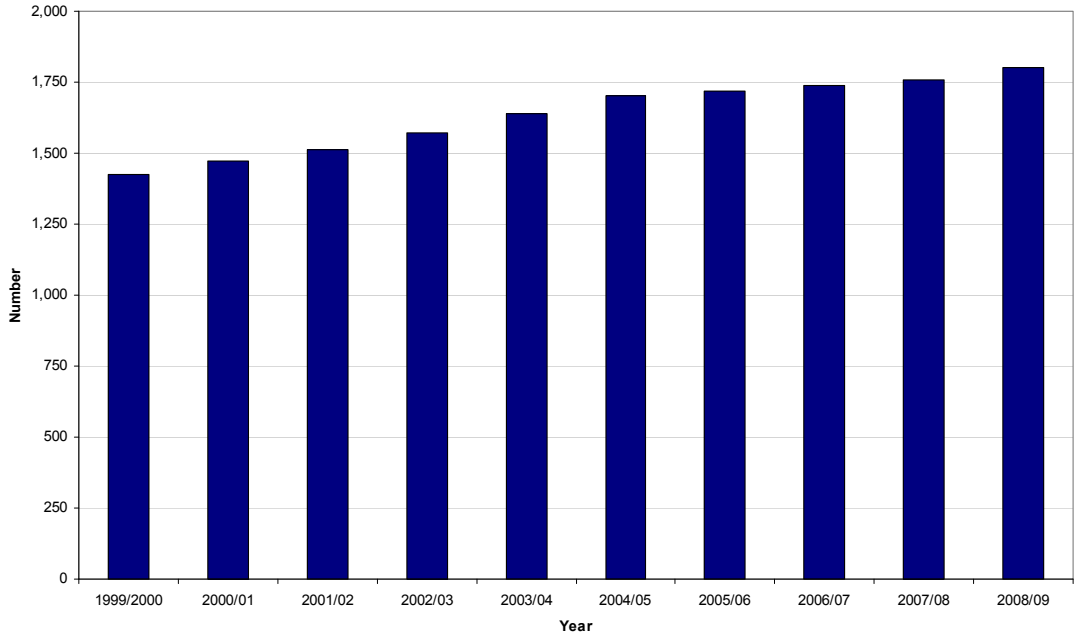


Table 7.1 Number of scheduled monuments, 1999/2000 – 2008/09

	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
Number of scheduled monuments	70	50	40	60	66	65	14	20	20	46
Cumulative total	1,423	1,473	1,513	1,573	1,639	1,704	1,718	1,738	1,757	1,803
Source: NIEA										
Note: One monument was descheduled in 2007/08										

- Scheduled Historic Monuments include settlements, defences, workplaces, routeways and sites for ritual and burial.

- There has been a decrease in the number of monuments being scheduled each year in Northern Ireland with 70 monuments being scheduled in 1999/2000 and 46 scheduled in 2008/09.

- However, overall there has been an increase in the total number of scheduled monuments rising to 1,803 in 2008/09 compared to 1,423 in 1999/2000.

Listed Buildings

Figure 7.2 Number of listed buildings, 2003/04 – 2008/09

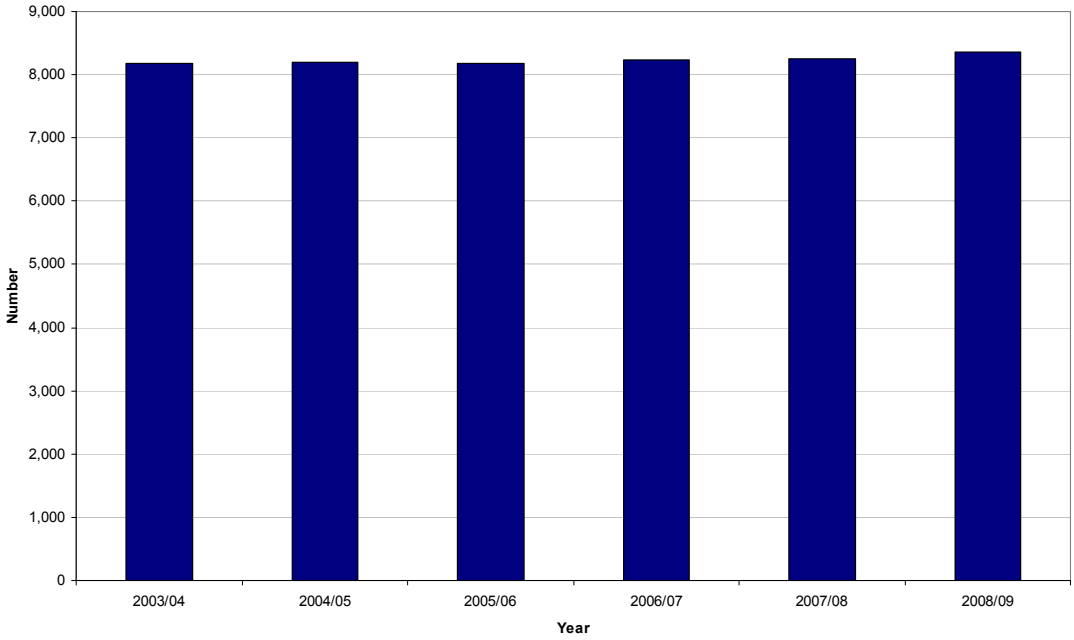


Table 7.2 Number of listed buildings, 2003/04 – 2008/09

					Unit: Number	
	2003/04	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**
Number of listed buildings	8,184	8,206	8,177	8,242	8,248	8,350
Source: NIEA						

- The Planning (Northern Ireland) Order 1991, enables lists of buildings of special architectural or historic interest to be compiled by NIEA.
- There has been a modest increase in the number of buildings listed in recent years with a total of 8,350 statutory listings in 2008/09.
- A second, area based survey of all historic buildings (The Second Survey) has been underway since 1997 and is largely responsible for this increase. However it should be noted that a significant number of buildings have also been found which no longer meet the legislative test and have therefore been removed.
- Because some listings include multiple buildings, such as terraces or farm buildings under a single listing reference, the total number of structures is greater than the figure given and is estimated to be around 8,500.

Listed Buildings

Figure 7.3 Number of buildings and monuments at risk, 2003/04 – 2008/09

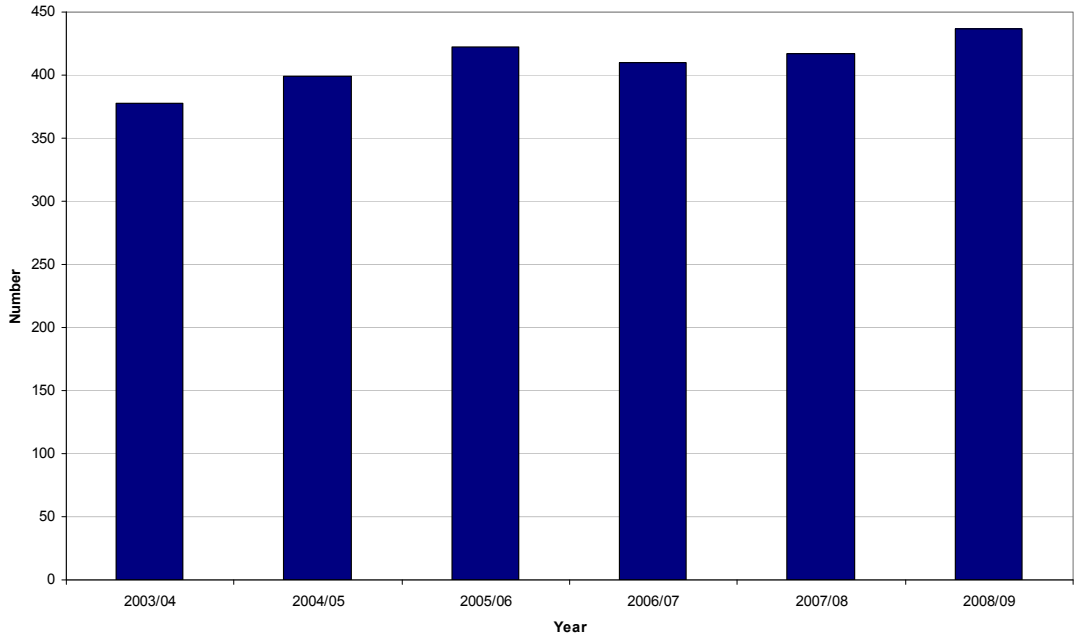


Table 7.3 Number of buildings and monuments at risk, 2003/04 – 2008/09

						Unit: Number
	2003/04	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**
Number of buildings and monuments at risk	378	399	422	410	417	437
Source: NIEA						

- A listed building or structure is at risk when its condition and management is deemed to be poor and unsustainable, placing the building or structure under threat of deterioration and/or demolition.

- Such listed buildings, structures and some scheduled monuments are recorded on an on-line database Built Heritage at Risk in Northern Ireland (BHARNI) register.

- The BHARNI register provides an indicator of changes in the number of buildings judged to be at risk. In 2008/09, there were 437 buildings and structures on the BHARNI database. In total, 24 listed buildings were removed from the database and were no longer at risk.

- The Sustainable Development Strategy sets a target of removing 200 buildings from the BHARNI register (based on 2006 figure) by 2016. However, as the collection of data is ongoing it is expected that numbers of buildings identified as being at risk will continue to rise in the initial years as this work is completed.

Conservation Areas

Figure 7.4 Number of conservation areas, 2002/03 – 2008/09

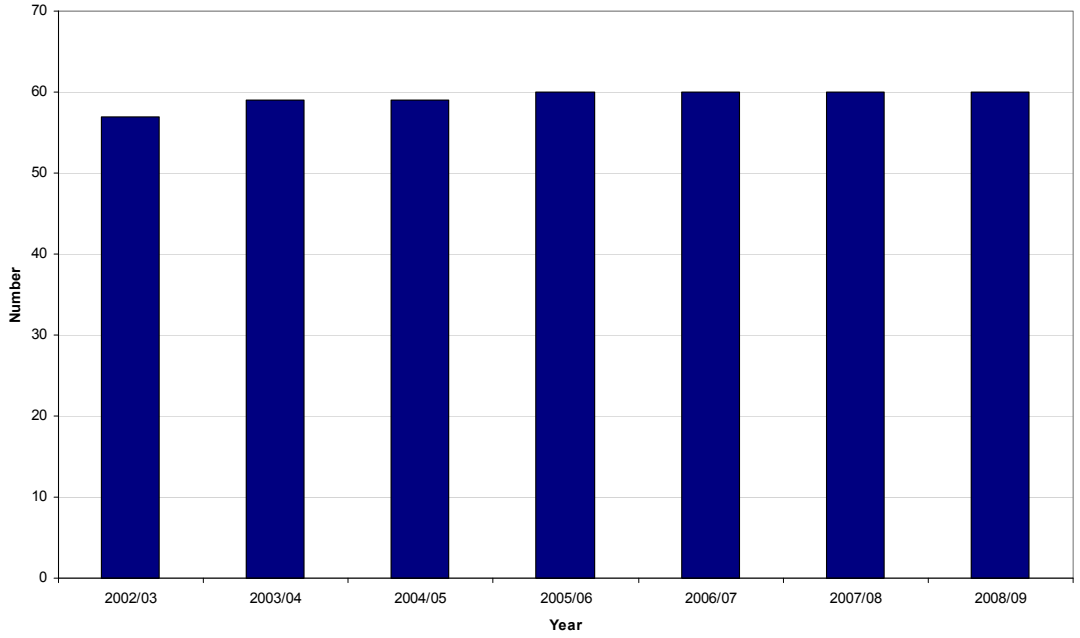


Table 7.4 Number of conservation areas, 2002/03 – 2008/09

						Unit: Number	
	2002/03	**2003/04**	**2004/05**	**2005/06**	**2006/07**	**2007/08**	**2008/09**
Conservation areas	57	59	59	60	60	60	60
Source: Planning Service							

- Planning Service and NIEA are both within the Department of the Environment. Planning Service is responsible for area based heritage controls.

- Planning Service has been responsible for the designation of Conservation Areas since 1995. These are defined as areas of special architectural or historic interest.

- Since 1975, the Department of the Environment has designated 60 conservation areas in Northern Ireland. They range in scale from city and town centres to villages and relatively small residential parks and streets.

8. Waste

Waste and, especially, how we deal with it, is becoming an increasingly important issue. Waste is produced by households, by industrial processes, by the construction and demolition industry, through commercial activities and agricultural practices and by public services and utilities. Waste can impact on the environment through the visual impact it can have, through emissions to the air, emissions to groundwater and surface water and contamination of land.

This chapter reports on the amount of municipal waste produced, the amount of municipal waste recycled and recovered and the amount of waste produced per household. Municipal waste is defined as all of the waste collected from households and commercial premises that comes under the control or possession of the local authorities.

In Northern Ireland, the amount of municipal waste we produce has remained fairly constant since 2004/05. The majority of waste is sent to landfill, with 68% of municipal waste in 2008/09 landfilled. Landfilled biodegradable waste emits methane and carbon dioxide into the atmosphere as it decomposes and leachate is produced when water filters down through a landfill.

Recycling of waste is becoming much more common in Northern Ireland. The Northern Ireland Waste Management Strategy (2006) set a target that 35% of household waste should be recycled or composted by 2010. In 2008/09, 34% of household waste was recycled or composted and 32% of municipal waste was recycled or composted.

The amount of waste produced per household has remained fairly constant at 1.22 tonnes per year, which equates to approximately 24kg per week.

Waste Arisings

Figure 8.1 Municipal waste arisings, 2004/05 – 2008/09

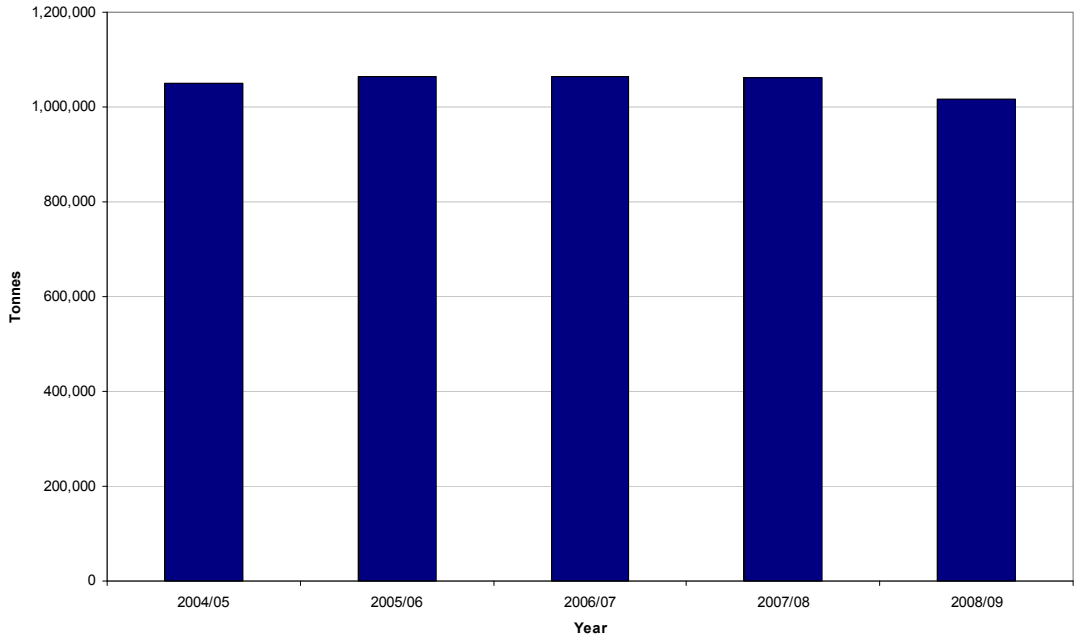


Table 8.1 Municipal waste arisings, 2004/05 – 2008/09

					Unit: Tonnes
	2004/05	**2005/06**	**2006/07**	**2007/08**	**2008/09**
Municipal waste arisings	1,050,716	1,063,510	1,064,090	1,061,108	1,017,215
Source: NIEA					

- Municipal waste in Northern Ireland is defined as all of the waste from households and commercial premises that comes under the control or possession of each of the 26 district councils. It is predominantly made up of waste collected from households, but also includes waste collected from civic amenity sites and some commercial waste.

- Municipal waste data for Northern Ireland is collected via quarterly data returns submitted by all district councils through the WasteDataFlow system.

- In 2008/09, there was 1,017,215 tonnes of municipal waste arisings in Northern Ireland, a slight decrease on the amount of arisings in 2007/08.

Waste Recycled or Composted

Figure 8.2 Municipal waste recycled or composted, 2004/05 – 2008/09

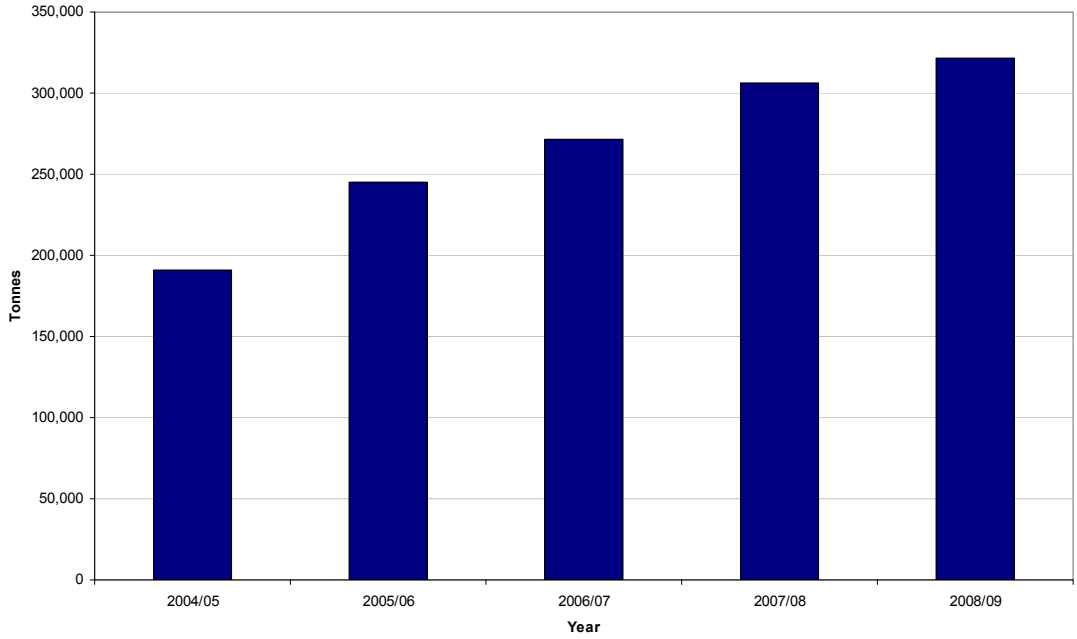


Table 8.2 Municipal waste recycled or composted, 2004/05 – 2008/09

					Units: Tonnes
	2004/05	**2005/06**	**2006/07**	**2007/08**	**2008/09**
Municipal waste recycled or composted	191,197	244,811	271,730	306,021	321,457
Source: NIEA					

- The management of municipal waste in Northern Ireland is through recycling, composting and landfill, with a small portion being sent for reuse (4,466 tonnes, 0.4%).

- Recycling and composting is based on kerbside collections, materials brought to civic amenity sites, materials brought to bring sites and materials collected by a third party, such as charities/voluntary groups.

- In 2008/09, 321,457 tonnes of municipal waste was sent for recycling or composting.

- There has been a steady increase in the amount of municipal waste sent for recycling or composting since 2004/05. The amount collected has increased by 68% on the 2004/05 level, and the proportion of municipal waste recycled or composted has increased from 18% in 2004/05 to 32% in 2008/09.

Household Waste

Figure 8.3 Household waste collected per household per year, 2004/05 – 2008/09

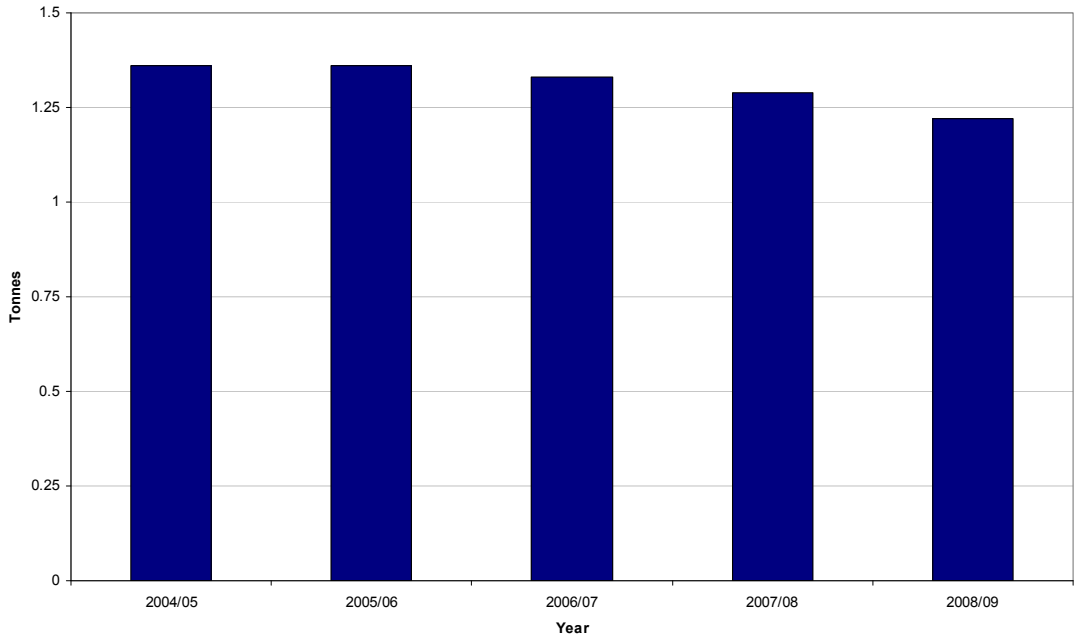


Table 8.3 Household waste collected per household per year, 2004/05 – 2008/09

					Unit: Tonnes
	2004/05	**2005/06**	**2006/07**	**2007/08**	**2008/09**
Household waste per household per year	1.36	1.36	1.33	1.29	1.22
Source: NIEA					

- Household waste is one element of municipal waste collected, and is recorded using the WasteDataFlow system as the amount of waste collected by the district council's regular household collections, kerbside collection, civic amenity and bring site collections

- In 2008/09, there was a total of 879,846 tonnes of household waste collected.

- In 2008/09, this was the equivalent of 1.22 tonnes of household waste per household per year, a 10% decrease on the 2004/05 figure of 1.36 tonnes of household waste per household per year.

Appendix

References

Our Environment, Our Heritage, Our Future: State of the Environment Report for Northern Ireland

First Steps Towards Sustainability: A Sustainable Development Strategy for Northern Ireland

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland

United Nations Framework Convention on Climate Change Reporting Guidelines

Northern Ireland Renewables Obligation

EC Freshwater Fish Directive

Water (NI) Order 1999

Pollution Prevention and Control Regulations (NI) 2003

EC Water Framework Directive

EC Nitrates Directive

Urban Waste Water Treatment Regulations

Bathing Waters Directive

Northern Ireland Countryside Management Scheme

Organic Farming Scheme

Belfast Metropolitan Area Plan

Convention on Biological Diversity

Further Information

1. Demographics, Transport & Public Opinion

Population: http://www.nisra.gov.uk/demography/default.asp17.htm
http://www.nisra.gov.uk/demography/default.asp20.htm

Households: http://www.nisra.gov.uk/demography/default.asp21.htm

Transport: http://www.drdni.gov.uk/index/statistics/stats-catagories/ni_transport_statistics.htm
http://www.drdni.gov.uk/index/statistics/stats-catagories/stats-catagories-travel_survey.htm

Public opinion: http://www.csu.nisra.gov.uk/survey.asp136.htm

2. Air & Climate

Air Quality: http://www.airqualityni.co.uk/

Greenhouse gas emissions: http://www.naei.org.uk/reports.php

Climate Change: http://www.doeni.gov.uk/index/protect_the_environment/climate_change.htm

3. Water

River quality: http://www.ni-environment.gov.uk/water-home/wfd.htm

Lake quality: http://www.ni-environment.gov.uk/water-home/wfd.htm

Groundwater quality: http://www.ni-environment.gov.uk/water/quality/groundwater.htm

Discharge quality: http://www.ni-environment.gov.uk/water/regulation_of_discharges_industrial.htm

Drinking water quality: http://www.ni-environment.gov.uk/water/drinkwater.htm

Water pollution: http://www.ni-environment.gov.uk/water-home/waterpollution.htm

4. Marine

Bathing water quality: http://www.ni-environment.gov.uk/water/quality/bathingqualityni.htm

Winter nutrient concentrations & Marine water quality: http://www.ni-environment.gov.uk/water-home/wfd.htm

Sea temperature: http://www.afbini.gov.uk/index/services/services-specialist-advice/coastal-science/coastal-monitoring/monitored-sites/irish-sea.htm

5. Land

Soil quality: http://www.afbini.gov.uk/index/services/services-specialist-advice/soils-environment.htm

Sustainable land management: http://www.dardni.gov.uk/index/grants-and-funding/agri-environmental-schemes.htm

Area of woodland: http://www.forestserviceni.gov.uk/

Housing: http://www.planningni.gov.uk/index/tools/about-statistics.htm

6. Biodiversity

Nature conservation designations: http://www.ni-environment.gov.uk/biodiversity/designated-areas.htm

Wild birds: http://www.bto.org/bbs/

Wetland birds: http://www.bto.org/webs/index.htm

SLNCIs: http://www.ni-environment.gov.uk/landscape/plan/whencon/when-areaplan.htm

TPOs: http://www.planningni.gov.uk/Devel_Control/info_leaflets/TPO/tpo.htm

Priority habitats: http://www.ni-environment.gov.uk/biodiversity/habitats-2.htm

Priority species: http://www.ni-environment.gov.uk/biodiversity/sap_uk.htm

7. Built Heritage

Monuments and sites: http://www.ni-environment.gov.uk/built/owning.htm

Listed buildings: http://www.ni-environment.gov.uk/built-home/protection/listed_buildings_p.htm

Buildings at risk: http://www.ni-environment.gov.uk/built/risk.htm

Conservation areas: http://www.planningni.gov.uk/index/policy/supplementary_guidance/conservation.htm

8. Waste

All indicators: http://www.ni-environment.gov.uk/waste/municipal_data_reporting.htm