3 Analysis of the situation, the strategy and the ex ante evaluation

3.1 Analysis of the situation in terms of Strengths and Weaknesses

1. This Chapter provides an overview of the agriculture, food and forestry sectors in England, the rural economy and employment, the demographic and resource situation, and the state of the environment. It draws out key variations between regions in England, and highlights key points of difference between the rural and urban economy.

3.1.1 The general socio-economic context of the geographical area

3.1.1.1 Rural areas in England

2. England is a country of some 50,351 square miles (130,410 square kilometres), and had a total population of 50.8 million in 2006. Roughly, 19% of the population in England lives in rural areas, using the rural definition (a National Statistic used for England and Wales) and data from the 2001 Census. England has borders with Scotland of 60 miles (95 km) and with Wales of 150 miles (240 km), and 5,325 miles (8520 km) of coastline.

Definitions of Rural Areas

3. The data given for rural areas in this section are drawn from a variety of sources. These may define "rural" in different ways. In 2004, to try to achieve some consistency in rural statistics, the Government introduced a rural definition for identifying rural areas in England and Wales, which is a National Statistic[1]. The OECD uses a different approach to defining rural territories across its Members. The OECD definition of rural areas is commonly used by the EU and is mentioned in the Implementing Regulation and in the Community Strategic Guidelines for Rural Development. There are advantages and disadvantages to both of these definitions.

4. The OECD definition of rural and urban areas is based on identifying territorial levels within countries, and then classifying each territory as Predominantly Rural (PR), Intermediate (I) or Predominantly Urban (PU). Territories are classified according to the proportion of population living in the relevant population density. PR areas are defined by more than 50% of the population of the territory living in an area with a population density of less than 150 people/km^2.

5. The OECD territories are defined at the UK's NUTS3[2] level of geography (e.g. at County Council rather than Local Authority District level). Because England is relatively urbanised and densely populated compared to much of the rest of the EU, the OECD definition means that England actually has no PR areas[3] and therefore zero population classified as living in PR areas[4]. Therefore, this definition is not useful for examining rural issues in England, which is characterised by more heterogeneous regions than may be the case in other OECD or EU countries.

6. An advantage of England's own rural definition is that it takes into account population density as well as the distances between settlements. The OECD

[1] Scotland, which has more remote areas than England, has developed its own definition of rural areas.
[2] The abbreviation NUTS stands for "Nomenclature des Unités Territoriales Statistiques". NUTS is the geography used as a harmonised base for European statistical purposes (NUTS 3 is an administrative area of between 150, 000 to 800,000 people)
[3] See "Regions at a Glance" (OECD, 2005) Part IV Sources and Methodology and Map IV.5 to see OECD rural, intermediate and urban definitions applied across the EU.
[4] Scotland, Wales and Northern Ireland do have PR regions under the OECD definition.

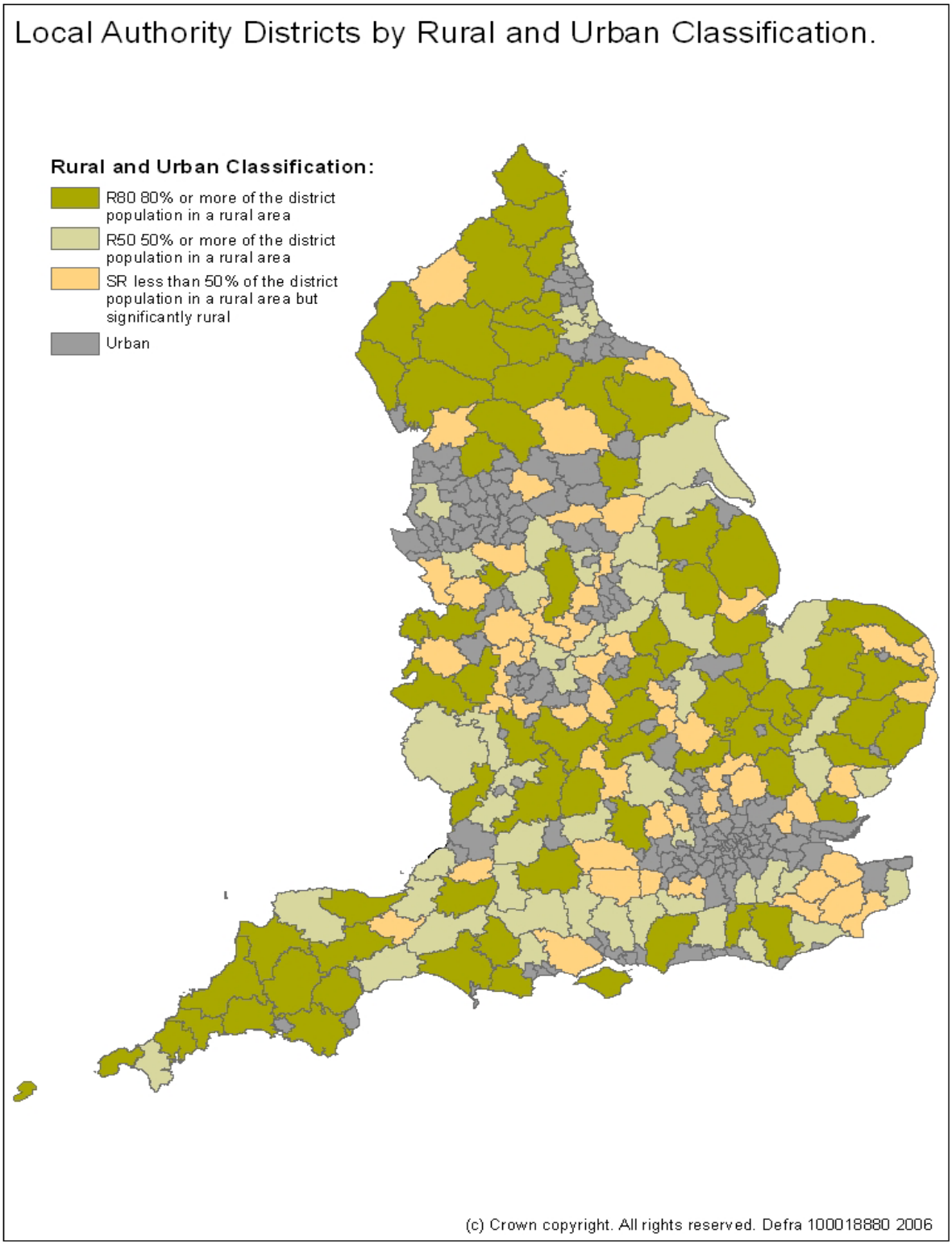
definition does not take into account the context or accessibility of rural settlements in this way. Furthermore, the England rural definition is applicable at low levels of geography, which is better able to characterise rural England. As the England rural definition is also a National Statistic, it applies to all Government data, so that evidence produced by one Government Department is directly comparable to the evidence produced by another.

7. Where data are only available at a higher level of geography (e.g. local authority districts) the rural classification, which was developed by Government in 2005[5], can be applied instead of the rural definition. Under the classification, PR Local Authority Districts are classified as R50 or R80, according to the rural population in the district[6]**.** At Figure 3-1 is a map of the classification applied to Local Authority Districts in England. Most National Statistics are available at the level of geography (Local Authority District level) that allows the rural classification to be applied and rural areas to be identified. This is still a lower level of geography than that used by the OECD definition. To compare how the rural classification and the OECD definition apply to England, also refer to Chapter 12.

[5] For a comprehensive explanation of the rural definition and classification, please see Defra's website. http://www.defra.gov.uk/rural/ruralstats/rural-definition.htm

[6] The classification is a 6-way split at local authority district level: Major Urban; Large Urban; Other Urban; Significant Rural; Rural-50: districts with at least 50 percent but less than 80 percent of their population in rural settlements and larger market towns; Rural-80: districts with at least 80 percent of their population in rural settlements and larger market towns.

Figure 3-1- Rural Urban Classification in England - predominantly rural areas are R80 or R50 classified local authority districts.



8. Overall, using the rural definition and classification for England is of much more value for England's policymakers than the OECD classification. Taking advantage of the relatively small size of England, it is possible to classify areas in the context of their surroundings, to an agreed uniform classification used throughout central government and, increasingly, outside. This allows policy based on these data to be mutually understandable and transferable within Government.

3.1.1.2 The demographic situation

9. Table 3-1 shows the distribution of population in England in 2006. As can be seen, the South East is the most highly populated region, whilst London has a larger population in its own right than any of the regions except the South East.

Table 3-1 - Resident population and population density in England, 2005[7]

		Total Population (thousands)	Area Km2	People per Km2
England		50,763	130,279	390
	North East	2,556	8,573	298
	North West	6,853	14,106	486
	Yorkshire and the Humber	5,142	15,408	334
	East Midlands	4,364	15,607	280
	West Midlands	5,367	12,998	413
	East	5,607	19,109	293
	London	7,512	1,572	4,779
	South East	8,238	19,069	432
	South West	5,124	23,837	215

10. Table 3-1 also shows population density. Regions on the Eastern side of England (North East, Yorkshire and the Humber, East Midlands and East of England) all have a population density around 300 people/km^2 with only the South West being lower at 200 people/km^2. Population densities are higher in the other regions, which have larger urban conurbations. They are highest in London, the only region in England without any rural districts.

11. Looking at population density between rural and urban areas, Table 3-2 below shows that there are larger differences in population density within regions, than inter-regionally as shown in Table 3-1. Rural areas in the North West and Yorkshire and the Humber have the lowest population density, well below the England average for rural areas. The South East region, which is closely linked to London, has the highest rural population density by a high margin. The West Midlands has the largest differences in population density between its rural and urban areas. In contrast, the East of England has the lowest variation in population density between its rural and urban areas, partly due to it having the lowest urban population density of any region and the highest rural population density outside of the South East.

[7] 2005 Mid Year Estimates, Government Actuary's Department.

Table 3-2 - Population density within England regions, 2005[8]

	People per Sq Km		
England Region	**Predominantly Rural**	**Mixed**	**Urban**
North East	105	639	1,417
North West	93	356	1,450
West Midlands	114	409	2,449
Yorkshire and The Humber	87	339	1,227
East Midlands	129	617	1,707
East of England	142	581	755
South West	128	876	1,049
South East	225	453	1,346
London	N/A	N/A	4,714
England	**131**	**478**	**1,780**

Age and Gender

12. Table 3-3 shows population trends over the past 24 years in England, in the age groups of children, the working age population and people of retirement age. The proportion of the total population aged 0-15 has decreased slightly over the period, matched by increasing proportions of the population in the working age and retirement age categories. The trends in the proportions of the population in each age band are also matched by trends in the absolute numbers of people, with the number of people in the working age and retirement age categories both increasing around 10% on their 1981 numbers, while the number of children has declined.

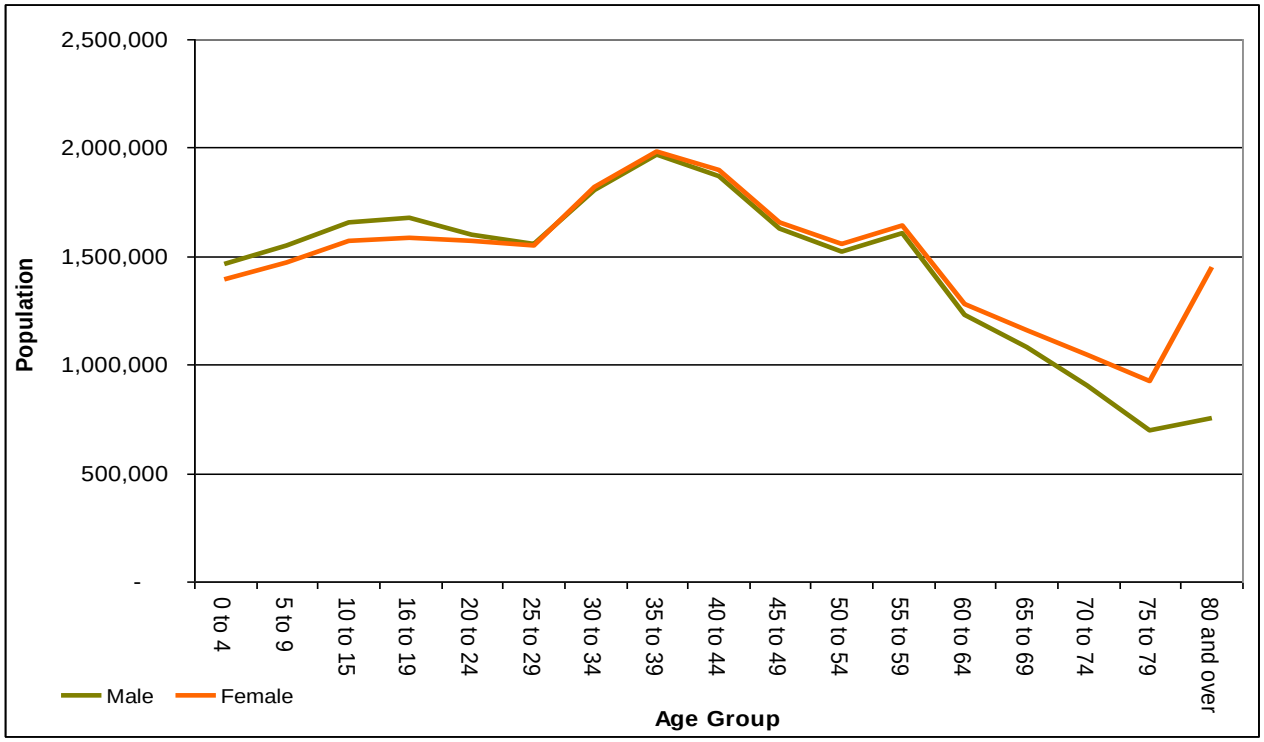
Table 3-3 - Population age 1981 onwards (England)[9]

Year	Age 0-15		Age 16-64		Age 65+	
	(000's)	**%**	**(000's)**	**%**	**(000's)**	**%**
1981	10,285	22%	28,133	60%	8,403	18%
1991	9,658	20%	29,390	61%	8,827	18%
2001	9,908	20%	30,487	62%	9,055	18%
2005	9,721	19%	31,330	62%	9,381	19%

13. Figure 3-2 shows the England population by age group and sex. There are more males than females until the age of around 30 when the numbers of males and females track each other closely until the age of around 60. The number of females overtakes the number of males after this age, with the greatest differences among those aged 80 or over.

[8] extracted from ONS Population trends database.
[9] extracted from ONS Population trends database.

Figure 3-2 - England population by age group and sex, 2004[10]



14. Population trends by age group differ between rural and urban areas in England. The proportion of the rural population that is under 45 is lower than for urban areas, while the proportion of the rural population that is over 45 is higher[11]. The largest differences between rural and urban areas in England are in the 25-44 age band (i.e. working age population) and the aged 60 and over age band. In rural areas, 26% of the population is aged 25-44 compared with of 30% in urban areas.

15. The pattern is reversed for those aged 60 and over: in rural areas, 24% of the population is in this age band, compared to 20% in urban areas. The trend is for the proportion of population of an area aged 60 or over to increase with sparsity, ranging from 22% of the population in less sparse areas to 30% of the population in sparse rural towns. These population patterns can be explained by a combination of migration and economic influences that will be examined below.

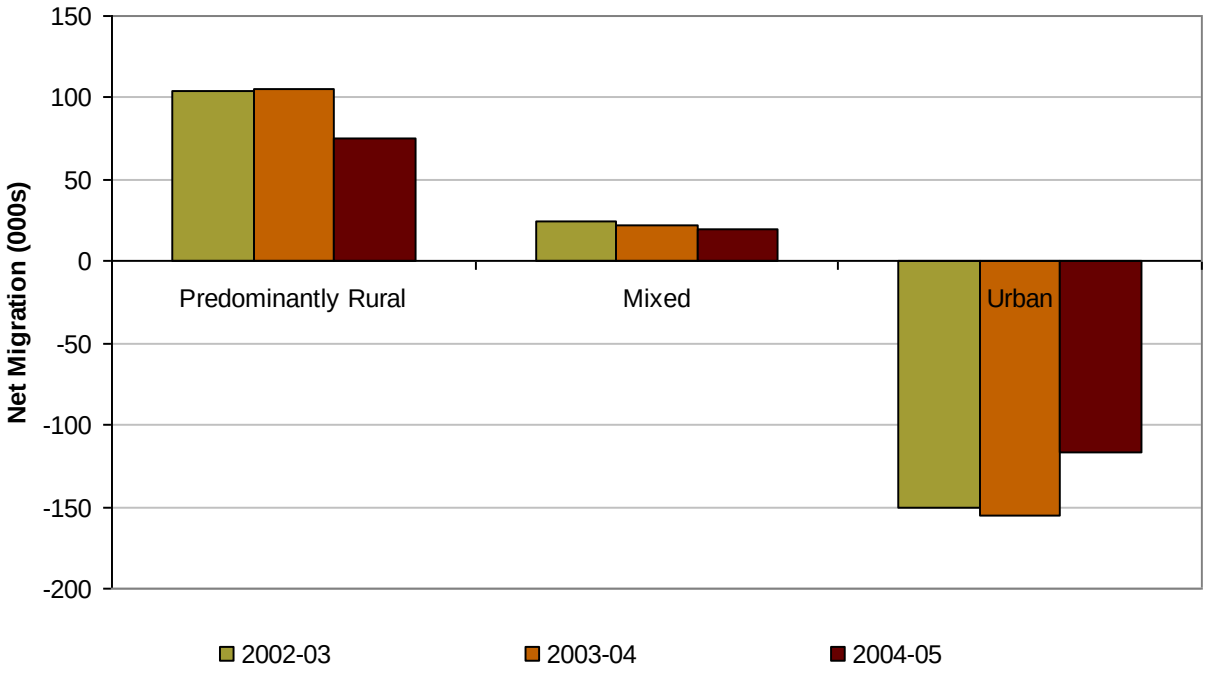
16. Population projections from 2005 to 2015 can be used to illustrate the expected rural age profile during the RDPE period (2007-2013). The population of rural England is growing and ageing at the same time. This is taking place at a faster rate than in urban areas. The population aged over 60 and aged over 75 living in predominantly rural areas (R50 and R80 local authority districts[12]) is increasing at a faster rate than in England overall. Between 2005 and 2015, the number of people aged over 75 in PR areas will increase by 23%, compared to an expected increase of 14% in England overall[13] [14]

[10] ONS mid year estimates, 2004.
[11] Defra's Rural Statistics Unit, using Census 2001 data.
[12] R50 and R80 are classifications of rural at the local authority district level, defined as follows; Rural-50 (R50); districts with at least 50 percent but less than 80 percent of their population in rural settlements and larger market towns; Rural-80 (R80); districts with at least 80 percent of their population in rural settlements and larger market towns.
[13] Population projections produced by the Rural Statistics Unit, Defra.

3.1.1.3 In and out migration in rural England

17. The population is growing at a faster rate in England's rural areas than in urban areas. This population growth stems both from a net migration from urban areas as well as births and deaths within rural areas. The population in PR areas (R80 and R50 districts) has shown the biggest proportionate increases[15]. This section will focus on population changes in rural areas primarily due to internal migration in England. International migration into rural areas is discussed in Section 3.1.4.7. Figure 3-3 below shows that there is a net inflow of people into rural areas and out of urban areas in all three years of data presented. However, it must be noted that this migration shift does not reflect a simple exodus out of urban into rural areas. The overall figure of net migration is produced by a diffuse and complex pattern of individual movements from inner cities, to outer urban areas, to smaller towns and to rural locations[16].

Figure 3-3 – Within England migration, 2002 – 3 to 2004 - 5 (thousands)[17]



18. Many rural areas, such as those in South West England, are characterised by high rates of out-migration of young adults as well as high rates of in-migration, particularly of the over 30s and, in sparsely populated areas, the elderly and retired. Ward level results from the Population Census show that a higher percentage of in-migrants to rural areas are aged over 30 or under 16 than in-migrants to urban areas (76% compared to 59%) as families with children move to rural areas. The percentage of in-migrants aged 30 or over is much higher in sparse rural areas than in urban areas (58% compared to 39%). Only 24% of in-migrants to rural areas are aged 16-29, compared with 33% of out-migrants[18].

19. The reasons for the net population shifts in England from urban to rural areas can be attributed to the differences in the characteristics of the two areas. Rural areas are characterised by a higher quality of the environment: its scenic beauty, space and

[15] Rural Economics Unit 'Productivity in Rural England' (Defra 2005).
[16] State of the Countryside 2005, Commission for Rural Communities.
[17] Migration Statistics Unit – ONS.
[18] Rural Economics Unit 'Productivity in Rural England' (Defra 2005).

clean air are the predominant strengths of rural areas, providing attractions for people to live there. Research has suggested that 38% of the change in population can be accounted for by indicators of environmental quality[19]. In contrast, urban areas are characterised by better amenities, and greater job opportunities, and (on average) more affordable housing.

20. It is important to recognise that different cohorts of the population will accord varying degrees of priority to many of these factors. Whilst scenic beauty often attracts older generations, younger generations tend to be attracted by better urban amenities and greater job opportunities. Thus, it can be difficult for rural areas, particularly those furthest from major conurbations, to maintain the presence of young skilled workers, which may in turn affect the location decisions of businesses.

3.1.1.4 Peri-urban pressures and remoteness

21. A full description of the rural definition and classification, with references, is given above. True geographical remoteness is rare in England. In general, England has only a few geographical areas, such as the extreme South West, Yorkshire moors and North Northumberland/North Cumbria that could reasonably be termed remote. Very few areas are distant geographically from a major population centre. More important in England is accessibility, as geography frequently makes travel far more difficult than it would appear on a map.

22. Businesses and people benefit from being located close together, in dense labour and product markets, leading to agglomeration effects (knowledge and location spillovers) which contribute to the faster growth of cites. Rural areas within city regions[20] (that is, more accessible rural areas where there is significant commuting to an urban node) capture some agglomeration effects, through higher earnings and prospects for higher growth rates in the future than those rural areas outside of city regions. Rural areas within the London city region or within more than one city region benefit from these effects more strongly[21].

23. Rural areas that are part of a city region would grow faster over the 2005 – 2015 period than less accessible rural areas, beyond the economic influence of cities. This result is shown in Table 3-4. Over the forecast period, rural areas outside of city regions will see the lowest annual growth rates in both employment and gross value added (GVA) a typical measure of productivity. As rural areas outside of city regions are starting from lower levels of productivity, this implies that the relative performance of rural areas outside of city regions will worsen in relation to both more accessible rural areas and in particular in relation to urban areas[22].

[19] Park et al. 2004.
[20] City regions are "the enlarged territories from which core urban areas draw people for work and services such as shopping, education, health, leisure and entertainment. The city region is therefore an important functional entity" as defined by the Centre for Sustainable Urban and Regional Futures (SURF) in its publication 'A framework for city regions'.
[21] SQW and Cambridge Econometrics “Economic Performance of Rural Areas Inside and Outside of City Regions” (Defra, 2006).
[22] SQW and Cambridge Econometrics “Economic Performance of Rural Areas Inside and Outside of City Regions” (Defra, 2006).

Table 3-4 - Prospects for growth in different categories of area (%PA)[23] in England

	Employment		GVA	
Type of area	1995-2005	2005-2015	1995-2005	2005-2015
England	1.1	0.6	2.9	2.5
Urban	1.1	0.6	2.8	2.5
Mixed	1.0	0.6	2.9	2.6
Rural	1.2	0.5	3.1	2.4
-Rural outside city-region	0.8	0.5	2.5	2.3
-Rural in one city-region	1.3	0.5	3.2	2.4
-Rural in more than one city-region	1.6	0.6	3.5	2.4

24. The levels and direction of commuting are different between rural areas at different distances from urban centres. There is a much higher rate of commuting to and from conurbations in rural areas near urban centres, whilst more rural areas located further from urban centres see more localised commuting within the immediate area[24].

25. In general, rural areas in England do not experience challenges of remoteness. Similarly, interlinkages between rural and urban areas tend to benefit rural areas, although there are potential local impacts, such as those on house prices, which are discussed in section 3.1.4.5 below.

3.1.1.5 Economic drivers, productivity and growth in rural England

26. In all areas of the economy, the drivers for growth are the same: productivity (skills, investment, innovation, enterprise and competition[25]); employment; and labour force participation. The context in which these drivers operate can differ between areas, with differing challenges for each of these drivers, for example between sparse rural areas and densely populated city centres. As explained in Section 3.1.1, the rural definition in England has the benefit of being at a low level of geography but the disadvantage that this is too low level to estimate GVA. Indicators on the performance of the economy in rural areas using the OECD definition are presented in the Annex to Chapter 12.

27. The labour market is important in determining growth and productivity in any area and employment is a key determinant of income. Differences in productivity between areas depend on demographics: the working age population, how many people of working age are participating in the labour market (the economic activity rate) and how many people of working age are employed (employment rate)

28. The decline in the importance of agriculture in the economy in rural areas has been combined with a shift in approach to rural policy, away from a sectoral basis[26] and towards a place-based approach that is supporting the economic performance, social inclusion and environmental assets of rural localities. The previous sectoral approach had meant a focus on agriculture.

29. The place-based approach is cross-sectoral and at different governance levels (local, regional and national), acknowledging that rural and urban areas face many of the same challenges but also that some rural areas have different characteristics

[23] Extracted from Table 4-2, 'Economic performance of rural areas inside and outside of city-regions-Final Report'.
[24] Rural Economics Unit, 'Productivity in Rural England' (Defra 2005).
[25] HM Treasury 'Productivity in the UK: The Evidence and the Government's Approach' (HMT, 2000).
[26] For example, see Roberts, S. 'Key Drivers of Economic Development and Inclusion in Rural Areas' (Defra, May 2002) and, more recently, OECD 'The New Rural Paradigm: Policies and Governance' (OECD, 2006).

which present specific challenges. The available evidence for England suggests that in aggregate the performance of the economy in rural areas is comparable to the performance in urban areas. However, there are rural areas where economic performance is well below average and prospects for growth are more limited. Sections 3.1.1.6 and 3.1.4.1 below explore the structure of employment and the rural economy in more detail.

30. Capital investment by businesses in rural areas is generally lower than the national average. An examination of the levels of capital investment at district level shows that when the level of investment in each of the 354 English districts is ranked, of the 20 districts with the lowest levels of investment in 2002, 18 were rural and of the top 20 districts, only one was rural[27]. Further detail on investment in training and skills in rural areas is presented in Section 3.1.4.2.

31. There is potential for improved Information and Communication Technology (ICT) use by rural businesses to support rural growth. Most of England now has broadband access, with over 99.8% of UK households able to access some form of broadband technology[28]. Take up, as of August 2006, was about 57% or 13.9 million households in England and Wales[29] but there appears to be[30] a lag in take up in rural businesses. For instance, 51% of urban businesses have a website, as compared with 38% of rural businesses. Usage of ICT in rural business appears to be comparable, but the rural businesses lag behind in the use of networks for data sharing. In 2005, 60% of urban businesses were using broadband, against only 41% in rural areas[31]. Further information about ICT take-up is presented in Section 3.1.1.4.

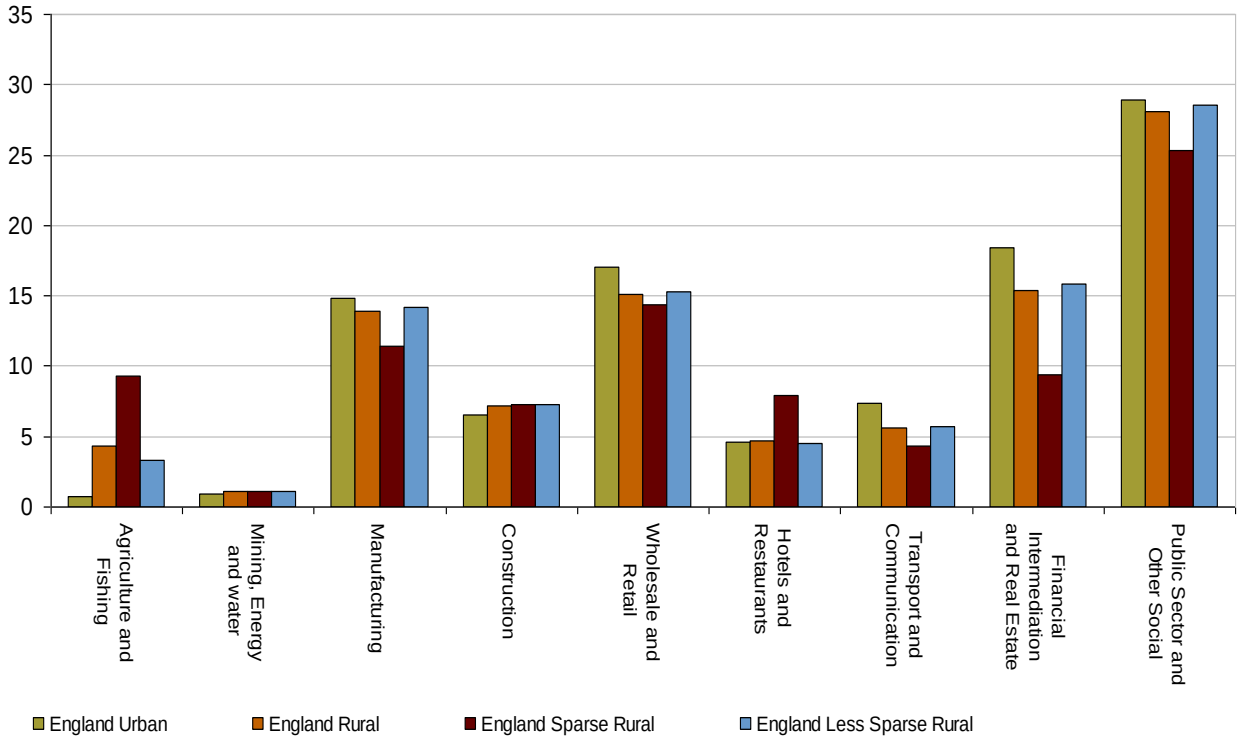
3.1.1.6 The labour market

32. As noted above, the shape of the rural economy in England increasingly resembles that of the country as a whole. Employment therefore also tends to follow a similar pattern. This section presents data on the structure of employment, employment, unemployment and economic activity rates, comparing rural and urban areas, as well as males and females and different age bands. The following tables present data using the rural definition and classification as described at the beginning of this chapter, in Section 3.1.1 above. The structure of employment and other employment data using the OECD definition of rural territories is presented in the Annex to Chapter 12.

33. The structure of employment in rural areas can be shown by employment proportions by industrial sector, as in figure 3-4 below, which is generated by applying the rural definition, building up from data at a very small geographical level, as described in Section 3.1.1.

[27] Page 15, Rural Economics Unit 'Productivity in Rural England' (Defra 2005).
[28] Page 3, Ovum 'UK Broadband status summary March 2006-A report for the Department of Trade and Industry' (Ovum 2006).
[29] Page 1, National Statistics Internet Access households and individuals First Release (ONS August 2006).
[30] Page 12, SQW Ltd 'ICT in England's rural economies-A final report to Defra' (SQW Ltd July 2005).
[31] Page17, SQW Ltd 'ICT in England's rural economies-A final report to Defra' (SQW Ltd July 2005).

Figure 3-4 - Distribution of labour force in England by industrial sector - urban/rural comparison[32]



34. With the exception of agriculture (which employs the greatest proportion of the labour force in sparse rural areas), the distribution of the labour force between England urban and total rural areas is similar for all industrial sectors, within a few percentage points. The largest differences in labour force by sector are between urban and sparse rural areas, with the rural average and the less sparse rural areas more closely resembling the urban distribution. The largest differences between urban and sparse rural areas are in the agricultural and financial intermediation sectors. This result would be expected from the nature of rural areas compared to urban centres.

35. Employment[33] is high in England. Between 1999-2000 and 2005-2006, the employment rate in England has consistently been around 75%. Over the same period, the employment rate in PR areas (R80 and R50 districts) has consistently been higher than the England average, ranging between 78% and 79%. There are some rural districts where employment performance is not as high as the PR average, although even these districts have employment rates in the range 74% to 75% for the same period. By contrast, urban areas have consistently lower employment rates compared to either the England average or the worst performing rural districts (between 72% and 73% for the same period)[34].

36. The Lisbon Agenda sets targets of a 70% employment rate for males and a 60% employment rate for females. In all regions of England and across both urban and rural districts, the Lisbon targets have been exceeded, as shown in Table 3-5.

[32] ONS Census 2001 Table UV034.
[33] Employment rate of the working age population.
[34] Defra Rural Statistics Unit, Labour Force Survey/ Annual Population Survey various years (ONS).

Table 3-5 - Employment rate for males and females in England[35]

	Male				Female			
England region	**Urban**	**SR**	**R50**	**R80**	**Urban**	**SR**	**R50**	**R80**
North East	73%	--	74%	77%	68%	--	67%	70%
North West	75%	80%	81%	82%	68%	73%	72%	74%
Yorkshire & The Humber	78%	79%	82%	84%	68%	70%	72%	77%
East Midlands	76%	83%	81%	84%	68%	75%	75%	75%
West Midlands	76%	82%	83%	84%	65%	73%	74%	77%
East of England	82%	84%	82%	85%	71%	72%	76%	74%
London	75%	--	--	--	63%	--	--	--
South East	82%	86%	86%	85%	73%	75%	76%	77%
South West	81%	84%	83%	82%	73%	78%	74%	73%

37. Patterns of employment differ for males and females between regions. For males, the North East has the lowest employment rates compared to both urban and rural areas of other regions. For rural areas, employment rates for males are at least as high as urban areas in the same region. Employment rates for males are highest in the South East.

38. For females, employment rates are lowest in London (the only region with no rural areas) and highest in the South West. With the exception of the North East, within each region the female employment rates in rural areas are at least as high as the employment rates in urban areas. An age and gender breakdown on employment rates shows that the national trends in employment rates between urban and rural areas and between males and females are also set to continue within each age group. Table 3-6 also shows that, for both males and females, the urban employment rate in each age band is below that of the rural employment rate in each age band. Up to the age band 50 to retirement, the employment rates for males are the same or higher than those for females (Table 3-6). However, the pattern reverses in the over retirement age band, where female employment rates are above those for males. This could be partly explained by the greater number of women in this age band, as shown above in Figure 3-1**.**

[35] APS, 2005; employment rates of working age population. Where percentages are not presented, there are no districts of that urban or rural classification in the region.

Table 3-6 Employment rates for England by gender, age band and rural/ urban districts[36]

England	16-24	25-34	35-49	50 to retirement	over retirement
Urban					
Male	56%	86%	87%	71%	8%
Female	53%	70%	74%	67%	10%
Rural					
Significantly rural - male	66%	92%	92%	76%	10%
Significantly rural - female	63%	75%	79%	71%	12%
R50 - male	66%	92%	92%	75%	10%
R50 - female	66%	75%	80%	70%	11%
R80 - male	69%	92%	93%	76%	10%
R80 - female	64%	77%	80%	71%	12%

39. However, these data on employment do not provide information on the quality of jobs or on the closeness of match between skills and vacancies. Where there are lots of similar businesses, people can move around more easily within the industry, gaining skills and progressing their careers. However, in rural areas, the potential labour supply is much thinner. Therefore, it is more likely that rural vacancies would face a mismatch of skills of job seekers resulting in disguised under-employment. This problem with measuring number of jobs created and the potential issue of the quality of those jobs is noted in assessments of the mid-term evaluation reports for the previous Rural Development Programme (2000-2006)[37].

40. The economic activity rate demonstrates how many people are in the labour market, adding together the employed and the unemployed people of working age. Economic activity rates are consistently high in England and consistently high between urban and rural areas. The urban economic activity rates range from 74% in London to 80% in the South West and East of England. The range of rural economic activity rates starts from the same rate at 74% in the North East but is as high as 84% in the South East region. In all regions, the performance of rural areas economic activity rates compared to urban areas is either comparable to or better in the rural districts[38].

41. Economic activity rate for males and females by region and by rural and urban area follow broadly similar patterns. For males, the lowest economic activity rate is in North East region (78%) with the highest rate in the South East (89%). In all regions with rural districts, the rural male economic activity rate is comparable to or higher than that of the urban areas of the region. Across all regions and urban and rural areas, female economic activity rates are lower than those for men are. For females, the lowest economic activity rates are in London (67%) and the West Midlands (69%) with the highest rate in the South West (81%). In all regions with rural districts, the rural female economic activity rate is comparable to or higher than that of the urban areas of the region[39]. There is no evidence of a larger gender participation gap in rural compared to urban areas of England.

[36] APS, 2005; employment rates of working age population.
[37] 'Synthesis of Rural Development Mid-Term Evaluations Lot 1 – Final Report', Agra CEAS Consulting (2005) http://ec.europa.eu/agriculture/eval/reports/rdmidterm/lot1/fulltext.pdf
[38] Defra Rural Statistics Unit, Annual Population Survey 2005 (ONS 2007).
[39] Defra Rural Statistics Unit, Annual Population Survey 2005 (ONS 2007).

42. The unemployment rate in England varies between regions and between rural and urban areas, as shown in Table 3-7. The North East region has the highest rate of unemployment in rural areas at 5%, while Yorkshire and the Humber has the lowest rural rate of unemployment at 2%. The highest unemployment rate is in London (7%) which is the only region with no rural districts. In every region, the unemployment rate in rural areas either is the same as or lower than the rate of unemployment in urban areas.

Table 3-7 - Unemployment rate by region and rural/ urban area in England[40]

England Region	Urban	SR	R50	R80
North East	6%	--	5%	4%
North West	6%	4%	4%	3%
Yorkshire & The Humber	5%	4%	4%	2%
East Midlands	6%	4%	3%	4%
West Midlands	6%	4%	4%	3%
East of England	5%	3%	4%	4%
London	7%	--	--	--
South East	4%	4%	3%	3%
South West	4%	3%	3%	3%

43. Unemployment patterns of males and females follow the same pattern as total unemployment rates. Table 3-8 shows that the lowest unemployment rate for men in rural areas is in Yorkshire and the Humber (2%) and highest in the North East (6%); and that the lowest (2%) and highest (5%) unemployment rates for females in rural areas are in those same districts. For both males and females, as in the aggregate picture, the highest unemployment rates area in London. In all regions, the unemployment rates for both males and females are the same as or lower than the urban districts of the region.

Table 3-8 - Unemployment rates in England of males and females by region and urban and rural area[41]

England Region	Male				Female			
	Urban	SR	R50	R80	Urban	SR	R50	R80
North East	7%	--	6%	3%	5%	--	5%	4%
North West	6%	5%	5%	3%	5%	3%	2%	4%
Yorkshire & The Humber	6%	4%	4%	2%	5%	4%	5%	2%
East Midlands	7%	4%	4%	4%	5%	4%	3%	3%
West Midlands	7%	4%	4%	3%	5%	3%	3%	3%
East of England	5%	3%	4%	4%	4%	4%	3%	4%
London	8%	--	--	--	7%	--	--	--
South East	4%	4%	3%	2%	4%	3%	3%	3%
South West	4%	3%	3%	3%	4%	3%	3%	3%

[40] APS, 2005; unemployment rate of economically active people. Where percentages are not presented, there are no districts of that urban or rural classification in the region.
[41] APS, 2005; unemployment rate of economically active people. Where percentages are not presented, there are no districts of that urban or rural classification in the region.

44. The levels of educational achievement in rural compared to urban areas are presented in Table 3-9 below. In the Rural Sparse (RS) categories, there is a comparable or higher proportion of the working age population with no qualifications compared to Rural Less Sparse (RLS) categories. However, all rural categories have fewer working age people with no qualifications compared to urban categories. For the working age population with qualifications at NVQ levels 1-3, the RS categories perform better than the RLS and at least as well as the Urban (U) categories. However, looking at NVQ level 4 and above, which equate to qualification levels for employment in the knowledge economy industries, the RLS areas perform the best, with up to a third of the working age population having NVQ level 4 qualification or above. In contrast, the proportion of the working age people in both Urban and RS categories with NVQ level 4 qualifications or above ranges between 17% and a quarter of the population. Comparing just RLS and RS areas, the proportion of working age population with NVQ level 4 qualifications and above decreases as rurality increases.

Table 3-9 - Educational achievement of working age people in rural compared to urban areas, 2005[42]

Rural Definition Category	No qualifications	NVQ levels 1-3	NVQ level 4 or above
Urban Less Sparse	15%	59%	25%
Urban Sparse	21%	61%	17%
Rural Less Sparse – village	10%	57%	33%
Rural Less Sparse – Town and Fringe	12%	60%	27%
Rural Less Sparse – Dispersed	9%	57%	33%
Rural Sparse – Village	14%	61%	24%
Rural Sparse – Town and Fringe	14%	67%	17%
Rural Sparse – Dispersed	9%	64%	25%

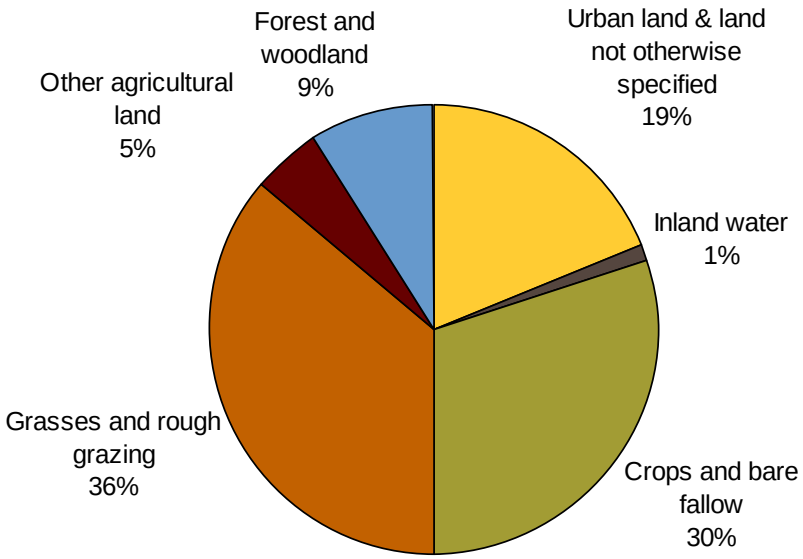
45. The same three industry sectors employ the three largest proportions of the labour force in both urban and rural areas (as shown in Figure 3-4). Generally, the needs of businesses in rural areas therefore mirror the needs of businesses in urban areas and are best addressed by mainstream policies. This range of employment opportunities across industries combined with high qualification levels demonstrates that rural areas are well placed to maximise opportunities presented by the knowledge economy.

3.1.1.7 Land use in rural England

46. Figure 3-5 below shows the area of land in England covered by agriculture, woodland, water or river and urban for 2004.

[42] APS, 2005.
No qualifications: No academic, vocational or professional qualifications.
Level 1: 1+ 'O' levels/CSE/GCSE (any grade), NVQ level1, Foundation GNVQ.
Level 2: 5+ 'O' levels, 5+ CSEs (grade 1), 5+ GCSEs (grade A to C), School Certificate, 1+ 'A' levels/AS levels, NVQ level 2, Intermediate GNVQ Level 3: 2+ 'A' levels, 4+ AS levels, Higher School Certificate, NVQ level 3, Advanced GNVQ.
Level 4/5: First degree, Higher degree, NVQ levels 4-5, HND, HNC, Qualified Teacher Status, Qualified Medical Doctor, Qualified Dentist, Qualified Nurse, Midwife, Health Visitor.

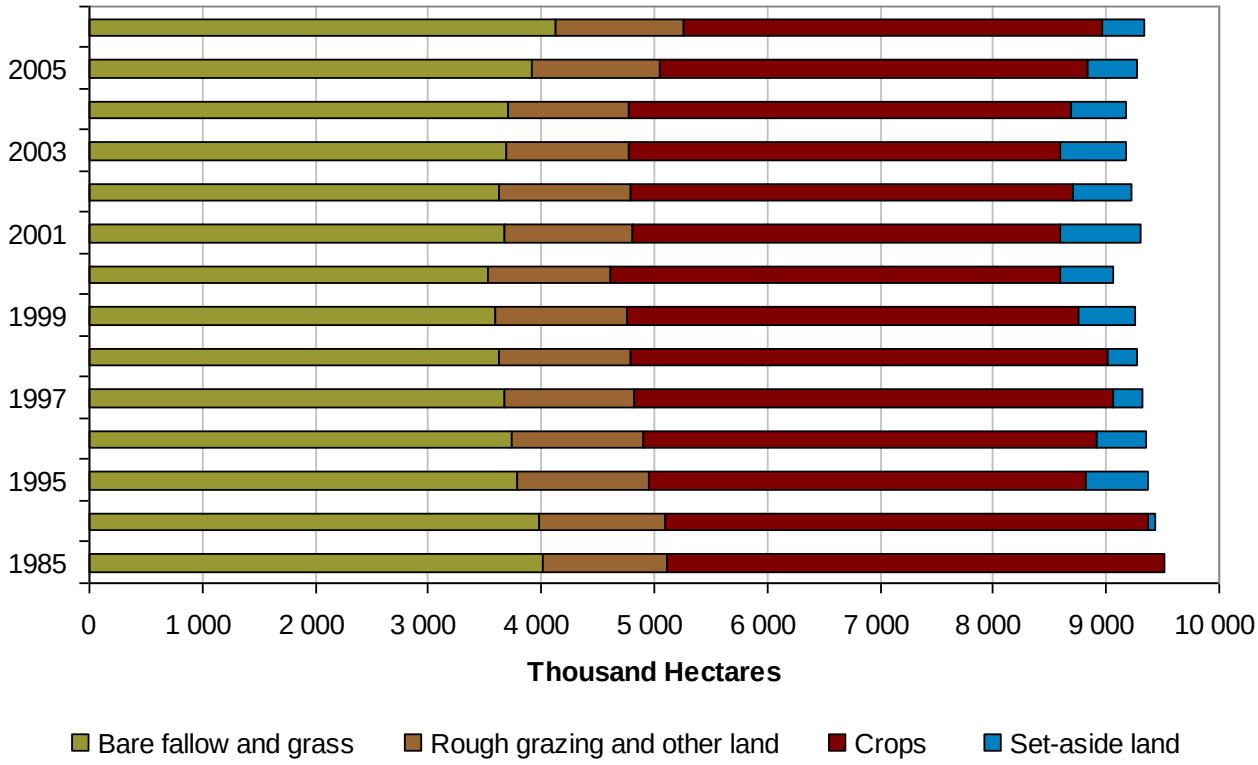
Figure 3-5 - Land Use in England[43]



47. As Figure 3-5 shows, land in England is primarily managed agriculturally. In fact, over 70 per cent of the total England land area is under agricultural uses. Figure 3-6[44] shows that the total area of agricultural land in the UK fell by 1 per cent between 1986 and 2005. The area under crops fell by 9 per cent between 1992 and 1993, mainly as a result of EC Set Aside Schemes, and in 2005 was 15 per cent less than in 1986. Variation of the land area set-aside is generally attributed to end of 5-year schemes and introduction of new schemes, and to optional and mandatory requirements.

[43] Source: Defra, Ordnance Survey, Forestry Commission, Forest Service. 'Other agricultural land' refers to set aside and other land on agricultural holdings, and excludes woodland.
[44] http://www.defra.gov.uk/environment/statistics/land/kf/ldkf05.htm

Figure 3-6 – Agricultural land use in England: 1985 - 2006



48. The Defra June 2006 Survey of Agriculture and Horticulture provided further detailed information about how agricultural land in England is managed[45].

49. Table 3-10 sets out Agricultural Land Use in England as at June 2006. Since the introduction of the Single Payment Scheme, the area classified as permanent grassland on agricultural holdings increased by about 6% on 2005 whilst the cropable land area has reduced.

Table 3-10 - Land use in England in June 2006[46]

	Thousand Hectares
Total crops - see note (a)	3711
Bare fallow/land not in agricultural production (b)	207
Set-Aside Scheme land (c)	363
Total Cropable area	**4281**
All grass under 5 years old	589
All grasses 5 years old and over	3330
Sole right rough grazing	670
Woodland	296
All other land on agricultural holdings	162
Total Agricultural Area (d)	**9329**

(a) Excludes crops grown on Set-Aside Scheme land.
(b) Land voluntarily taken out of production is not included within the set-aside estimate.
(c) Sourced from the Rural Payments Agency (RPA) payments data not the June survey and only includes compulsory set-aside.
(d) There is also an additional 428 thousand hectares that has historically been assigned to common rough grazing.

[45] http://statistics.defra.gov.uk/esg/statnot/june_eng.pdf
[46] The June 2006 Survey of Agriculture and Horticulture. Notes about the table:

50. Table 3-11 below shows a breakdown of the crops that were grown on non Set-Aside land. Wheat is by far the most dominant crop and accounts for around 46% of the non Set-Aside crops in England. Although the wheat area has fallen in recent years, the winter crop area from the December 2006 Survey of Agriculture suggest that the wheat area will increase again this year (2007). The area of barley, the second largest cereal crop, has been in decline in recent years mainly due to a decrease in the area of the spring-sown crop. Overall cereal crops account for around 65% of the crops on non Set-Aside land. Of the other crops, oilseed rape is the largest and its area has risen from 250 thousand hectares in 1995 to 450 thousand hectares in 2006. The area under sugar beet has been in decline recently and this area will continue to fall in the wake of British Sugar Ltd closing some of its processing factories, and this is likely to see the crop disappear from some parts of the country. Horticultural crops account for around 4% of the total cropable area, with the vast majority constituting vegetables and salad crops grown in the open.

Table 3-11 - Crops (non set-aside land only) England June 2006

	2006
Wheat	1709.0
Barley	
winter	322.3
spring	242.8
total	**565.0**
Oats	93.0
Rye	6.7
Mixed Corn	2.4
Triticale	11.4
Total cereals (excluding maize)	**2387.7**
Rape grown for oilseed	
winter	446.8
spring	15.9
total	**462.8**
Sugar beet not for stock feeding	130.1
Potatoes (early and main crop)	105.3
Hops	1.1
Linseed	32.3
Industrial Crops (including flax) - (a)	18.3
Other crops	46.2
Total other crops not for stock feeding	**796.1**
Peas for harvesting dry (human consumption or stock feed)	44.5
Field beans	179.7
Maize	124.4
Other crops for stock feeding	31.1
Mainly fodder or compounding crops total	**379.8**
Vegetables & salad grown in the open	105.6
Total orchards, small fruit and grapes	29.4
Other horticultural crops grown in the open	10.6
Area under glass or plastic covered structures	2.0
Total horticultural cops (excluding potatoes, peas for harvesting dry and mushrooms)	**147.6**
Total crops	**3711.2**

51. The June 2006 Survey of Agriculture and Horticulture provides information on the livestock numbers in England, as shown in Table 3-12. There are just over 15.5 million sheep and lambs in England, whilst cattle numbers are around 5.4 million. The size of the English dairy herd has declined continuously over the last 15 years from over 2 million to less than 1.3 million (Figure 3-7 below). The size of the beef herd has only shown small fluctuations throughout this period. However, the size of both herds fell in the year to June 2006, as did the number of heifers in calf, suggesting that we will see a further decline in both the beef and the dairy herd size during 2007. Whilst sheep are generally left out to graze for almost all of the year, most cattle are

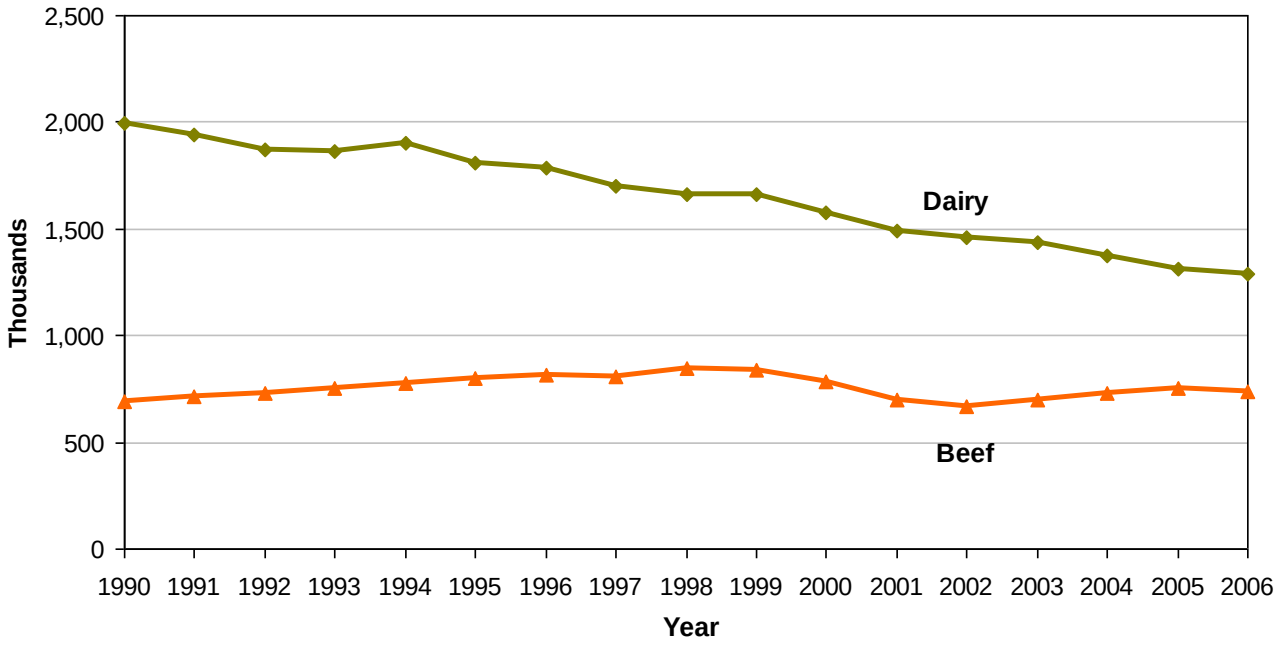
housed for a considerable period over winter. The 2006 Farm Practices Survey[47] showed that the typical grazing period for cattle is from mid to late April until late October/early November. The length of the grazing period for beef cattle tends to be longer in the South of England than the North, whilst the dairy herd tend to have a longer grazing period than the beef herd. There are approximately 4 million pigs in England, the 2006 Farm Practices Survey shows that only around 17% of pigs are kept in an outdoor environment.

Table 3-12 - Livestock in England in June 2004, 2005 & 2006

Thousand Head

		2004	2005	2006
Total cattle and calves		**5,679**	**5,527**	**5,378**
of which:	dairy cows	1,374	1,311	1,290
	beef cows	730	752	739
	heifers in calf	853	754	742
Total sheep and lambs		**15,873**	**15,877**	**15,673**
of which:	breeding sheep	7,587	7,289	7,191
	lambs under one year old	7,814	8,040	7,932
Total pigs		**4,234**	**3,959**	**4,057**
of which:	breeding pigs	499	459	462
	other pigs	3,729	3,494	3,590

Figure 3-7 - The dairy and beef herd in England 1990 to 2006



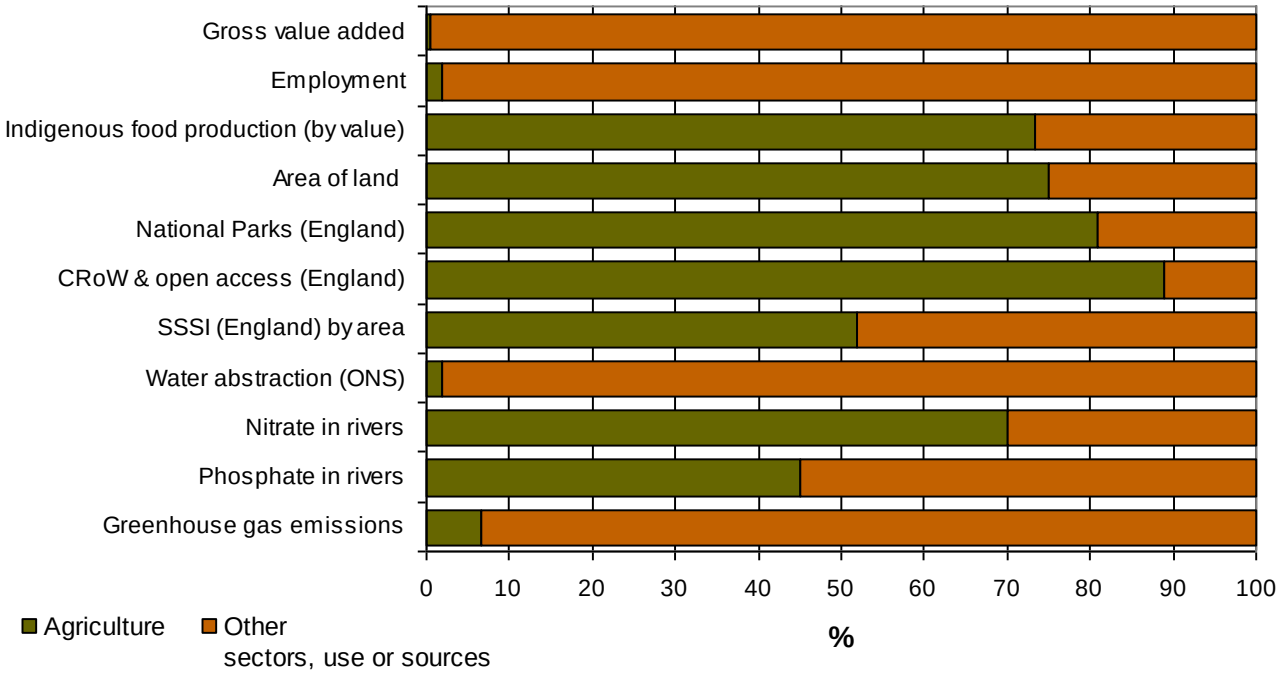
52. It is clear that the agricultural sector varies widely in size and type. A range of different farming practices are employed involving: the way in which livestock are kept; the use of inputs such as soil and water as well as nutrient, land and waste management. The interaction between these practices and the local environmental characteristics affect the extent to which farming activities impact on the environment. The effects on the environment are significant and complex – farming activities can

[47] http://statistics.defra.gov.uk/esg/publications/fps/default.asp.

give rise to both positive and negative impacts on the environment operating at local, regional, national and global levels.

53. Figure 3-8 below puts UK agriculture into context by bringing together data to summarise agriculture in comparison with other sectors in the UK. It shows the agricultural sector as a proportion of the UK (or England where stated). It includes the agricultural contribution to the UK economy; land protection and conservation; resources; pollution and emissions.

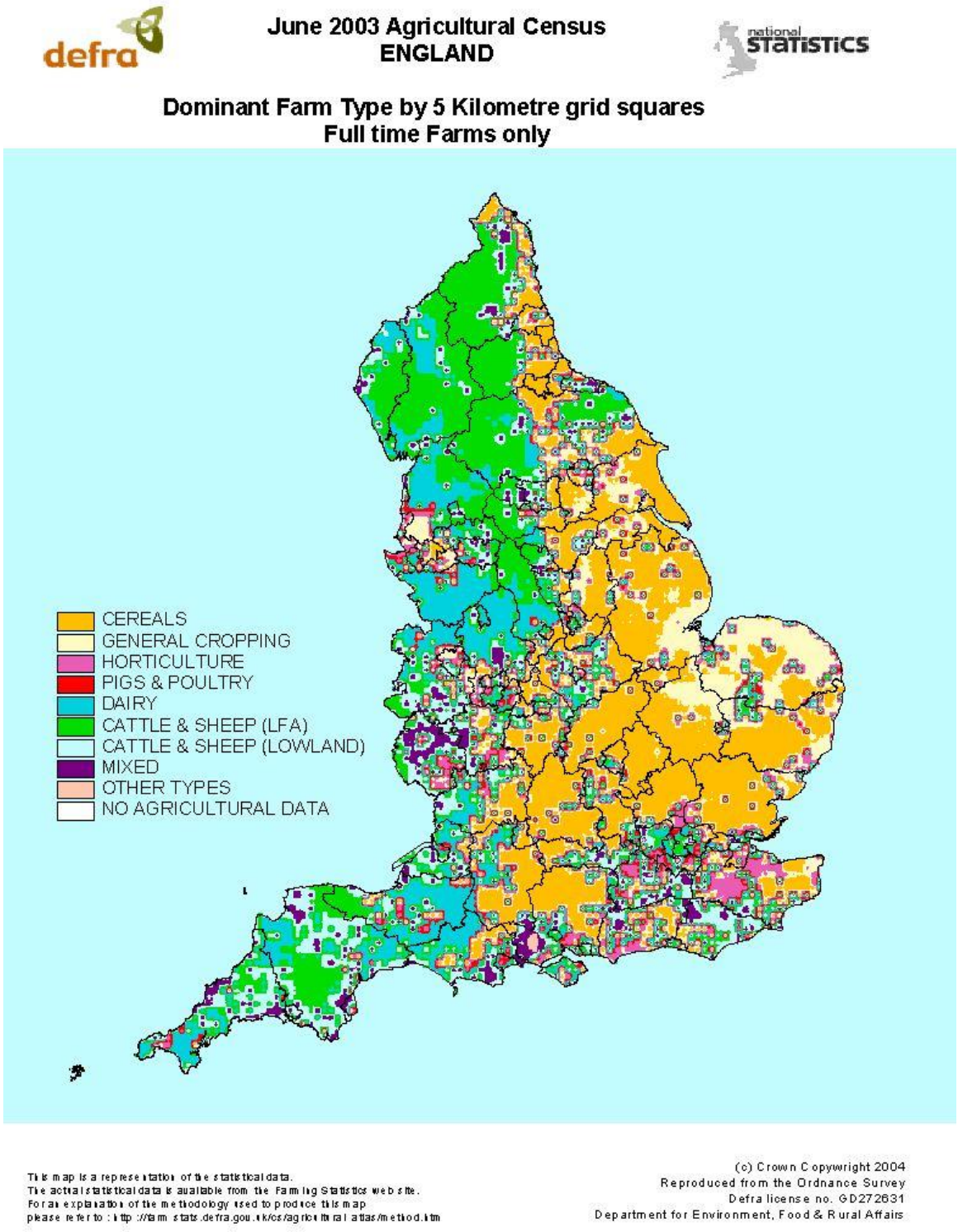
Figure 3-8 Environmental profile of the agricultural sector[48]



54. Farming in England is strongly affected by geographical factors. The map in Figure 3-9 shows the variation in farming activity across the country with pastoral-based systems dominating in the uplands and lowlands of the North, Welsh borders and South West and mixed and arable cropping systems dominating central, eastern, southern and South East England.[49]

[48] Sustainable Farming and Food Strategy: Forward Look - Supporting economic and statistical analyses http://statistics.defra.gov.uk/esg/indicators/documents/sffsforwardlook.pdf
[49] Defra website http://www.defra.gov.uk/erdp/docs/national/section5/agriculture.htm

Figure 3-9 - Dominant Farm Type in England



55. Woodland cover of England has increased steadily from the early part of the 20th Century, as illustrated in Table 3-13. However, although it has risen by 70% over this period the proportion of woodland cover is still only 25% of the EU-25 average.

Table 3-13 - Area of woodland in England 1924-2006 (000 Hectares)[50]

Year	1924	1947	1965	1980	1995-99	2006
Hectares	660	755	886	948	1097	1121
% land cover	5.1	5.8	6.8	7.3	8.4	8.6

56. This increase in forest cover can be explained by government policy. Following the First World War the Forestry Commission was established with the primary objective to create a strategic reserve of timber (without compromising agricultural production). During the Second World War, the demands placed on British timber were again immense and the post-war forestry policy statement reinforced the need to establish a significant reserve as soon as possible. This, together with the requirement that agricultural production should not be compromised, resulted in extensive afforestation with exotic coniferous species. In the 1950s the military aim was replaced with an economic strategic objective, in effect an import substitution rationale, as it was considered the continued global increase in demand for timber and forest products would result in an increase in costs (this scenario has not transpired). Afforestation with exotic conifers on unproductive agricultural land therefore continued, together with the conversion of existing broadleaved woodland to coniferous.

57. It was not until the 1980s that the importance of broadleaved woodland was recognised. A policy for broadleaved woodland was announced in 1985 that resulted in an encouragement of the planting of broadleaved woodland, although there was still a presumption against the conversion of productive agricultural land. The encouragement of and support for the afforestation of agricultural land developed from 1988. One aspect of forestry policy in England is to continue to increase woodland cover, but that it should be targeted to provide public benefits. These include expansion and linkage of native woodlands, the creation of woodland close to centres of population for recreational purposes and to assist in the restoration of degraded landscapes (such as in The National Forest and Community Forests).

Ownership Structure and holding size

58. Table 3-14 shows the tenure of total area agricultural holdings for England as of June 2006.

[50] Table 1.2, Forestry Statistics 2006, Forestry Commission.

Table 3-14 - The tenure of total area agricultural holdings for England as of June 2006

Land rented under:	Thousand hectares
Full agricultural tenancy	1835
Farm business tenancy	1003
Other arrangements	465
Total Land rented	3303
Total Land owned	6220
Seasonal use of land	
Area of land returned as being let for 364 days or less for cropping, hay making or grazing	539.3
Area of land returned as being rented for 364 days or less for cropping, hay making or grazing	433.9

59. The average size of English agricultural holdings is shown in Table 3-15 below.

Table 3-15 - Agricultural holdings in England by size 2005[51]

		England
	Number of holdings (thousand)	Total ESU
Size of holding (ESU)		
under 8 ESU	122.8	168.4
8 to under 40 ESU	31.0	621.7
40 to under 100 ESU	21.9	1 424.7
100 to under 200 ESU	12.3	1 710.4
200 ESU and over	8.0	3 563.8
Total	195.9	7 489.0
Average size (ESU):		
All holdings		38.2
Holdings 8 ESU and over		100.1
	Number of holdings (thousand)	Hectares (thousand)
Total area on holdings		
Under 20 hectares	121.1	523.9
20 to under 50 hectares	26.5	875.8
50 to under 100 hectares	21.5	1 548.5
100 hectares and over	26.8	6 330.1
Total	195.9	9 278.4
Average area (hectares):		
All holdings		47.4
Holdings 8 ESU and over		112.7
% of total area on holdings with 100 hectares and over		68.2

NB: European Size Units (ESU) measure the financial potential of the holding in terms of the margins which might be expected from the crops and stock. The threshold of 8 ESU is judged to be the minimum for full-time holdings.

60. Above the threshold of 8 ESU (European size units), the minimum size for a full time farm, the average holding size in England is 112.7 hectares, above the EU average for both EU 27 and EU 15. There are 26,800 large holdings (of over 100 ha) with about 6.3 million ha between them. Therefore, the average 'large' holding is around 234 ha. The significant number of very small holdings (below 8 ESU), reflects the increasing trend for part-time, lifestyle or hobby farming, or equestrian activities.

61. Woodland ownership data are not regularly collated, except the split between the public forest estate and other owners. However, the National Inventory of Woodlands and Trees published in 1998 did include a breakdown by ownership type together with an estimate of the number of holdings for various ownership sizes (excluding that area managed by the Forestry Commission) as presented in Table 3-16 and Table 3-17.

[51] Table 3.3 Agriculture in the UK 2006 (Defra 2006)

Table 3-16 - Woodland ownership types in England by area and percentage[52]

Ownership type	Area (ha)	%
State (Forestry Commission)	222,694	21.8
State (other)	27,302	2.7
Local Authority	61,098	6.0
Community ownership or common land	3,732	0.4
Forestry or timber business	7,200	0.7
Business	146,601	14.3
Personal	480,794	47.1
Charity	68,484	6.7
Unidentified	3,917	0.4
Total	**1,021,822**	**100.0**

Table 3-17 - Size class distribution of woodland in England by ownership units[53]

Size class (ha)	Number of ownership units	Total area (ha)	Percent of total area
<2	Unknown	62,294	7
2 - <10	43,753	185,655	21
10 - <20	7,081	98,530	11
20 - <50	4,568	140,178	16
50- <100	1,593	110,579	13
100 - <500	952	181,296	21
500 and over	95	90,761	10
Total	**58,042**	**869,248**	**100**

[52] Table 12 National Inventory of Woodland and Trees, 1998, Forestry Commission.
[53] Compiled from Tables 7b and 14 National Inventory of Woodland and Trees, 1998, Forestry Commission.

62. It is therefore clear that the private personal ownership, which includes individuals, private family trusts and family partnerships, is the most prevalent and that almost 40% of owners have less than 20 hectares.

63. Reliable national data relating to woodland ownership in association with agricultural land ownership are not available, although figures from the agricultural and horticultural census 2006 (see Table 3-10) suggest that about 46% of the personal and business ownership in Table 3-16 could be classed as 'farm woodland'.

64. No national data exit on the financial potential of woodland ownership. A study undertaken in the Chilterns Area of Outstanding Natural Beauty (AONB) however provides some insight. The Chilterns AONB is well wooded, by English standards, with 21% woodland cover and has a long history of woodland management and wood usage in the local economy. It is not, therefore, typical of England as it could be expected that commercial woodland management would be more prevalent than elsewhere. The traditional land ownership throughout the Chilterns has historically been mixed agricultural and wooded estates, which is still substantially the case with about 75% of those owners with more than 20 hectares of woodland also owning adjoining agricultural land[54]. However only about 16% of owners of both woodland and farmland consider land management as their main source of income. Woodland ownership and management are very rarely seen as potential sources of income. Only 18% of owners state that the woodland management they undertake is self-financing whilst 9% claim any income generation[55]. It is therefore apparent that the objectives of ownership are other than financial, although a small percentage considers it an investment.

3.1.1.8 Overall assessment of the range of information presented

65. Rural areas of England are experiencing a net in-migration from urban areas. The nature of the migration between rural and urban areas and the inherent characteristics of rural areas results in a higher proportion of older people in rural compared to urban areas. Whilst this can present challenges in terms of loss of young adult workers it presents opportunities in terms of the entrepreneurial drive from many of the older adult incomers.

66. The majority of England's rural areas are easily accessible to urban areas and as a result, there is a close relationship in the economic activity found in both types of area. This is reflected in flows of commuters but also in the economic activity actually located in the rural areas. In terms of employment, there is very little difference in the dominant sectors with the relatively small differences made up by those engaged in farming. In these rural areas there are a wide range economic opportunities. There are however, some rural areas that do not have easy access to urban areas and have inherent characteristics, which lead to low levels of economic performance and growth.

67. The drivers of productivity are the same for all areas: skills, investment, innovation, enterprise and competition. The context in which the drivers operate differs between rural and urban areas and even between different rural areas. In general, rural areas perform as well as urban areas in terms of skill, innovation and enterprise but less well in terms of competition and investment. The other key driver of economic performance, employment, is also high England rural areas with even the lowest performing rural areas experiencing higher levels of employment than urban

[54] Page 166 M G Render Unpublished Brunel University PhD thesis: The development of sub-regional policy for sustainable forestry, with particular reference to the Chilterns, UK.
[55] M G Render Unpublished Brunel University PhD thesis: The development of sub-regional policy for sustainable forestry, with particular reference to the Chilterns, UK. Table 7-7 page 167.

areas. There are also high levels of economic participation in terms of age and gender.

3.1.2 Performance of the agricultural, forestry and food sectors

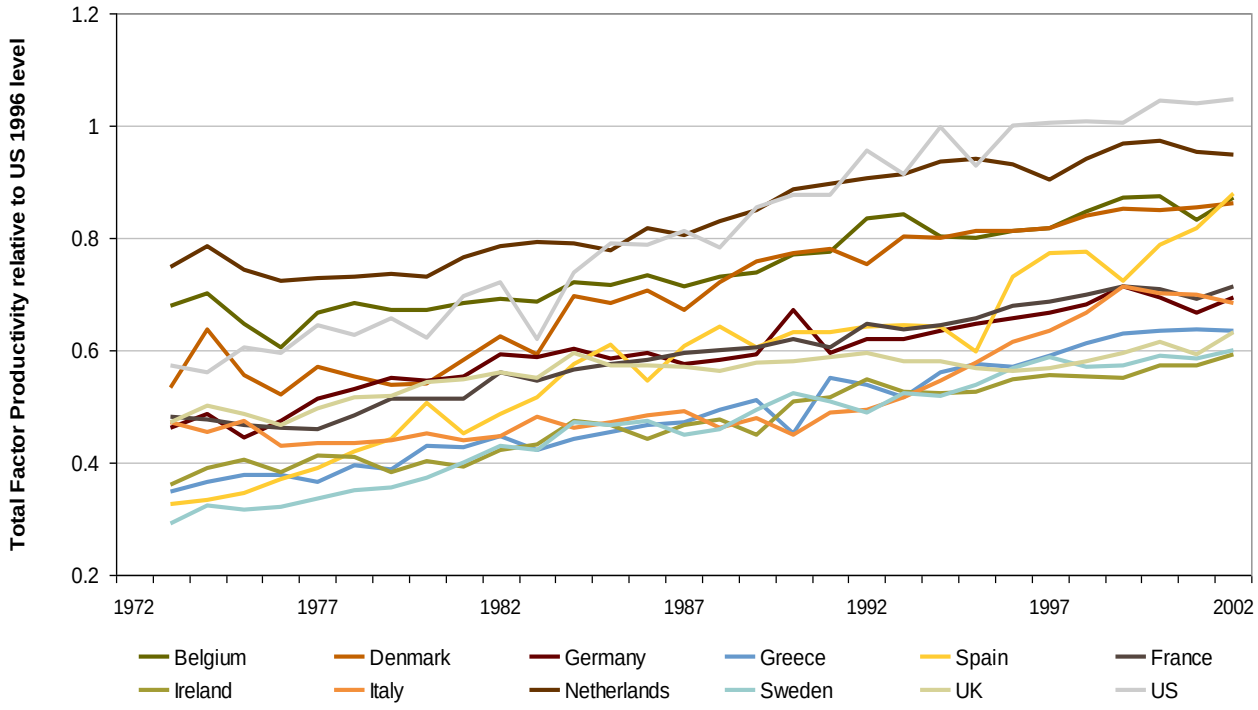
3.1.2.1 Competitiveness of the agricultural, forestry and food sectors

Competitiveness of agriculture and food sectors

68. Industry productivity is a widely used indicator of competitiveness. Productivity can be measured in relation to particular inputs (labour, capital etc) or it can be considered against all relevant inputs to give Total Factor Productivity (TFP).

69. In the mid 1970s the UK's agricultural productivity (as measured by TFP) was above the EU average (for the then EU10), although still behind the leading EU countries and the US (as Figure 3-10 illustrates). By the early 1990s, the UK had fallen back relative to other countries, but since then accelerated productivity growth (largely in response to the severe financial pressures of the late 1990s), has resulted in a partial recovery[56].

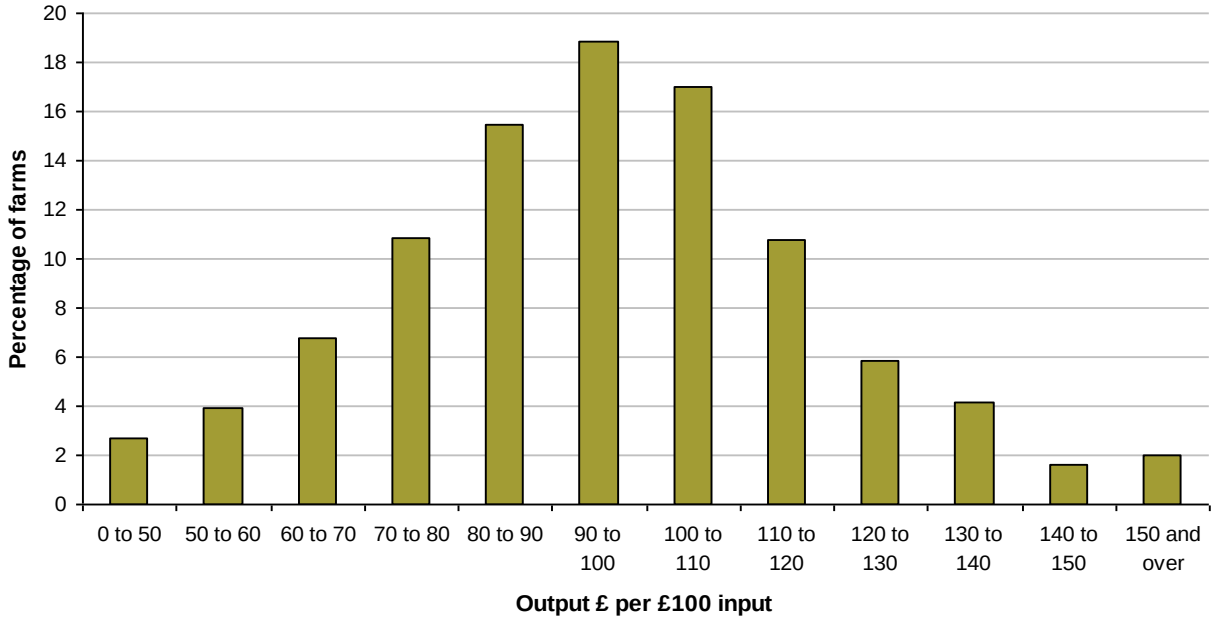
Figure 3-10 - Trends in total factor productivity in agriculture[57]



70. Comparisons of the productivity performance of different farm businesses in England show that there is significant scope to improve performance (see Figure 3-11 below), as there is a wide variation in outputs per £100 input. This variability in performance is driven by a combination of differences in costs and differences in the value added achieved. Economies of scale are important but equally so are other factors, relating to skills and business organisation as well as externally determined factors such as climate and geography.

[56] The international comparisons described in this section are available only at UK level, but broadly reflect (and are largely dominated by) the agricultural situation in England.
[57] Chart 12, P16, Sustainable Farming and Food Strategy: Forward Look Supporting economic and statistical analysis (Defra, July 2006)

Figure 3-11 - Distribution of performance across farms > 0.5 Standard Labour Requirement 2004/05[58] (England and Wales)



71. Recent research[59] analysing Farm Business Survey data for England and Wales from 1982 to 2002 (see Table 3-18 below) shows that most farm types exhibit a relatively high degree of efficiency with the majority of farms close to the efficient frontier. Frontier farms[60] of all types are becoming more efficient through time due to technical change, which ranges from 5.8% per year for cereal farms to 1.6% a year for poultry farms. However, whilst the frontier of productive efficiency is being pushed out by technical change, evidence suggests that the average farm is falling behind that advancing frontier.

72. Change in mean annual efficiency from 1982 to 2002 (shown as average per annum percentages) shows that farms of all types (except cereal and poultry farms) have on average become relatively less efficient between 1982 and 2002. The issue of scale of operation dominates the difference between the farms that are most efficient, and that define the frontier, and those that are least efficient. However, this does not exclusively mean that large farms (in terms of area or herd size) are more efficient than small farms, but that on average larger farms are more efficient.

[58] Chart 13, P 17 Sustainable Farming and Food Strategy: Forward Look Supporting economic and statistical analysis (Defra July 2006).
[59] Efficiency and Productivity at the Farm Level in England and Wales 1982 to 2002, David Hadley: Report to Defra, March 2006.
[60] The most efficient 15% of farms are classified as frontier farms – see for example http://statistics.defra.gov.uk/esg/reports/prodagri/paper6.pdf

Table 3-18 - Summary of analysis of Farm Business Survey (1982 to 2002, England)

	Farm Type							
	Cereals	**Dairy**	**Sheep**	**Beef**	**Poultry**	**Pigs**	**General Cropping**	**Mixed**
Number of farms in sample	702	1431	592	402	85	199	1094	1093
Technical change (average per annum)	5.80%	2%	2%	3.30%	1.60%	3.50%	4.20%	5.20%
Approximate Efficiency Change (average per annum)	0%	-0.43%	-0.76%	-0.24%	0%	-0.48%	-0.95%	-0.95%

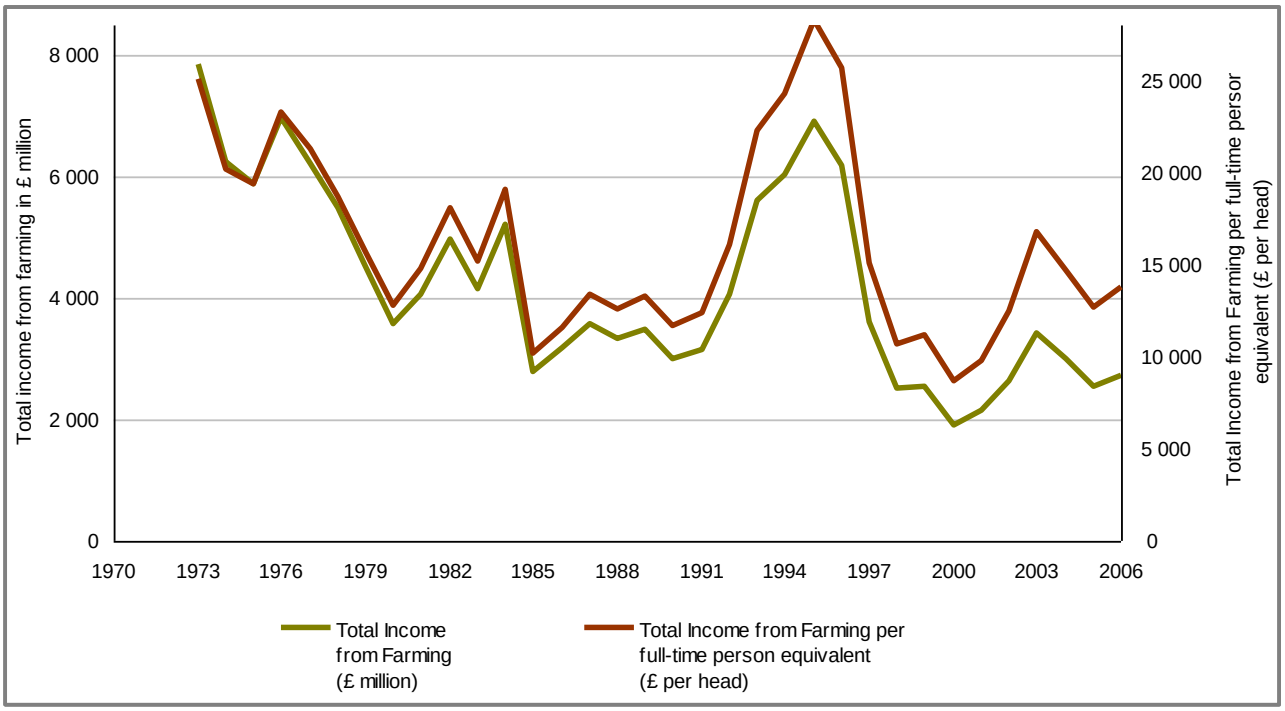
Note: Inputs include an allowance for farmer and spouse labour costs and for capital costs. Source: Farm Business Survey, Defra

73. Levels of productivity feed through to farm income levels. Improvements in England's relative productivity performance compared to the UK's international competitors will, all other things being equal, lead to increased income levels. However, there are many other external factors (in particular the exchange rate and commodity price movements) which shape farm income trends.

74. In 2000, Total Income from farming per full time person equivalent (the returns to the labour and entrepreneurial input of farmers, spouses and other business owners) was at its lowest level, in real terms, since the depression of the late 1930s[61]. Since then, a period of recovery (see Figure 3-12) was followed by a two-year fall back and then a rise, in 2006, to £13,840 (UK figures). Total Income from farming for England has shown a similar pattern, increasing in real terms, by 32 per cent on the low 2000 value, compared with a 27 per cent increase for the UK as a whole over the same period. Incomes in Less Favoured Areas are considered further below.

[61] Quoted P 18 Sustainable Farming and Food Strategy: Forward Look Supporting economic and statistical analysis (Defra July 2006)

Figure 3-12 - Agricultural industry income trends in the UK (real terms at 2006 prices)[62] [63]



75. Farm incomes also vary according to sector. For example, in the dairy sector, the last major study[64] concluded that only 40% of farmers produced milk at a profit. There is also a large gap between the most and least efficient dairy farmers. Exits from dairy farming have accelerated in recent years[65]. Costs for livestock sectors are going to continue to rise, particularly as a result of the increasing emphasis on their environmental performance and contribution to climate change. Increasing their competitiveness to enable them to manage these rising costs and strengthen profitability will be essential for their long-term viability, particularly against the background of their existing low profitability and incomes.

76. The steep decline in agricultural incomes since the mid 1990s has been shaped by a combination of drivers, in particular changes in the exchange rate. The decline in the pound/euro rate after the UK left the Exchange Rate Mechanism (ERM) in the early 1990s led to a boom in farming's profitability, which was reversed as the pound/euro rate increased in the latter half of the decade. There has also been the impact of changes to commodity prices, and the impact of diseases such as BSE, foot and mouth disease and bovine tuberculosis, and more recently rises in the price of energy.

77. For some farm households the downturn will be partly cushioned by other sources of income. More than a half of full time farms in England have diversified sources of income (either through off-farm employment or other types of business on the farm) and for a significant number of these households diversified income is at

[62] Chart 16, page 19, Sustainable Farming and Food Strategy: Forward Look Supporting economic and statistical analysis (Defra July 2006).
[63] It should be noted that the 2005 estimates include the full value of the Single Farm Payment which, in accordance with National Accounting conventions, is included on an accruals basis. On a cash flow basis total income for 2005 fell by over £2b as a consequence of delayed payments.
[64] Professor Colman, The Economics of Milk Production on England and Wales, in 2002/2003
[65] Milk Development Council www.mdc.org.uk & NFU/RABDF, British Milk - What price milk 2007?

present more important than the income earned from farming. Further information about farm diversification is included in Section 3.1.4.3 below.

78. Whilst income levels remain well below the mid 1990s peak, the net worth of the UK agriculture industry stands at £120 billion, up by around 20% in real terms since the mid-1990s. This reflects a value of assets of £130 billion (which is mainly land) and liabilities of £10 billion[66].

79. Figure 3-13 shows TFP of the food sector. Productivity measures the efficiency at which inputs are converted into outputs. The figures shown in the chart indicate that food manufacturing had a positive TFP growth rate of 0.68 per cent per annum (1998 to 2003), which is above the whole economy average of 0.57 per cent for the same period. The remaining three sectors had negative growth rates: food wholesaling at –0.71 per cent; food retailing at –0.61 per cent; and non-residential catering at –0.10 per cent. It is not clear what underlies this deterioration. In the retail and restaurant sectors, TFP may ignore less measurable consumer benefits, such as longer opening hours, a greater focus on customer service and a focus on convenience.[67] However, underlying productivity may be hampered by planning restrictions and poor use of ICT. UK food and drink manufacturing, particularly within larger enterprises, has performed strongly over recent years, judging by profitability, productivity and value-added.[68]

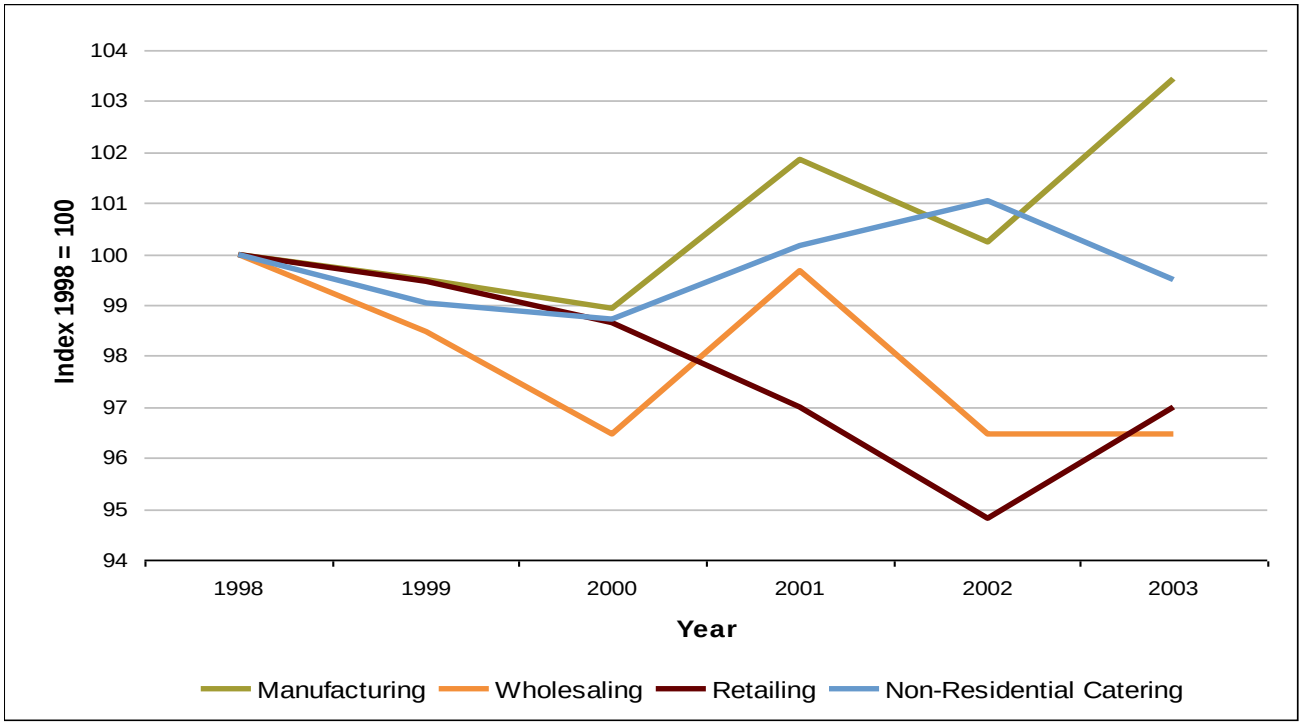
Figure 3-13 - Total factor productivity of the food sector in UK[69]

[66] Page 20, Sustainable Farming and Food Strategy: Forward Look Supporting economic and statistical analysis (Defra July 2006). An aggregate balance sheet is only published at UK level but trends in England broadly follow those for the rest of the UK.

[67] Defra has published an analytical overview of the UK grocery retailing sector (May 2006). See http://statistics.defra.gov.uk/esg/reports/Groceries%20paper%20May%202006.pdf

[68] More economic analysis of UK food and drink manufacturing can be found in a Defra paper of May 2006, http://statistics.defra.gov.uk/esg/reports/FDM%20paper%2019%20May%202006.pdf Further analysis of supply chain profitability is found in the Competition Commission's Emerging Thinking on the groceries market in January 2007, http://www.competition-commission.org.uk/inquiries/ref2006/grocery/emerging_thinking_working_papers.htm

[69] Chart 20, P 22 Sustainable Farming and Food Strategy: Forward Look Supporting economic and statistical analysis (Defra July 2006).

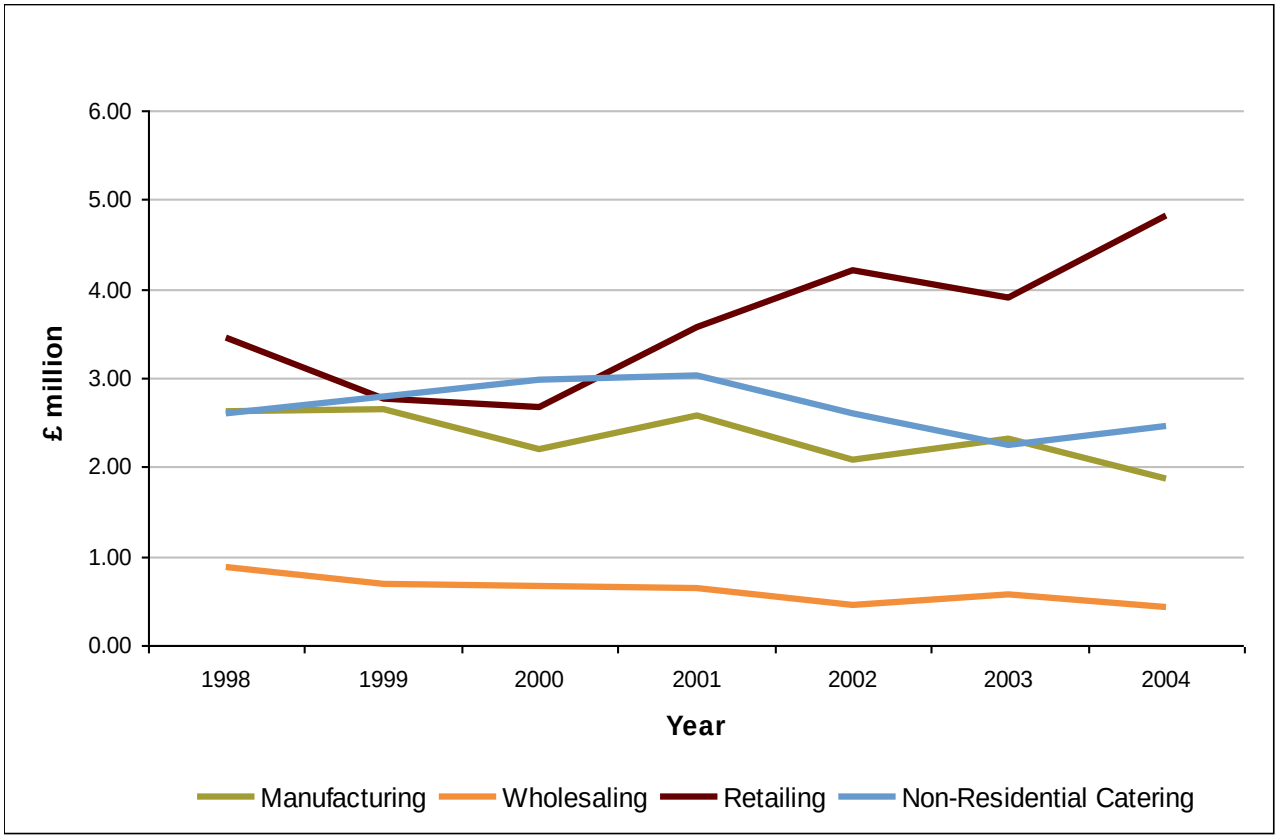


80. Consumption of processed foods has generally been increasing and consumers' expenditure on food has been rising faster than either retail food prices or physical consumption, indicating a switch toward higher value products. In 2005, the food industry was able almost to treble the value of farm gate prices through processing and other value adding activities. Issues such as animal health and welfare have become increasingly important in consumer choices[70] together with other provenance issues such as organic, fair trade and regional and local food (see FISS).

81. Net capital expenditure in food retailing increased by 38 per cent between 1998 and 2004 and totalled £4.75 billion in 2004 (see Figure 3-14). This is around the level of expenditure seen in the whole of the rest of the food sector put together. Over the same period net capital expenditure in food and drink manufacturing and non-residential catering decreased by 28 per cent and 6 per cent respectively. Levels of net capital expenditure are lowest in food and drink wholesaling and have decreased by 54 per cent between 1998 and 2004.

Figure 3-14 - Net capital expenditure in the food sector in UK [71]

[70] Defra Animal health and welfare strategy 2005, page 28.
[71] Chart 21, P 23 Sustainable Farming and Food Strategy: Forward Look Supporting economic and statistical analysis (Defra July 2006).

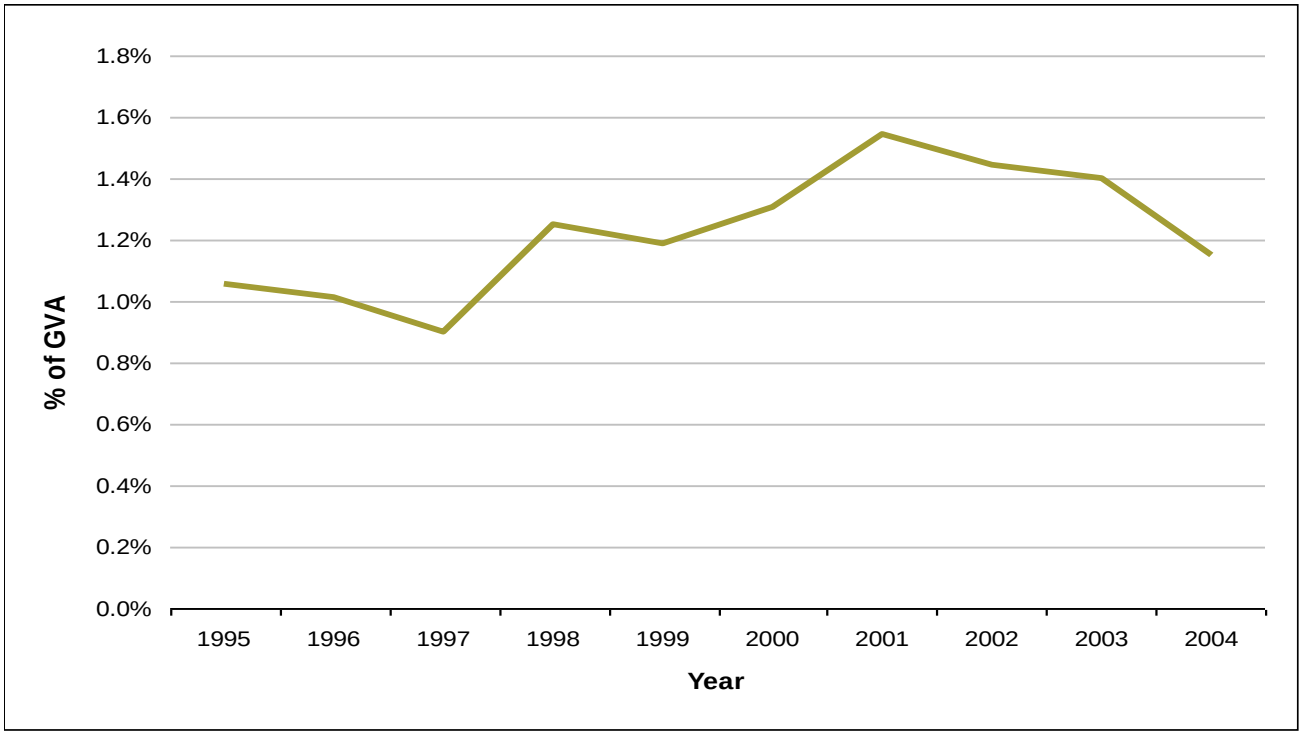


82. Productivity trends in the food sector will in part be shaped by levels of investment and Research and Development (R&D). R&D spending in food and drink manufacturing is significant, at around £250m or 1.15% of total sector GVA[72] (see Figure 3-15). However, R&D has fallen since 2001 and is proportionally lower than that in other UK manufacturing industries. R&D expenditure in UK manufacturing as a whole is equivalent to 7.2% of GVA.

Figure 3-15 - Spending on research and development in food and drink manufacturing as a proportion of GVA in UK[73]

[72] P 23 Sustainable Farming and Food Strategy: Forward Look Supporting economic and statistical analysis (Defra July 2006).

[73] Chart 22, Page 24 Sustainable Farming and Food Strategy: Forward Look Supporting economic and statistical analysis (Defra July 2006).



83. This is not wholly surprising, since the food industry is not reliant on technology in the same way as (for example) IT manufacture. Comparisons by the Food and Drink Federation (FDF) suggest that 'R&D intensity' in the EU food sector is relatively low; in 2001, R&D spend was 0.24% of turnover compared to 0.35% in its major competitors. UK 'R&D intensity' is however well above the EU average, with R&D expenditure increasing from 0.3% to 0.5% of turnover between 1995 and 2002. However, according to the DTI, UK food and drink manufacturing remains less R&D intensive than many other sectors of the economy, although this may simply reflect the high-volume, low-margin nature of its products rather than any fundamental weakness. [74]

Competitiveness of the Forestry Sector

84. As shown in Figure 3-5, woodland and forest cover in England extend to about 9% of the land area. At 13.9 hectares, the average size of private forest holdings in England[75] is similar to the average for the EU as a whole. However, labour productivity in forestry is calculated as being less than a third of that in some other Member States. Table 3-19 shows baseline figures for comparison of labour productivity and average size of woodland holdings.

[74] Para 54, Page 22 Food and drink economics branch 'UK Food and Drink Manufacturing: an economic analysis' (Defra May 2006).
[75] Table 7b. National Inventory of woodland and Trees: England (1998), Forestry Commission.

Table 3-19[76] – Baselines figures of labour productivity and average size of woodland holdings in England

Indicator	England	EU average
Labour productivity in forestry: thousand euros/employed (2002)	11.5	38.3[77]
Average size of private holding (FOWL): ha	13.8	11.7[78]

85. Competitiveness of the forest industries is substantially influenced by productivity. Annual growth rates of labour productivity (GDP per hour) have fallen in the forestry industry in the UK from 3.0% in 1990-95 to 1.1% in 2000-2002 reflecting the impact of low prices of round timber. Innovation, which also plays a significant role, is substantially influenced by workforce skills and is currently at a relatively low level[79]. Part of the problem lies in a low skills equilibrium in England. Weak skills demand from employers feeds weak skills acquisition amongst the workforce. Businesses have trouble in recruiting and retaining their workforce and the workforce lacks motivation to upgrade skills or to seek a career in the industry[80]. This is not a problem restricted to England but is recognised throughout the EU[81].

86. Other data confirm the significant under-utilisation of woodland and forestry resources in England. Less than 25% of the annual growth of timber from broadleaved woodlands is harvested each year and only 60% from conifer forests. Only around half of the woodland in England is under active silvicultural management. However, there is considerable demand for wood processing in the UK – only 19% of timber used by the processing industry is sourced from UK-grown timber[82]. The largest sub-sector of the wood processing industry in England is secondary processing which relies on imported timber[83]. The majority of private sector woodlands are effectively disconnected from these markets because the primary processing sector (sawmills, panel board and paper) in England is dominated by a few, large companies which require consistent large volumes of, primarily, coniferous timber[84].

87. Forests and woodlands are not, however, only associated with jobs in timber related industries. They also support jobs in recreation, wildlife conservation, and other environmental activities. Business sectors such as tourism benefit from attractive landscapes, to which well designed and managed woodlands can make a major contribution. Research on the economics of the forestry sector[85] suggests that

[76] ERDP website CMEF baseline indicators Annexe 1A
http://www.defra.gov.uk/erdp/pdfs/rdp07_13/annex1a.pdf
[77] 9 Member States only.
[78] EU-22 (excl. AT, CY, EL).
[79] Scottish Forest Industries Cluster 'Workforce Development',
http://www.forestryscotland.com/pages/workforce.asp
[80] Page 13 Sector Skills Agreement Stages 1-3 Report: Trees and Timber Industry. Lantra, 2006.
http://www.lantra.co.uk/documents/Treesandtimberstage3_000.pdf
[81] Enterprise Europe No 18. January-March 2005, http://ec.europa.eu/enterprise/library/enterprise-europe/issue18/articles/en/topic9_en.htm
[82] Table 8, Forestry Facts and Figures 2006.
http://www.forestry.gov.uk/website/ForestStats2006.nsf/byunique/index_main.html
[83] Annex 3. Woodland and Forest Sector in England. A Mapping Study Carried out on behalf of the Forest Industries Partnership by Jaakko Pőyry Consulting, 2006.
[84] Ibid.
[85] CJC consulting Ltd Economic Analysis of Forestry Policy in England – (CJC Consulting 2003).

good environmental and forestry management can contribute towards the competitiveness of an area by helping to attract new businesses. A recent analysis of The National Forest has shown some important linkages between the development of The Forest and the area's changing economy[86].

88. Forestry is also identified as having a role in reclamation of brownfield sites. The importance of this multifunctional role is emphasised in the EU Forestry Strategy.[87] Research undertaken for the Forestry Commission has shown that forest recreation attracts significant expenditure in local economies[88]. In England, this ranged from about £8 million per annum at Whinlatter, in the Lake District, to about £100 million per annum in the New Forest. In terms of job creation, this equates to between 140 and 1800 full-time equivalents.

89. The number of people in England employed directly in forestry, haulage and the processing of forestry products is slightly less than 15,000. However, a recent research project[89] looking at the total economic benefits from forestry in the South West found that there could be significant indirect effects. The study found that the direct value of timber production to the South West region was £17 million a year, but that the processing of both local and imported timber was estimated to increase the value of the sector to around £151 million per year. The study also found that other economic uses of woodland and forestry, including recreation, tourism and sporting activities, provided major returns to the regional economy.

90. In summary, there is potential to improve the economic performance of forestry in England. Labour productivity is low by comparison with the EU average, despite the average size of forest holdings in the UK being slightly higher than the EU average. Only about half of English woods and forests are under active management even though there is considerable demand for wood processing in the UK. In order for the forestry sector to become more competitive in the production of wood and wood products there is a need to:

- improve the skills base of those employed in the sector;
- increase the percentage of annual increment currently being harvested;
- improve the connection of home-grown wood and the markets;
- re-engage private forest owners with wood markets.

91. The EC, as a member of the Ministerial Conference on the Protection of Forests in Europe (MCPFE), is committed to the implementation of the General Guidelines for the Sustainable Management of Forests in Europe[90]. As part of this commitment, the MCPFE and its constituent members have developed and adopted a series of criteria and indicators of Sustainable Forest Management (SFM)[91]. Whilst these criteria and indicators are not legally binding, they have been incorporated within the UK approach to SFM[92] and any forest management in England that receives financial support from public funds must meet their requirements.

[86] Morris, J and Urry, J 'Growing Places: A study of social change in the National Forest'. Forest Research 2006.
[87] OJ C56, 26.2.1999, p.1.
[88] Page 6. Christie, M., Hanley, N., Garrod, B., Hyde T., Lyons, N., Bergmann, A. & Hynes, S. 'Valuing Forest Recreation Activities. (Forestry Commission August, 2006).
[89] Table 1, page 4 South West England Woodland and Forestry Strategic Economic Study (Forestry Commission, South West of England Regional Development Agency and Land Use Consultants 2002).
[90] Second Ministerial Conference on the Protection of Forests in Europe, Helsinki 1993.
[91] Improved Pan-European Indicators for Sustainable Forest Management, Vienna 2002.
[92] The UK Forestry Standard, The Government's Approach to Sustainable Forestry, 2004.

3.1.2.2 Analysis of structural disadvantages and identification of restructuring and modernisation needs for the agricultural, food and forestry sectors

92. Few farms regularly employ more than one or two staff, apart from the farmer and his or her family. Whilst this structure may bring benefits (e.g. independence) to the individuals concerned and to rural communities, it also poses problems created, for example, by the lack of economies of scale (which impacts on productivity), and reduced negotiating power. In other words, there are many sellers being confronted by a limited number of buyers who have the leverage to set prices.

93. There are signs that farmers are addressing these issues through collaboration and co-operation with other farm businesses or with the rest of the food supply chain. As shown in Figure 3-16, between 2004 and 2006 the proportion of farmers in England in collaborative enterprises rose year on year from 29% to 32%. The largest increase has been in the cereal sector which has risen from 33% to 44% and in the upland cattle and sheep sector which increased from only 5% to 16%. However, collaboration by dairy farmers decreased from 50% to 44%. The highest level of collaboration in 2006 was among dairy and cereal farmers (44%). The lowest level was of pig and poultry farmers (15%).

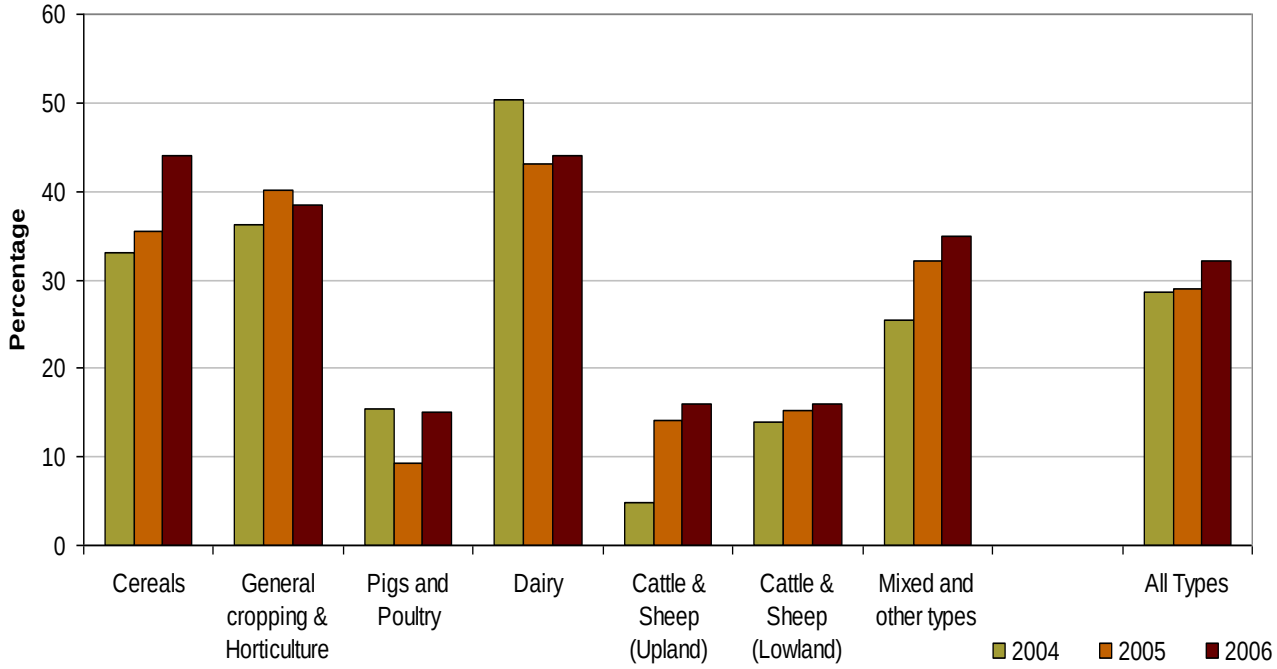
94. Benchmarking is another way in which farmers can collaborate as a means of improving the operation of their businesses, and this is considered in detail below.

95. Total output in England of Farmer Controlled Business (FCBs, i.e. commercial and legally registered businesses in which farmers or farmer's organisations hold a controlling stake) has been estimated to be 30-35% of gross agricultural output. In Sweden, Denmark, the Netherlands, France and Germany it is far higher, indicating that FCBs in those members states are adding more value through processing and service delivery[93]. Research by English Farming and Food Partnerships revealed that 76% of farmers questioned believe that collaboration will be more important in the future. Those involved in production collaboration cited more efficient investment, reduced costs and shared skills as the major benefits. Those collaborating to market produce saw the benefits as better prices, reduced costs and consistency of quality and supply[94]. The figures suggest that there is scope to strengthen further farmer cooperation, and potential benefits from doing so.

[93] Pg 19, “Farming and Food, Collaborating for Profit” (English Farming and Food Partnerships May 2004).

[94] Pgs 34 and 35, “Farming and Food, Collaborating for Profit” (English Farming and Food Partnerships May 2004).

Figure 3-16 - Proportion of farmers in England collaborating by farm type (2004-2006)[95]

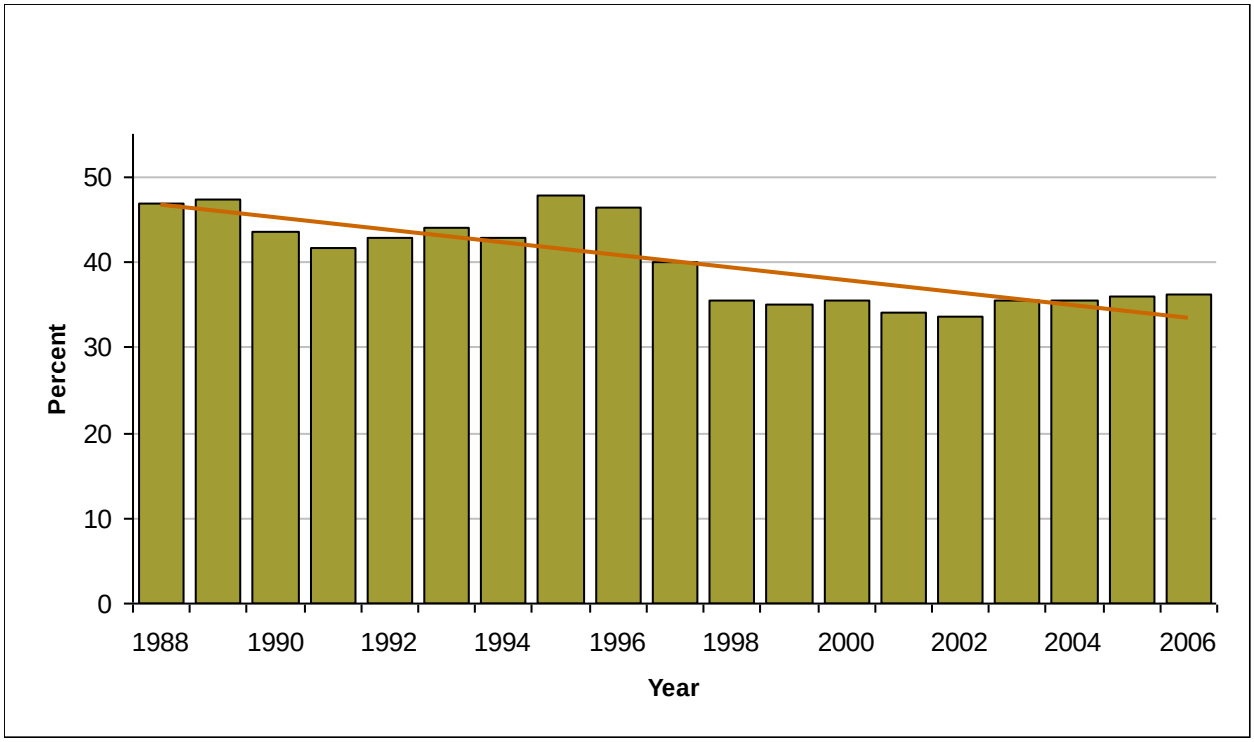


Farm share of food prices

96. Consumption of processed foods has generally been increasing, and consumers' expenditure on food has been rising faster than either retail food prices or physical consumption, indicating a switch toward higher value products (e.g. organic / free-range products etc). At the same time, the price of food has declined in real terms over recent years. Since 1998, food prices have risen by only 8.5 per cent while prices of all items have increased by 21.7 per cent. Retail food prices were 11 per cent lower in real terms in December 2005 compared to January 1998[96]. Over time the share that farmers receive of total retail spending on food has been declining. The farmers' share of retail spending is illustrated in Figure 3-17. Increased processing of food between farm and fork, and a consequent decline in the farm gate's share of the retail price are a normal an expected part of the process of economic development. Nevertheless, adding value to their produce is one-way farmers can compete in a more liberalised, market-oriented environment. In doing so they will increase their share of food market and thus economically viable and sustainable businesses in the long term.

[95] Core indicator 1.03: Collaboration, Sustainable Farming and Food Strategy – indicator data sheet (Defra 2007).
[96] Page 20, Sustainable Farming and Food Strategy: Forward Look Supporting economic and statistical analysis (Defra July 2006).

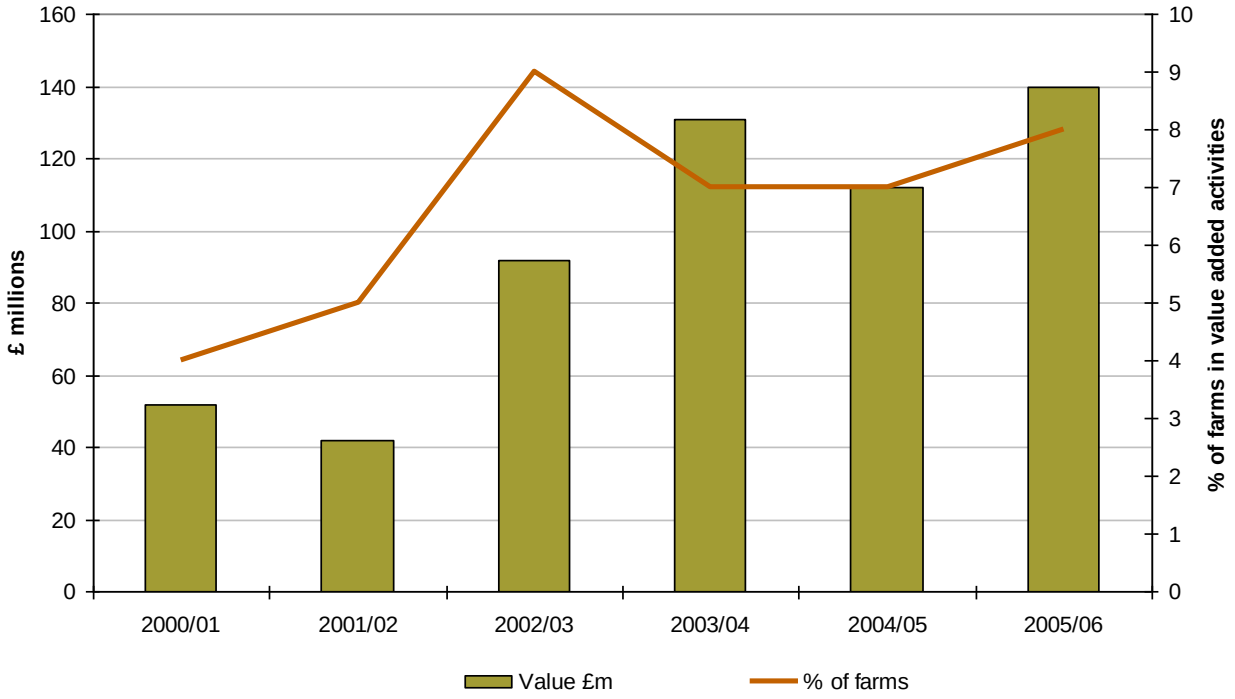
Figure 3-17 - UK farm gate share (%) of total household food sales (1990-2005)[97]



97. Figure 3-18 below shows the aggregate value of value added activities such as processing and retailing of farm produce on farms in England. The value of these activities has increased by 114% over the four years to 2004/5

[97] Chart 18, P 21. Sustainable Farming and Food Strategy: Forward Look Supporting economic and statistical analysis (Defra July 2006).

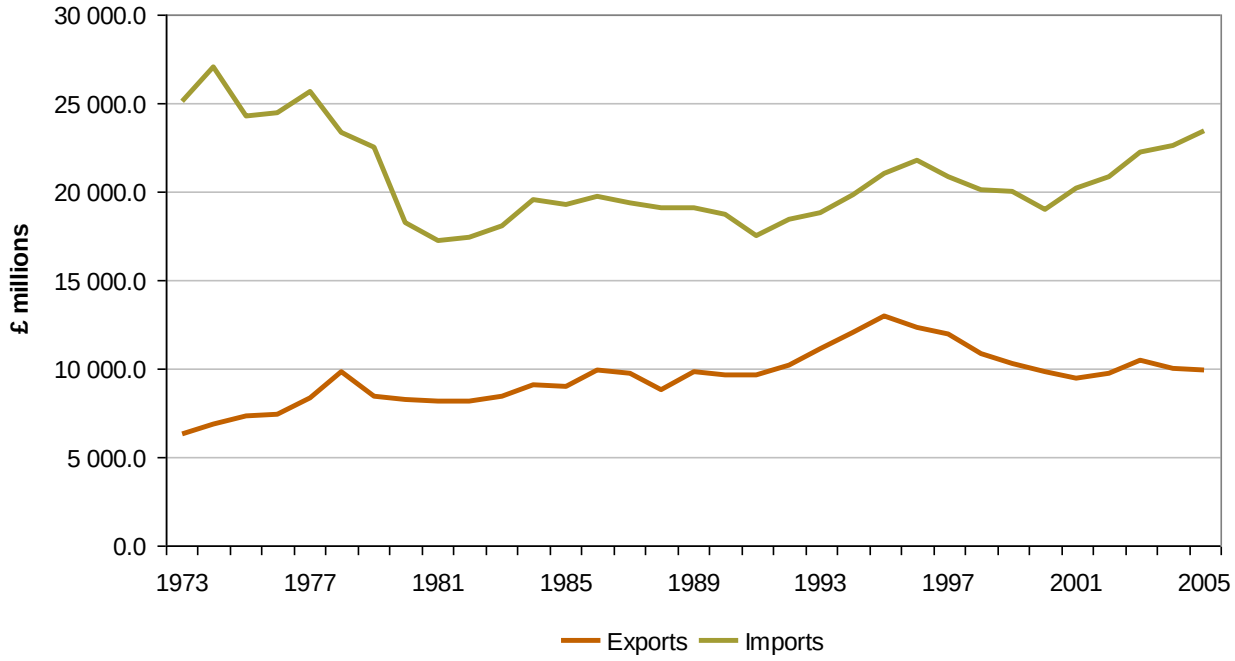
Figure 3-18 - Value added activities in England[98]



98. Recent years have seen a rise in imports and a fall in exports of food, feed and drink (see Figure 3-19) and a consequential decline in self-sufficiency back to the levels of the mid-1970s. Levels of overseas trade and self-sufficiency are broad indicators - not drivers - of the economic position of the farming and food industry, but the figures may perhaps suggest that producers and processors in England, as in the rest of the UK, have not been able to respond effectively to consumer demand at home and abroad.

[98] Sustainable Farming and Food Strategy Indicators: Core Indicator 1.02 Value Added activities March 2007.

Figure 3-19 - UK trade in food, feed and drink in real terms at 2005 prices[99]



Resource efficiency

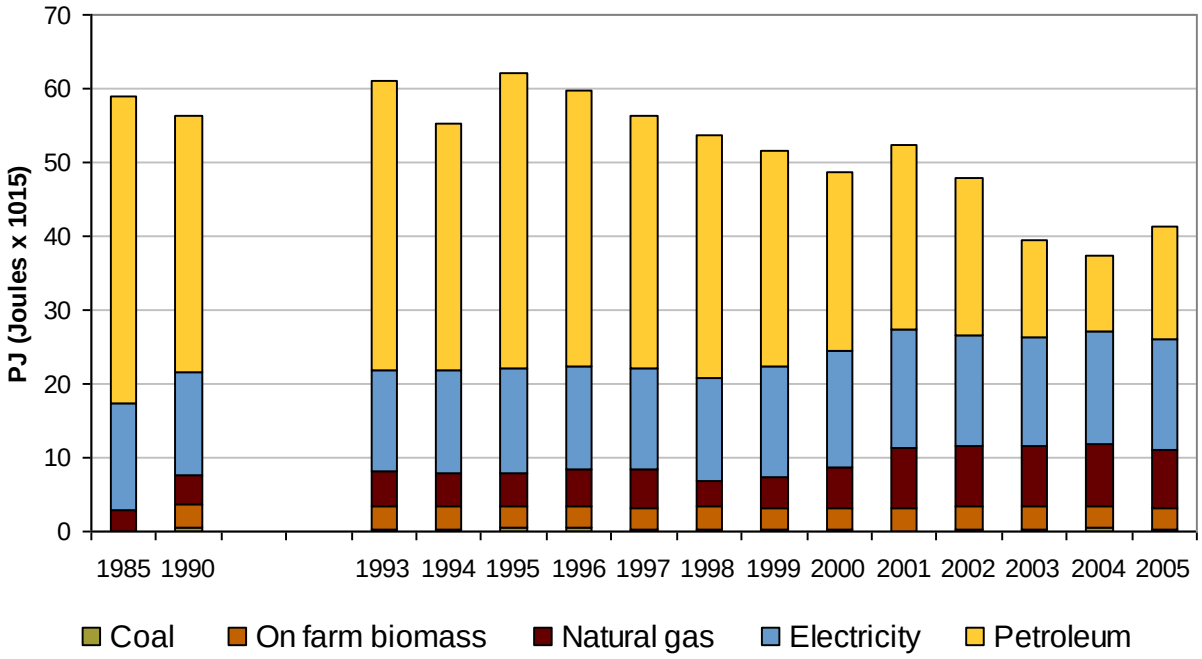
99. English Nature and the Environment Agency investigated the relationship between good environmental management and economic performance in the agricultural sector[100]. Their work has identified significant cost savings relating to changes in natural resource management practices. The most significant barrier to the uptake of these 'win win' opportunities was found to be a lack of awareness that these opportunities exist. As the following paragraphs show, the broad trend in energy consumption is downward for both the agricultural and food sectors, but there is considerable potential to improve the situation further. More widely, the need to address environmental issues, including climate change, will require a major shift towards cleaner more resource-efficient production processes, which reduce environmental impacts and at the same time strengthen competitiveness.

100. The following chart (Figure 3-20) shows the energy used directly on farm. Petajoules (PJ: joules $x10^{15}$) are used for comparison between different sources of energy.

[99] Chart 8.1 Page 67 CH8 Overseas Trade Agriculture in the UK 2006.

[100] Sarah Bragg (BDB Associates), Alex Inman (Tamar Consulting), Caroline Manning (Tamar Consulting), Jamie Pitcairn (Momenta), Caroline Wood (Momenta) 'Assessment of 'Win Win' case studies of Resource Management in Agriculture' (English Nature, Environment Agency 2005).

Figure 3-20 - Direct energy use on farm UK[101]

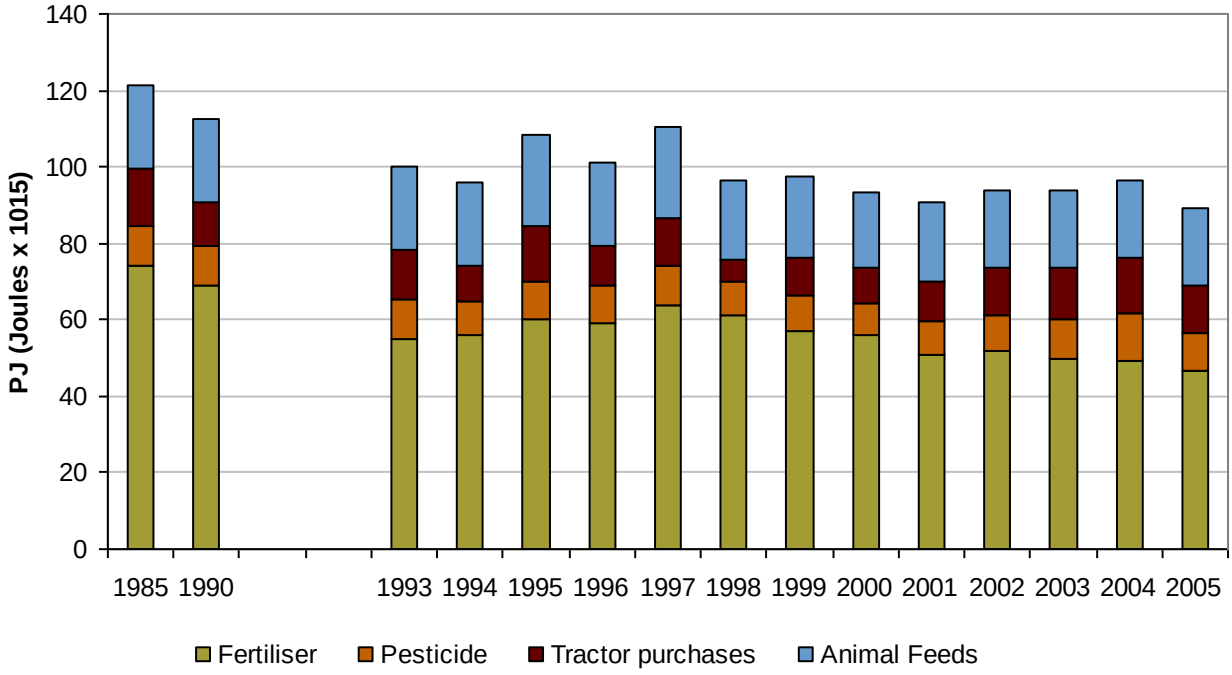


101. The chart shows that total direct energy has fallen by 40% since 1995. Use of petroleum products has declined from 64% to 28% of the total direct energy used since 1995, but the use of electricity has increased from 23% of the total in 1995 to 40% in 2004.

102. Agriculture also uses a substantial amount of energy through the inputs it employs. The following chart (Figure 3-21) shows the energy used indirectly in agriculture, such as in the manufacturing of fertilisers, pesticides and animal feed.

[101] Sustainable Farming and Food Strategy Indicators. Core Indicator 4.07 Energy February 2007.

Figure 3-21 - Indirect energy use in agriculture UK[102]



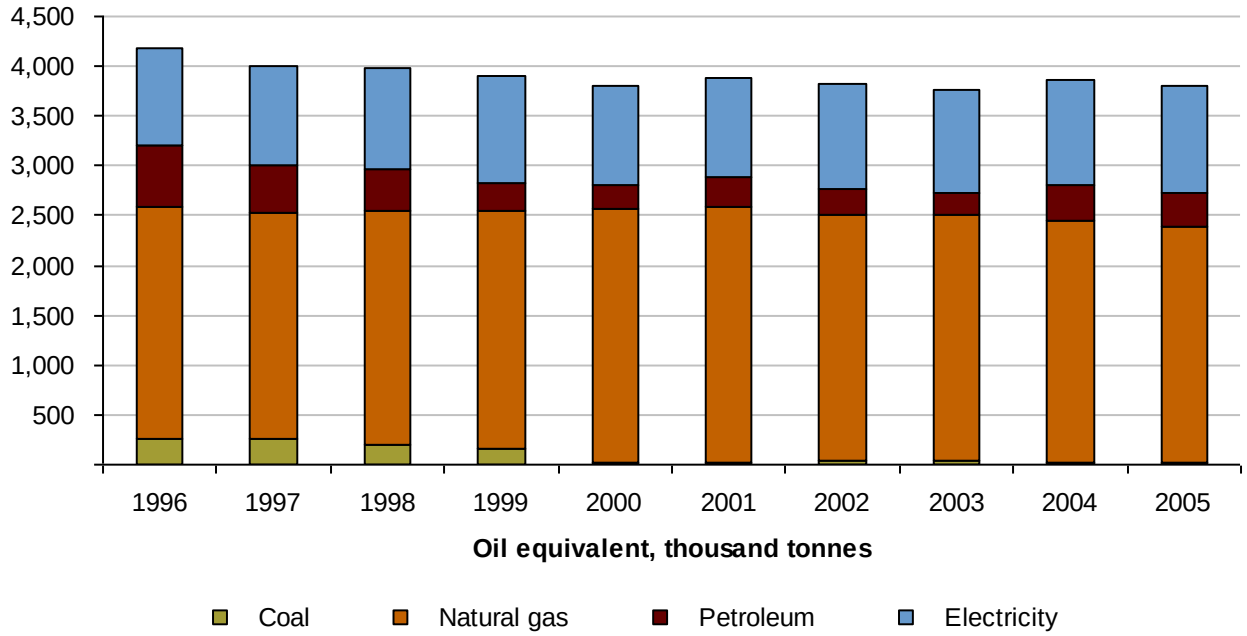
103. Total indirect energy use has fallen by 11% since 1995 and 20% since 1985. In 2004, fertilisers accounted for 51% of indirect energy use compared to 61% in 1985, reflecting in part energy efficiency savings and an overall decline in use. This decline is mainly due to a reduction in application rates on grass, where the rate has fallen by a third over 10 years.

104. Further information about resource efficiency in agriculture in relation to water quantity and quality and pesticides is included below in sections 3.1.3.3, 3.1.3.4 and 3.1.3.5.

105. Looking at the food chain beyond the farm gate, the following chart (Figure 3-22) shows trends in energy consumption by the food manufacturing sector.

[102] Sustainable Farming and Food Strategy Indicators. Core Indicator 4.07 Energy February 2007.

Figure 3-22 - Energy consumption in food, drink and tobacco manufacturing by type UK [103]



106. Energy consumption in the food, drink and tobacco manufacturing industry totalled 3.85 million tonnes of oil equivalent in 2004, down 1.6 per cent on 2003. Since 1996, energy consumption has decreased by 328,000 tonnes of oil equivalent, a fall of 7.9 per cent partly due to productivity gains over this period. However, the decrease is mainly due to declining petroleum and coal consumption, with reductions of 44 per cent and 49 per cent respectively since 1996. Usage of electricity has increased by 9 per cent over the same period, while usage of natural gas has decreased by 1 per cent. Natural gas is the main energy resource, accounting for 60 per cent of total energy consumption in 2004, followed by electricity with 28 per cent. Petroleum and coal provide 9 per cent and 3 per cent of total energy consumption respectively.

107. Though the trends for energy use are broadly downwards, there remains considerable potential to increase the efficiency of energy use in the agricultural and food sectors. The drivers for increased energy efficiency are mainly economic, resulting in a more competitive industry, which is more resilient to energy price movements. Increasingly, however, the benefits for soil, air and water quality are recognised, as well as the contribution that resource efficiency can make to climate change mitigation. This suggests a need for public intervention in support, particularly, of innovative technologies and resource management techniques.

108. To take one example, anaerobic digestion (AD) is a renewable energy technology that has significant potential to contribute to climate change and wider environmental objectives. It helps reduce greenhouse gas emissions by capturing methane from the decomposition of organic materials (such as manures and slurries, food waste and sewage sludge). The biogas can then be used as a renewable energy source for heat, power or as a transport fuel. A study conducted for Defra in 2005 by AEA Technology (AEAT) and Future Energy Solutions concluded that the main

[103] Table 1.8 “Final energy consumption by main industrial groups” Digest of UK energy statistics 2005.

challenge to anaerobic digestion in the UK was an economic one, resulting from market failure[104]. Public intervention may therefore be necessary to pump-prime early adopters of the technology and to disseminate knowledge of its potential. Without such intervention, the opportunity to bring the technology to market and achieve the public benefits expected of it may be lost.

109. There is considerable scope for bringing more woodland into active management in order to stimulate and meet demand for renewable raw materials, notably wood fuel. As noted above, only around half of the woodland in England is under active management and the area under such management has been declining in recent years. There is, however, a risk of environmental damage if a drive towards greater management and increased exploitation of the forestry resource is not carried out in an appropriate manner. It will be important to encourage forest holders to access professional advice that can help ensure that improvements in economic and environmental performance go hand in hand.

110. Harvesting timber will produce both economic and environmental benefits. Non-native species are one of the top three reasons for unfavourable condition in Sites of Special Scientific Interest (SSSIs), and remedying this involves thinning or felling such conifer crops. Restoring plantations on ancient woodland sites (PAWS) which are dominated by conifer crops is one of the priorities identified in the Governments' policy for ancient and native woodland[105]. One of the UK Biodiversity Action Plan targets for native woodland is to ensure that by 2020 85% of such PAWS are either restored, being restored or actively conserved. In all cases, this will require felling of non-native trees and therefore the opportunity to harvest timber.

3.1.2.3 Human capital and entrepreneurship

111. Employment in agriculture has declined by 30% in the last 20 years. In 2004, the agriculture, hunting and forestry sector accounted for 2.6% of total employment in predominantly rural areas.

112. In 2004, ADAS produced a report for Defra on the entry to and exit from farming[106]. This found that in 2000 only 5.2% of 'agricultural' holders were under 35 years old compared to 7.4% in 1990.[107] Between 1999 and 2004, the entry rate (2% of farming population) was much lower than the exit rate (18%)[108] mainly because of a decline in the total number of farmers and farm businesses.

113. The report also noted that between 1990 and 2000 the proportion of farmers aged 65 years old and over had risen from 22.1% to 25.3% (a trend that can be seen in most other OECD countries) and that only 5% of decision-makers are under 35 years old.[109] However, the report identified no evidence of major barriers to entry to

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[104] Mistry P and Misselbrook T. (2005). Assessment of methane management and recovery options for livestock manures and slurries. Report for Sustainable Agriculture Strategy Divisions, Defra, London.
[105] Keepers of Time, FC/Defra, 2005; www.forestry.gov.uk/england
[106] ADAS Consulting Ltd, University of Plymouth, Queen's University Belfast and Scottish Agricultural College, 2004. Entry to and exit from farming in the United Kingdom. Wolverhampton: ADAS Consulting Ltd, report to Department for Environment, Food and Rural Affairs, London.
[107] Para 2.1 ADAS Consulting Ltd, University of Plymouth, Queen's University Belfast and Scottish Agricultural College, 2004. Entry to and exit from farming in the United Kingdom. Wolverhampton: ADAS Consulting Ltd, report to Department for Environment, Food and Rural Affairs, London.
[108] Para 5.5, ADAS Consulting Ltd, University of Plymouth, Queen's University Belfast and Scottish Agricultural College, 2004. Entry to and exit from farming in the United Kingdom. Wolverhampton: ADAS Consulting Ltd, report to Department for Environment, Food and Rural Affairs, London.
[109] Para 2.1 ADAS Consulting Ltd, University of Plymouth, Queen's University Belfast and Scottish Agricultural College, 2004. 'Entry to and exit from farming in the United Kingdom.'

justified policy intervention, and no evidence of market failure in the processes of entry to and exit from farming.

114. Statistics show a high level of female involvement in the management of farm businesses. Between one quarter and one third of those working in farming are women, which is similar to the position outside farming. A survey[110] carried out by the National Farmers Union has shown the extent of women's role in the modern farm business:

- 72% oversee the farm's accounts;
- two-thirds are partners in the farm business;
- half are involved in management and planning of the farm business;
- over a third are responsible for a new enterprise on the farm.

115. Women have an increasingly strategic role on farms, in terms of both the traditional agricultural enterprises and new enterprises. In particular, they are tending to take the lead with business innovation and new enterprises (e.g. farm shops, open days, tourism and recreation enterprises and catering) while combining this work with farm, family and domestic responsibilities. This new role is often underpinned by the fact that many women have entered farming through marriage and acquired skills useful in farm diversification before doing so.

116. Eurostat data suggest that England and the UK as a whole compare favourably with other Member States in terms of labour productivity in the agricultural and food sectors. (see Table 3-20 below).

Table 3-20 - Comparison of key baseline indicators for the UK against the EU average

Indicator	UK	EU average
Labour productivity in agriculture – GVA (at basic prices in Euros) average 2004 to 2006 (EU-27 = 100)	234	100
Labour productivity in food industry: thousand euros/employed (2005)	87.2	40.9

117. However, there are indications that productivity in the agricultural and food sectors could be further increased by improvements in the level of skills. Defra research[111] shows that poor productivity performance in rural areas, as manifested by an increased incidence of low pay, is often associated with low educational attainment levels, although educational qualifications across rural areas as a whole compare favourably with the picture for England as a whole. The same source also shows that the proportion of people in the most rural areas of England receiving job-related training is consistently lower than the England average. This may be partly explained by the fact that small companies (including many in the agri-food and forestry sectors) are less likely to be able to afford to spend time training staff because of the impact it would have on their business operations.

118. The recent Leitch Review of skills states that one-half of Confederation of British Industry (CBI) employers cite improving management and leadership skills as

Wolverhampton: ADAS Consulting Ltd, report to Department for Environment, Food and Rural Affairs, London.

[110] Women in Agriculture Conference Report (NFU 1999).

[111] Page 66 of Productivity in Rural England, Defra, 2006.

the most significant factor contributing to competitiveness.[112] Yet research indicates that agriculture has the highest level of unqualified managers and the lowest participation in management training of any industry sector. Managers in agriculture also tend to stay longer in one job than in other industries.[113] In addition, there is a lack of awareness of the need for business and management training, low importance given to business training generally and a lack of recognition of the benefits of business skills development.

119. Further discussion of the economic significance of educational and skills levels in rural areas is provided later in this document[114]. However, it is possible to compare levels of training between the agricultural, fisheries and forestry sectors and other sectors. The data (shown below in Table 3-21) are derived from the Labour Force Survey, a continuous sample carried out throughout the whole of the UK by interviewing people about personal circumstances and work. From a random sampling, with respondents questioned over their activities in the previous four weeks, it is revealed that the agriculture, fisheries and forestry sector has the lowest overall rate of training undertaken of any business sector. In addition, what training takes place is often off the job, with very low rates of on the job training, and even lower rates of combined on and off the job training. There would appear, therefore, to be a substantial case for securing additional support for training and information services in the agricultural sector.

Table 3-21 - Participation by employees of working age in job related training [115] in England

England	Employees of working age				
	Total Number of Employees 000's	Receiving off-the-job training only %	Receiving on-the-job training only %	Receiving both on-the-job and off-the- job training only %	Receiving any training %
By industry					
Agriculture, forestry and fishing	136	4.9	2.0	1.6	8.5
Energy & water supply	182	7.2	5.6	2.7	15.5
Manufacturing	2,833	3.9	3.9	1.6	9.4
Construction	1,109	5.3	3.1	4.3	12.6
Distribution, hotels & restaurants	3,912	6.1	3.8	1.4	11.3
Transport	1,381	4.4	4.3	1.0	9.7
Banking, finance & insurance	3,173	7.9	5.1	2.5	15.5
Public administration, education and health	6,118	11.0	7.8	4.8	23.7
Other services	1,023	6.9	4.5	3.5	14.9

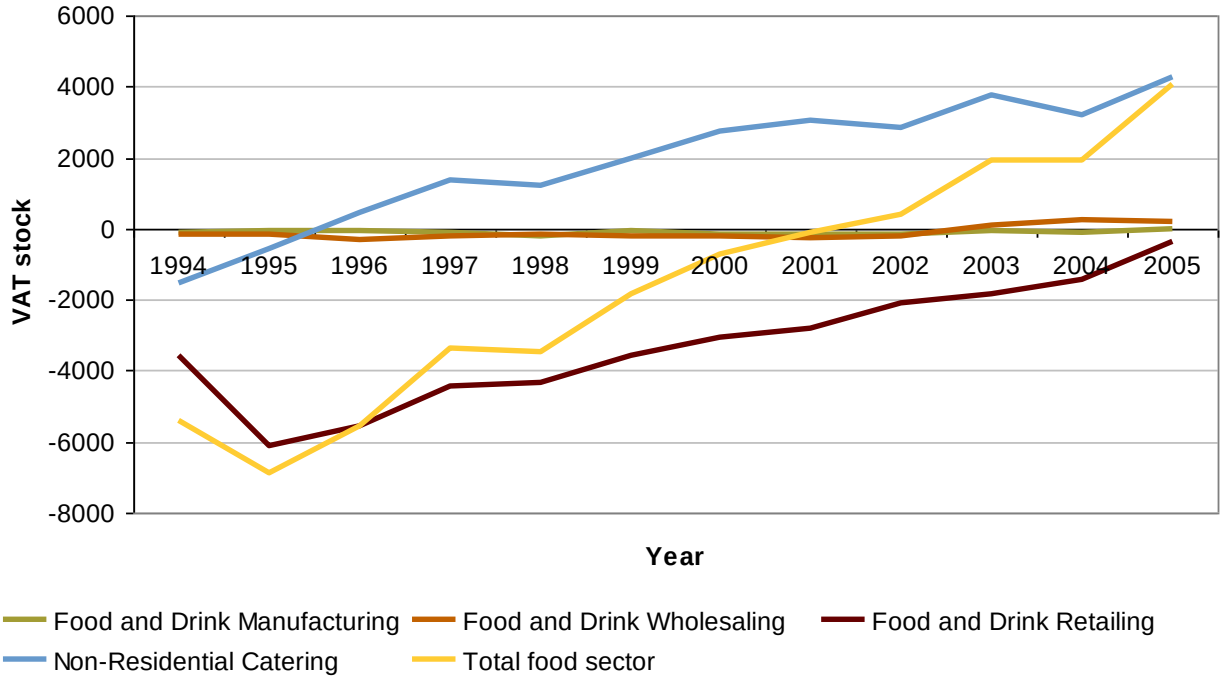
[112] Leitch report: 'Prosperity for all in the global economy – world class skills (December 2006).
[113] Sectoral Management Priorities Management Skills and Capacity –University of Warwick, January 2005.
[114] See "Barriers to creation of alternative employment opportunities".
[115] Extracted from Table 2.11 Education and training statistics for the UK 2006. (DfES 2006).

120. Similar considerations apply to forestry. A recent mapping study of the forestry sector[116] identified a skills deficit and the need to treat training as a priority. Efforts are now underway (for example through apprenticeships) to train a new generation of skilled forestry workers to replace the ageing workforce that has resulted from the long-term decline in forestry employment. Such training will cover both the practical skills of woodland management and the business skills of woodland owners and small-scale processors and contractors. Lantra, the Sector Skills Council for the Trees and Timber industry, is currently working with employers to review the skills needs of the industry and to establish a new Sector Skills Agreement between businesses and Government funding agencies and partners.

121. Overall, in terms of human capital, the age profile of the agricultural workforce is rising. This, combined with low rates of formal training in both the agricultural and forestry sectors, suggests that some land managers are not well prepared to adapt to a more market-orientated sector.

122. In the food sector, there are indications of a healthy degree of entrepreneurship, which is essential to maintain industry competitiveness. One indicator of this is the extent to which the industry is able to attract new business. Figure 3-23 shows that each year since 2001 there has been a net increase in the number of businesses registering for VAT in the food sector.

Figure 3-23 - Net change in VAT registrations in the food industry in UK[117]



3.1.2.4 Potential for innovation and knowledge transfer

123. Innovative farm diversification can both improve the performance of the agricultural holding, by diversifying into alternative crops (including renewable energy) or livestock, or improve the performance of the whole business, by adding value to

[116] Woodland and forest sector in England Report (Jaakko Poyry Consulting for England Forest Industries Partnership) July 2006. www.confor.org.uk
[117] Small Business Service April 2007

agricultural products or by diversifying into businesses outside of agriculture. Diversification can help to broaden the business base of farmers and reduce their reliance on mainstream agricultural production. In England, the opportunities for diversification have led to a high rate of involvement in farm property conversion for business, industrial, tourism or residential purposes. There has also been considerable investment in equipment hire, and in new crops and livestock species. Further details about farm diversification can be found in Section 3.1.4.3.

124. Data are not readily available on diversification within agriculture, for example specialist food crops, rare breeds or crops for non-food use. The most recent data available (Exeter Farm Diversification Benchmarking Study 2002) indicated that of the 58.3 % (in that study) of farm holdings with some form of diversified activity, approximately 22% were involved in a non-conventional crop or crop based processing and about 16% were involved with non-conventional livestock and livestock processing.

125. Cropping farms tend to diversify more than others do, with 57% having some other enterprises. 37% of livestock and 39% of 'other' farms have diversified. Hill farms have the lowest rate of diversification, at only 25%. Table 3-22 indicates that the proportion of small (full-time) farms that have diversified income is lower than for large farms.

Table 3-22 - Diversified enterprises by size of core farming activity England 2006/07[118]

	Number of farms	**Farms with diversified enterprises**			
		Number	% of all farms	Avg output (£/farm)	Avg margin (£/farm)
All sizes >1/2SLR	59,500	30000	50	25200	10500
Very small	16500	7100	43	17800	11500
Small	20200	10100	50	23200	13100
Medium	9400	4400	47	15000	10300
Large	6700	4000	59	30900	13200
Very large	6800	4300	64	46700	28300

126. As set out below, the farm gate share of retail expenditure on food has been declining in real terms since the 1990s, though recent years have seen an increase in both the value of and percentage of farms involved in innovative value added activities such as processing and retailing of farm produce on farms. The same period has also seen a significant increase in imports of lightly processed, and in, particular highly processed food products, suggesting the potential to replace imports with domestic production.

127. A key challenge, therefore, is to increase the ability of farmers and small to medium enterprises to take advantage of opportunities and meet the demand for added value food products. In certain cases, for example, imports of processed food might be able to be replaced by domestic production provided that farmers can exploit opportunities by improving skills, exploiting existing skills and resources and through greater innovation and collaboration.

[118] Table 4 Diversification in Agriculture – January 2007 (Defra statistical note)

128. As with all businesses operating in rural areas, the agri-food and forestry sectors can access business advice through the online mainstream service of Business Link. The website has a dedicated section on farming to help farmers plan their business and to signpost them to other relevant sources of support and advice. The forestry sector is dealt with more generically given the variation in forestry sector business. Both sectors also have access to the wider resources on the Business Link website.

129. However, in common with other rural businesses, the agri-food and forestry sectors may need additional support beyond mainstream services to help them overcome some of the barriers that exist to training, knowledge transfer or seeking advice in rural areas. For example, the Learning, Skills and Knowledge Review (February 2004) found that, in some regions of England, it can be difficult for rural businesses to access mainstream training and advice packages because of the lack of critical mass, the high unit cost of training in such areas, and their limited economic pull. It is estimated that over 40% of the land-based workforce have no (or very basic), formal qualifications, with only 14% having higher education qualifications.[119]

130. There are long-term benefits to focusing on skills and knowledge transfer across the agricultural sector. For example, supporting skills and knowledge transfer to improve the way farmers prepare for and handle disease can have a high impact on the sustainability of their business. Good standards of animal health and welfare through good biosecurity and husbandry as well as establish contingency plans can help manage risks.

131. Evaluation evidence from the Regional Food Strategy also suggests that certain market failures are hampering enterprise in this sector. According to the evaluation, "the strongest claim for government support to prevent market failure in the provision of regional foods occurs where consumers cannot distinguish between good and bad quality regional foods (asymmetric information). This depends upon geographical origin being used as an indicator of quality by consumers. Asymmetric and imperfect information is also likely to hinder new and small firms from obtaining capital from potential lenders and devising appropriate business strategies"[120].

132. The evaluation also highlights the cultural context for market failure. "Regional foods producers in the UK are a disparate group of SMEs with few co-operative bonds between them in either production or marketing; most seek to add value to their products through their own individually held brand names and trademarks rather than collective designation. UK Regional food producers thus belong to a more British tradition of entrepreneurship, which often takes the form of a family business, operated for a mixture of motives: independence, lifestyle, exploiting a market niche. The main problems faced by such businesses are largely common to the SME sector as a whole: capital constraints, finding a suitable market niche, meeting the demands of multiple retailers and imperfect information on which to make business decisions. These arguments can be linked to justifications for government intervention to correct market failure in capital and information markets and specific support measures to improve market intelligence and facilitate trade. However, it should be noted that such justification largely derives from regional food producers being small businesses rather than the particular sector to which they belong."

133. Benchmarking is a key tool for farmers to use to identify ways to improve the operation of their businesses. In 2002, only 9% of farmers in England and Wales were using formal benchmarking, whereas, by 2004, this had risen to almost a

[119] Learning, Skills and Knowledge Review (February 2004).
[120] Elliott, J, Temple, M., Bowden, Dr C., Gorton, Dr. M, Tregear, Dr A., 'Economic Evaluation of the Regional Food Strategy' (ADAS 2005), section 4.

quarter. In addition, 59% of respondents to the 2004 benchmarking survey said that they benchmarked with friends or associates in an informal way[121]. Although these figures are encouraging, there remains scope to increase the use of benchmarking as a means of reducing unnecessary costs and improving farm efficiency and competitiveness.

134. Overall, there is considerable potential for innovation and knowledge transfer to improve the performance of the agricultural and food sectors, particularly in the areas of diversification, added value food products, improved market information, knowledge transfer and training, and through making better use of techniques such as benchmarking.

3.1.2.5 Quality and compliance with Community standards

Quality Regional Food

135. The quality regional food sector, which covers food produced within a particular geographical area and has a 'distinctive quality' based on that area or a method of production, in England remains a small part (£3.7 billion in April 2003) of the overall agri-foods sector[122]. It is characterized by innovative, small to medium sized enterprises (SME) that are mainly independent, often family owned businesses with an absence of co-operation with other producers regarding marketing and production. This contrasts with countries, typically southern European ones that have stronger and better-established quality food sectors where collaboration and collective activity is more prevalent.

136. Many quality regional food producers are based in rural areas and a high proportion derive from farm diversification. The main problems faced by quality regional food producers, common to the SME sector as a whole, are:

- capital constraints;
- finding a suitable market niche;
- meeting the demands of multiple retailers, and
- imperfect information on which to make business decisions.

137. Regional food producers have strong local linkages, as evidenced by their procurement and distribution preferences in terms of sourcing ingredients, distribution and other businesses services. However, this linkage tends not to be horizontally with other firms making similar products. Given this and the rural location of many quality regional food producers the success, or otherwise, of the sector can have a strong influence on the overall socio-economic well being of rural communities by creating and sustaining employment[123].

138. Consumers' interest in the sector is growing. Research in 2005 indicated that 70% of people in Britain want to buy local and regional foods and that 49% wanted to buy more of them[124]. Further research in 2006 indicated that consumers were taking an increasing interest in the provenance of their food because of the assurances and quality that this provided[125]. These trends are linked to the shift towards higher quality as incomes rise and evidence that consumers are willing to pay a premium for good

[121] Chart 14, Platt, S. 'Sustainable Farming and Food Strategy Forward Look- Supporting economic and statistical analysis' (Defra July 2006).
[122] Page 30, Market Research Report on Quality Regional Food Businesses (ADAS September 2003).
[123] Elliott J., Temple, M.L., Bowden, C., Gorton, M., Tregear, A. Economic Evaluation of the Regional Food Strategy. ADAS Consulting Ltd, Woodthorne, Wergs Road, Wolverhampton, WV6 8TQ, and University of Newcastle, Newcastle upon Tyne, NE1 7RU. Report to Department for Environment, Food and Rural Affairs, London.
[124] Chapter 3, Groves, A .'The Local and Regional Food Opportunity '(IGD 2005).
[125] Retail and Foodservice Opportunities for Local Food (IGD 2006).

quality food[126]. Quality regional food provides an opportunity for English producers and processors to differentiate themselves from their competitors and to meet the growing demand for such products from consumers. Increasing numbers of producers are already developing their businesses in this way, as shown in Table 3-23.

139. Consumers also have fundamental expectations about acceptable levels of animal health, the safety of the food they eat, and that standards of animal welfare appropriate to a modern society have been met[127].

Table 3-23 - Proportion of production covered by assurance schemes (United Kingdom) (percent)[128]

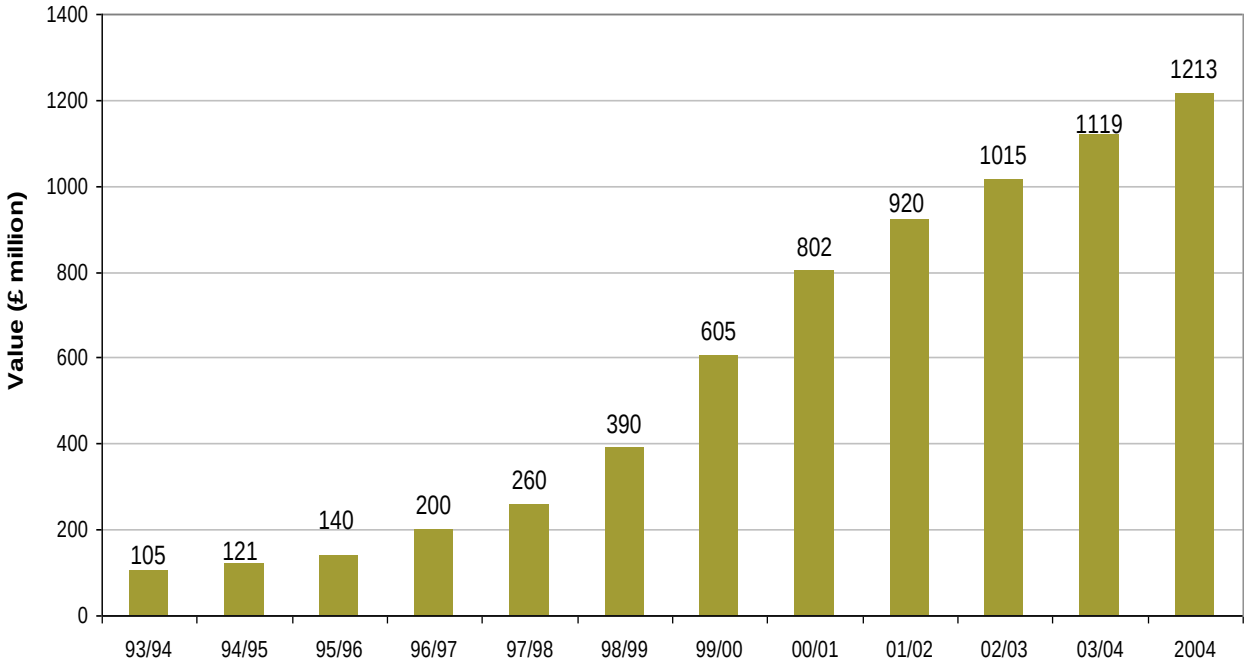
	Baseline (1st Quarter 2003)	Year 1 2003/04	Year 2 2004/05	Year 3 2005/06	Year 4 2006/07
Pigs	85	85	90	90	*85*
Poultry	80	85	90	90	*90*
Crops	80	80	80	80	*85*
Produce	70	75	75	75	*85*
Beef	75	75	75	82	*80*
Sheep	65	65	65	65	*70*
Dairy	85	85	90	95	*90*

Note: Figures in *italics* are forecasts, with Year 4 being the target

140. Since the late 1990's, the organic food retail market has been expanding at around £100m per annum, as shown in Figure 3-24. This appears to be an ongoing trend, and although the explosive growth seen in the 1990's may be over, organic is still the fastest growing sector of the food market and, it is clear that organic produce is now an established premium brand that UK consumers are willing to pay for.

Figure 3-24 - UK retail market growth for organic food[129]

[126] Datamonitor (2003).
[127] Page 28 Animal Health and Welfare Strategy (Defra 2004).
[128] Table 1.07 Farm Assurance Schemes Defra Sustainable Farming and Food Strategy.
[129] Chart 6.9, Agriculture in the UK 2005.



141. The most recent figures suggest that there is still considerable interest in organic conversion among English farmers. The area of land in conversion in England at January 2006 showing a significant increase over the comparable figure for 2005 (53,223 ha and 28,832 respectively). The number of processors of organic food also increased over the same period (from 1,769 to 1,353). Overall, however, the picture appears to be a levelling off in the number of English farms in organic production, as against a continued expansion in the market for organic food. Research (as yet unpublished) suggests that home production may not be increasing at the rate necessary to continue to satisfy market demand.

142. Table 3-24 shows how much organic production varies between English regions. Essentially this reflects the preponderance of livestock production in the organic sector in England.

Table 3-24 - Organic producers, growers, processors and importers – Regional Breakdown (Jan 2006)[130]

	Producers and growers	Processors and/or importers	Total
North East	101	28	129
North West	168	143	311
Yorkshire and Humberside	138	141	279
East Midlands	221	195	416
West Midlands	335	143	478
Eastern	253	255	508
South West	1152	380	1532
South East (Inc London)	417	484	901
England	**2785**	**1769**	**4554**

[130] Extracted from Table 3, Organic Statistics England (ONS Stats Org UK 4, September 2006)

Animal Health and Welfare

143. Improvements to the health and welfare of farmed animals can make a considerable contribution to the farming and food industry and more broadly to the countryside and rural economy. Each year the industry culls large numbers of livestock animals due to poor health and loss of productivity. The control of outbreaks of notifiable diseases (both exotic and endemic) often requires the compulsory slaughter of animals and area restrictions on the movements of animals and other activities to control and eradicate the spread of disease. This is disruptive to the industry and costly both to the rural economy and to the taxpayer[131].

144. The potential costs to the economy of exotic animal diseases are illustrated by the foot and mouth disease outbreak in 2001. It is estimated that the outbreak cost the public sector over £3 billion and the private sector more than £5 billion, including losses to farmers and to other businesses along the food chain[132]. There have also been very significant costs (of a broadly similar order of magnitude) to a range of other rural businesses as a consequence of fewer people visiting the countryside. However, much (but not all) of these latter costs have been offset by gains in other sectors of the economy as consumer spending was displaced.

145. Endemic diseases are also associated with large costs. For example, the direct costs estimates for 2001 for producers in Great Britain associated with mastitis are £179.7 million, for cattle lameness £53.5 million and the costs associated with Bovine Virus Diarrhoea (BVD) are £39.6 million.[133]

146. There are many existing Community standards relating to animal health and welfare. Over the next decade, the challenges facing livestock owners and others will continue to grow. Common Agricultural Policy (CAP) reform will impact on the way that animals are kept and managed. European Union (EU) legislation has extended food safety and hygiene controls to primary producers, requiring a step change in performance. There must be a marked change in the way livestock industry manages risks to the health and welfare of farmed animals and copes with the consequences of disease outbreaks.[134]

147. Working with the farming community to develop a common understanding of farm health planning and biosecurity is an important part of helping bring about this change. Improving efficiency and farm biosecurity through training and knowledge transfer, (including dissemination of best practice for exotic and endemic diseases) encourages a better approach to farm health planning to manage the risks. This is important, as fit and healthy animals that are appropriately cared for are likely to be higher yielding and remain productive over a longer period.[135] For example, increasing awareness on sustainable control of parasites has long-term benefits in particular for the sheep industry.

148. Increased investment and improved knowledge transfer for technology and innovation in animal health and welfare can help producers make the most of new technologies and the opportunities this provides. For example, the promotion of the benefits of new technologies in record keeping can help inform better farm management decisions leading to improved performance of the sector.

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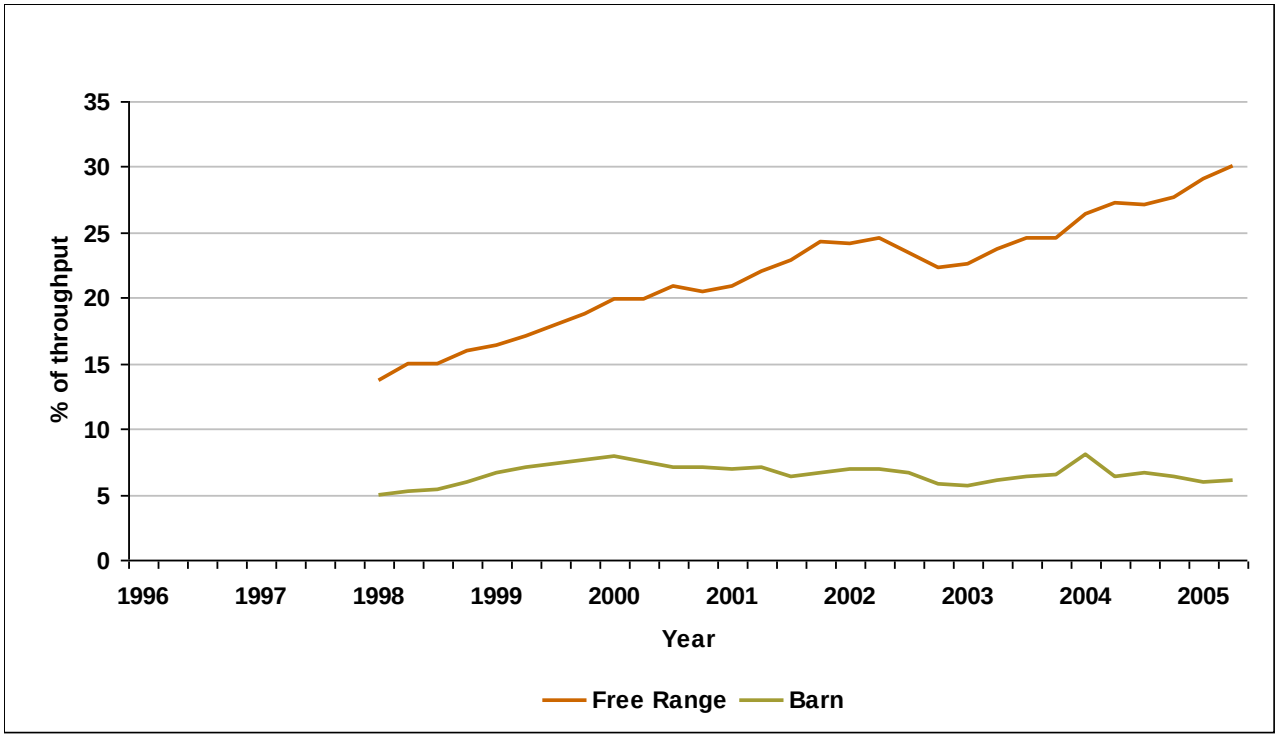
[131] p.22. Animal Health and Welfare Strategy (Defra 2004).
[132] Para.1, page 1 National Audit Office ' The 2001 outbreak of foot and mouth disease' Report by the Comptroller and Auditor General HC 939 Session 2001-2002: (NAO 21 June 2002).
[133] P.21-22 'Economic Assessment of Livestock Diseases in Great Britain' R. Bennett, J. IJpelaar, University of Reading, 2003.
[134] p. 11 Animal Health and Welfare Strategy (Defra 2004),
[135] P. 20 Animal Health and Welfare Strategy (Defra 2004.

149. There is evidence of increasing demand from consumers for better welfare standards. Consumers will buy particular foods for a variety of reasons including some aspects of quality, such as “corn fed” or organic, or the welfare conditions under which the food is produced. Free-range eggs are an example of this. Figure 3-25 shows how the consumption of free-range eggs has increased over time, with the share of packing station throughput increasing from 14% in 1998 to around 27% currently.

Figure 3-25 UK egg packing station throughput by system



150. Animal welfare in England is regularly monitored and often exceeds standards. For example, State Veterinary Service inspections carried out in 2005 demonstrated that for randomly inspected farms (programmed and elective visits) nearly 80% comply with both legislation and voluntary codes of practice.[136]

151. Ensuring producers know where to get information on welfare best practice and how to apply this is important. As the European Commission noted in 2002 "research has shown that both farm animal welfare and product quality improves when the people who care for, transport and handle the animals are well-trained, have a positive attitude towards their jobs and the animals, treat the animals with care, and are attentive to their needs. It is therefore important to educate and inform these professions."

152. Good education depends upon having the best knowledge available. Improving animal health and welfare through supporting outputs from innovative research and development is key and improves welfare, farm economics and efficiency (for example new slaughter techniques and new solutions to cattle lameness).

153. Taking all these factors into account, there would appear to be considerable scope to improve the preparedness of the farming and food sector for the challenges of animal disease and changes in public attitudes towards animal health and welfare. This requires an increase in the opportunities for training and knowledge transfer to improve animal health and welfare standards.

3.1.2.6 Overall assessment of the range of information presented

154. Overall, England's agricultural productivity is relatively high by comparison with other member states and agricultural assets are generally increasing in value. However, agricultural incomes are vulnerable to external influences, particularly exchange rate movements. In addition, agriculture is an industry where specific

[136] Parliamentary question 0061 November 2006

events, such as animal disease outbreak or poor weather, can shift incomes from the underlying trend in individual years. The English livestock industry is emerging from a difficult period over recent years, with much of the difficulty due to the effects of animal disease outbreaks and the cost and competitiveness effects of measures to address those outbreaks, and prevent their reoccurrence.

155. Whilst it is impossible to offset completely the impact of such events, much can be done to minimise the risk. Defra research[137] found that a high proportion of farmers intended to remain in the industry despite the stresses of recession, BSE and foot and mouth disease, which afflicted agriculture at the time. They also considered restructuring to be a prime instrument for enabling them to remain in the industry. As well as addressing structural disadvantages through modernisation, training and the dissemination of knowledge can make the agricultural, forestry and food sectors more innovative and resilient to external pressures and better able to adapt to a more market driven and competitive business environment. It is important to note the strengthening trends that can be built upon as opportunities for improving the competitiveness of the agricultural, forestry and food sectors.

156. The efficient use of natural resources, driven in part by market price movements and in part by technological development, is a key element in improving the economic performance of the agricultural and food sector, as measured by productivity. Efficient use of resources can also help reduce environmental impacts – including greenhouse gas emissions, and contributes to more sustainable food production.

157. The forestry sector in England could become more competitive by increasing workforce skills and thereby improving productivity, and by better utilising woodland and forestry resources so as to stimulate and meet market demand for, in particular, woodfuel. At a national level, the direct economic benefits resulting from such increased competitiveness are always likely to be limited in scale given the relatively small percentage of England under woodland cover. However, their local importance can be significant and, by providing forest holders with the incentive to bring more woodland into active management, make a positive contribution to the wider rural economy by creating an attractive environment for other businesses, including those dependent on tourism and recreation.

158. The recently published Woodfuel Strategy[138] highlights the potential for new opportunities in the emerging woodfuel market, but notes that this will require adoption of new technologies and entrepreneurial skills. More generally, the England Forestry Strategy emphasises the need to develop new woodland products and to harness the recreational, environmental and educational potential of farmland and woodland.

[137] Para 4.27, Lobley, M. Errington, A., McGeorge, A. ,Millard, N. Potter,C. 'Implications of changes in the structure of Agricultural businesses-Final report' (University of Plymouth 2002).
[138] Woodfuel strategy, Forestry Commission, 2007 www.forestry.gov.uk].

3.1.2.7 Summary table for competitiveness of the agricultural, food and forestry sectors

Topic	Strengths & weaknesses, including disparities and gaps		Needs
	Strengths	Weaknesses	
Agricultural productivity	Relatively high by comparison with other Member States	Significant variability in the performance of farms	Targeting investments to increase competitiveness of the sector as a whole, with particular consideration to the needs of the livestock sector, through for example, improving skills, encouraging benchmarking, cooperation and collaboration, and building on innovation.
Agricultural incomes and assets	Increasing value of agricultural assets, particularly land	Vulnerability of income to external influences, particularly exchange rate movements	Within the context of CAP reform, fostering a more market driven and competitive agricultural sector within the UK, through for example meeting the growing consumer demand for high quality, seasonal produce with lower environmental impacts. Adding value to their produce is one-way farmers can compete in a more liberalised, market-oriented environment. In doing so they will increase their share of food market and thus economically viable and sustainable businesses in the long term.
Food sector productivity	Strong productivity growth in food manufacturing	UK farm gate share of total household food sales steadily reduced over last 15 years	Developing viable farm businesses through: - building on increasing trend for diversification - innovation and knowledge transfer; - making better use of existing skills and acquiring new skills to improve efficiency and competitiveness. In collaboration with other producers and the rest of the supply chain, exploiting market opportunities for higher value farm produce sourced from England, including produce with environmental and/or animal welfare credentials.

Topic	Strengths & weaknesses, including disparities and gaps		Needs
	Strengths	Weaknesses	
Forestry sector productivity		Labour productivity is low by comparison with the EU average, despite the average size of forestry holding being slightly higher than the average.	Targeted investment to: • improve productivity through training, skills acquisition, benchmarking and co-operation • increase percentage of annual increment harvested
		Low levels of utilisation of English woods and forests combined with high levels of timber imports for the UK processing industry.	Ensure specialist advice is available to re-engage woodland owners with markets, particularly for low-grade material. Improve silviculture to enhance the quality of timber grown.
Agricultural market share	Value adding activities on farm increased by 114% by value since 2000/01	UK farm gate share of total household food sales steadily reduced over last 15 years	Developing viable farm businesses through: - building on increasing trend for diversification; - innovation and knowledge transfer; - making better use of existing skills and acquiring new skills to improve efficiency and competitiveness. In collaboration with other producers and the rest of the supply chain, exploiting market opportunities for higher value farm produce sourced from England, including produce with environmental and/or animal welfare credentials.
Trade		The last decade has seen a rise in imports and a fall in exports of food, feed and drink perhaps indicating a an inability by UK producers and processors to respond effectively to changing consumer demand for such products	
Efficient use of natural resources	Broadly downward trend on energy efficiency	Lack of awareness of opportunities and benefits of energy efficiency	Recognising the extent to which resource efficiency and good environmental management can improve the economic performance of agriculture.
		Opportunities to stimulate and meet demand for renewable raw materials, notably woodfuel through active forest management.	Increase active forest management through exploiting demand for woodfuel.

Topic	Strengths & weaknesses, including disparities and gaps		Needs
	Strengths	Weaknesses	
Agricultural workforce	High productivity in agricultural and food sectors compared to other EU member states.	Rising age profile of agricultural workforce, combined with low rates of formal training, suggest poor preparedness for adapting to a more market-oriented sector	Ensuring specialist advice and training is available to help farmers adapt to: - the challenges of CAP reform; - the review of Community Animal health Policy - the increasing emphasis on protection of water and other natural resources and on climate change Overcoming barriers to formal training, knowledge transfer and advice in rural areas, particularly relating to agricultural and food businesses
Training	Business support, advice and training available through mainstream services Work currently underway to provide practical and management skills to a new generation of forestry workers, thus reversing the long-term decline in forestry employment.	Barriers to training in rural areas Low levels of formal training in agricultural and forestry sectors	Increasing active forest management through exploiting demand for woodfuel Building on increasing awareness of recreational and environmental benefits of properly managed woodlands to bring more existing woodlands into active management. Supporting an improvement in the practical and management skills of the forestry workforce, in particular to ensure that there is an appropriate balance between economic and environmental management in this important resource
Quality foods	Growing consumer interest in good quality regional food and in organic produce	Market research suggests that main constraints on quality food businesses are capital constraints, finding a suitable market niche, meeting the demands of multiple retailers and imperfect information on which to base business decisions	Developing viable farm businesses through: - building on increasing trend for diversification - innovation and knowledge transfer; - making better use of existing skills and acquiring new skills to improve efficiency and competitiveness In collaboration with other producers and the rest of the supply chain, exploiting market opportunities for higher value farm produce sourced from England, including produce with environmental and/or animal welfare credentials
		Number of farmers converting to organic in England levelling off, with the growth in consumer demand being met by an increase in processing and imports of organic produce	

3.1.3 Environment and land management.

3.1.3.1 The handicaps facing farms in areas at risk of abandonment and marginalisation

159. The area of Less Favoured Area (LFA) is an EU baseline indicator related to context. In England, about 17% of all English agricultural land is designated as LFA and is almost exclusively areas of hill farm, moorland or common grazing with most to be found in the north and south west of England, with a smaller area around the Welsh border.

160. Designation of LFAs in England relates to the physical handicaps to farming in these areas, notably: high rainfall, low temperatures, poor infertile soils and steep gradients, and to low or declining populations with a higher than normal dependence upon agriculture. There are currently two categories of LFA land: “Disadvantaged Areas” (DA) and “Severely Disadvantaged Areas” (SDA). There are approximately 0.6m hectares of land within DAs, and they occupy approximately 26% of the total area of LFA. The remaining 74%, approximately 1.6m hectares, are classified as SDAs.

161. SDAs have land:

- which is suitable for extensive livestock production but not for the production of more crops necessary to feed such livestock, and
- whose agricultural production is severely restricted in its range by one or a combination of soil, relief, aspect or climate, or
- land situated in the Isles of Scilly.

162. Land above the Moorland Line accounts for about 0.8m hectares. The Moorland Line is defined in terms of the vegetation present within it, which must be predominantly semi-natural upland vegetation, or predominantly of rock outcrops and semi-natural vegetation, used primarily for rough grazing. Moorland includes both open moors and enclosed land on the margins of uplands.

163. The dominant farm type in the English LFA is extensive cattle and sheep farms (46%) followed by other farm types (36%), then dairy (10%). Dairy farms are less common in SDAs (7.2%) than in DAs (15.6%).

164. As well as being essential for the country’s current sheep farming system, much of the LFA is subject to important national or international environmental designations (see Table 3-25). Some 40% of the total English LFA is within National Park boundaries - within the LFAs there are seven National Parks. Twelve areas, or 19% of the LFA, are designated as Areas of Outstanding Natural Beauty.

Table 3-25 – Overlap of LFA with environmental designations[139]

	Total Area (ha)	Number of sites**	% in LFA
Less Favoured Area (LFA)	2,213,245.66		100%
Special Protected Area (SPA)	274,663.46	11.00	12%
National Nature Reserve (NNR)	21,117.04	51.00	1%
Environmentally Sensitive Area (ESA)	596,423.54	9.00	27%
Site of Special Scientific Interest (SSSI)	450,094.21	841.00	20%
Special Area of Conservation (SAC)	364,057.73	68.00	16%
Ancient Woodland*(AW)	47,674.21	4,934.00	2%
National Park (NP)	895,795.72	7.00	40%
Area of Outstanding Natural Beauty (AONB)	423,752.36	12.00	19%

*** Ancient Woodland Polygons as defined on the Ancient Woodland Inventory**
**** Numbers indicate where a designation is partly or entirely within the LFA.**

165. The maps at Figure 3-26 and Figure 3-27[140] show the extent of coincidence between LFA boundaries and key environmental designations.

[139] Updated figures from Natural England mapping database as of 7.3.07
[140] Pages 27 & 28 Annex 3 RDPE 2007-13 Uplands Reward Structure Consultation document (Defra February 2006)

Figure 3-26 – LFA boundaries and key environmental designations

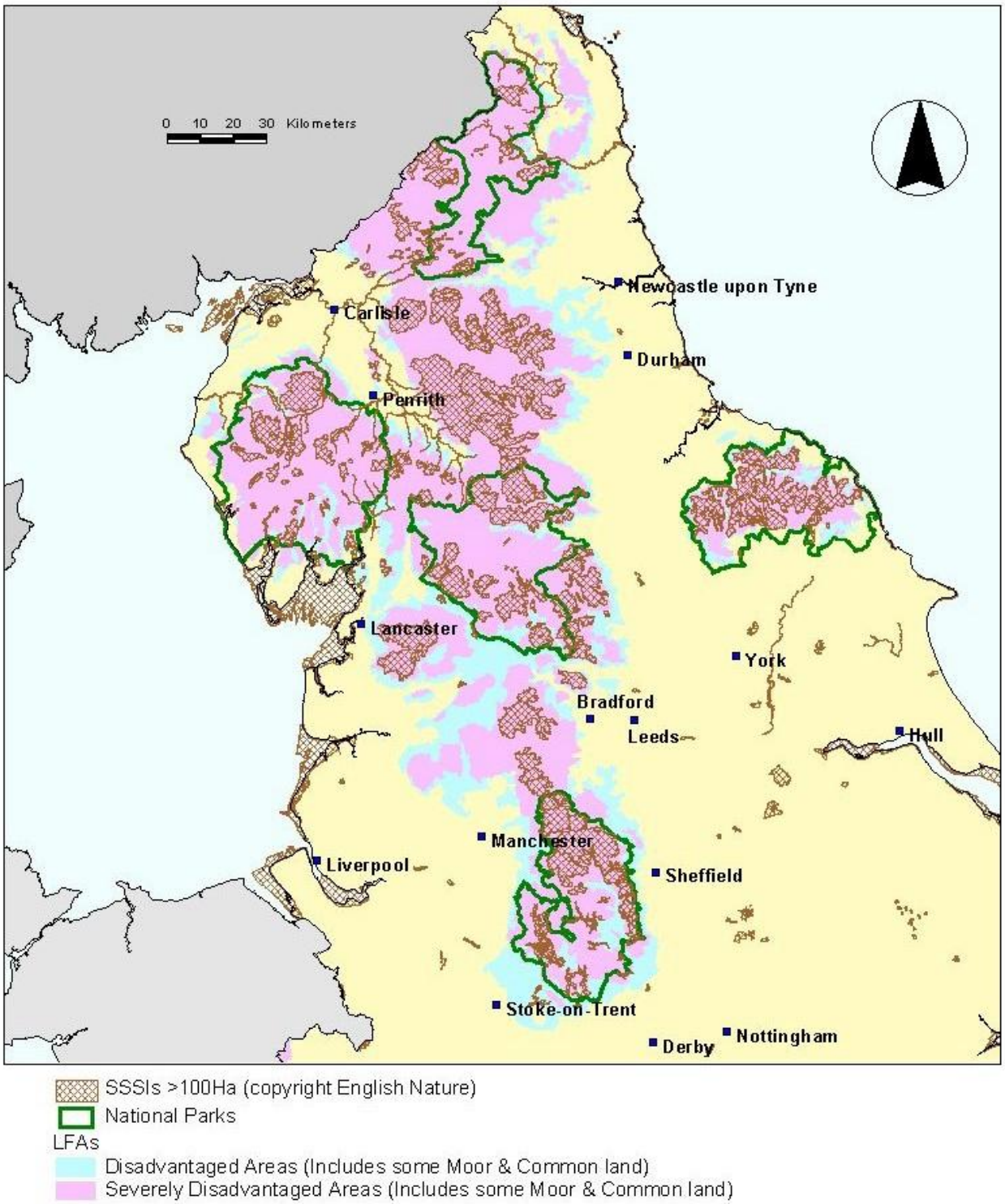
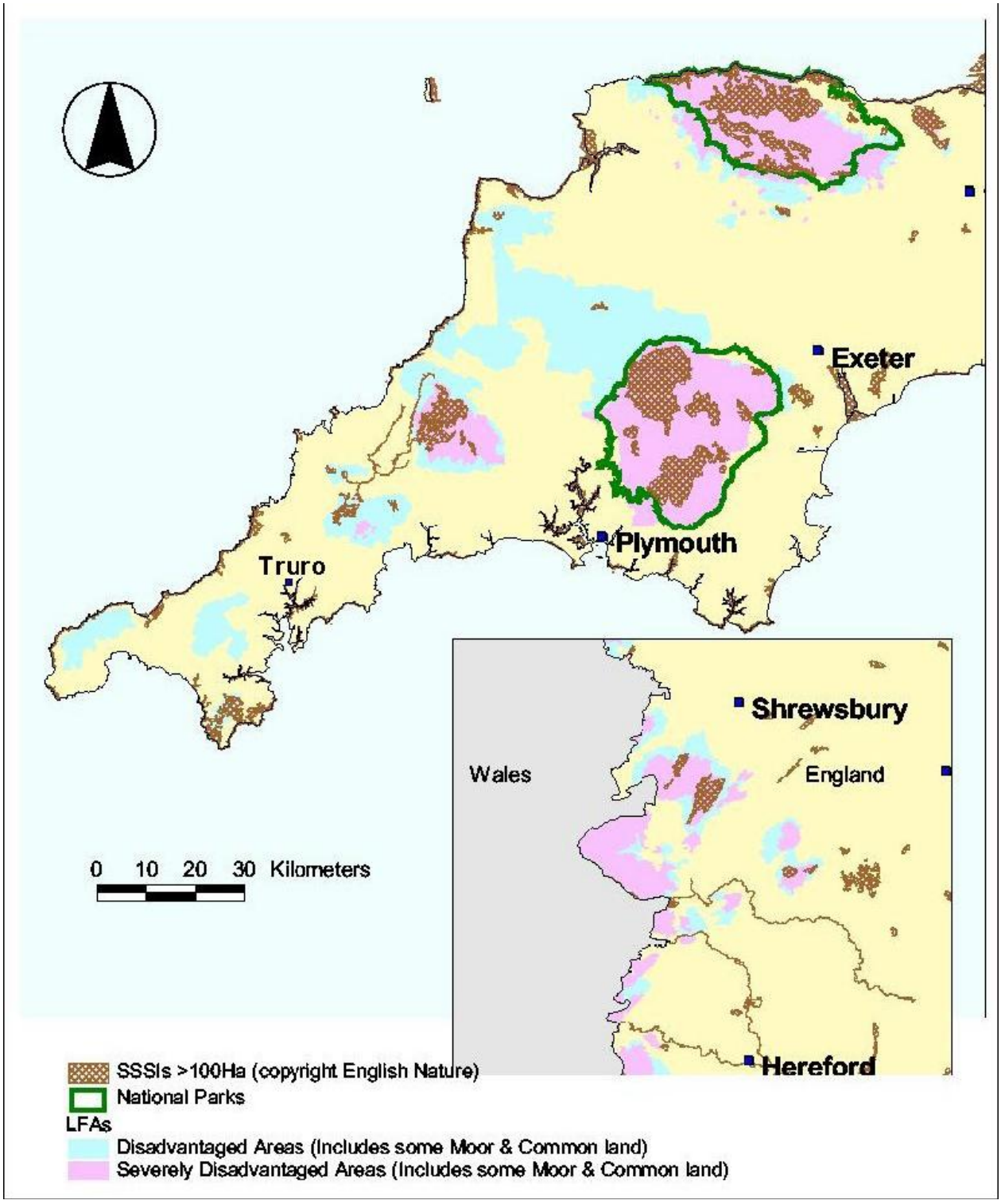


Figure 3-27 - LFA boundaries and key environmental designations



166. In 2005, Defra commissioned a report[141] that provides an assessment of current status and recent trends affecting farming and land use in LFAs in England and models in detail the likely impact of a number of different scenarios, including that of completely removing targeted support for farmers in LFAs.

[141] Cumulus Consultants Ltd 2005: Assessment of the impact of CAP Reform and other key policies on upland farms and land use implications in both Severely Disadvantaged and Disadvantaged Areas of England. Unpublished report for Defra No. CC-P-423.

167. This report includes summary figures for average farm incomes within both DAs and SDAs. These show that, although total average income within SDAs is slightly higher than in DAs, a much higher proportion of this income is from subsidy. The current Hill Farm Allowance (HFA) made up only 3.3% of total income for farms in DAs in 2003/4, but made up 15.9% of total income for farms in SDAs.

168. The report also includes data that model the likely impact of the introduction of the Single Payment Scheme (SPS) on farm incomes within LFAs and predicts how this will change as payments shift progressively from being based on historic entitlement to being area based, a process that is due to be completed by 2012. These data show that the farmers in SDAs are likely to experience an average 11% reduction in average farm income between now and 2012, whereas those in DAs are likely to experience a 6% increase. This follows on from the approach to SPS implementation in England and is not unexpected.

169. Given this analysis, and the slender profit margins of most upland farms, it is somewhat surprising to note that, even under the scenario that involves complete withdrawal of the support currently targeted specifically at farmers in LFAs, widespread land abandonment is not predicted. However it is predicted that withdrawal of this support would trigger a series of changes in farming practice, including the following:

- an acceleration in the existing rate of loss of dairy and beef cattle from hill and upland farms;
- a continuation of the shift towards rearing/finishing enterprises and towards sheep, but with a continued decline in sheep numbers, particularly in hill areas;
- continued intensive management of 'in-bye' (enclosed and improved grassland fields in the uplands) and other more productive areas of land;
- a reduction in spending on maintenance, including boundary management, except where this is funded by agri-environment payments;
- further pressure to reduce overheads, leading to a continuation of the trend to larger farms, simplified systems and less labour, particularly in the SDA area;
- an acceleration in the move to part time hill farming, leading to more extensive, reduced labour hill sheep systems. This may have an adverse effect on animal welfare;
- a search for opportunities to diversify, though these may be limited in the more remote areas;
- some withdrawal of tenancies by conservation-minded landlords wishing to experiment with re-wilding.

170. These changes are in turn predicted to exacerbate a series of adverse environmental impacts that already appear to be occurring. These are complex, but may be summarised as including continued loss of heather moorland and bog, arable land (important for farmland birds in these predominately pastoral areas) and particularly upland hay meadows. Gorse and bracken encroachment would continue.

171. Not all the changes would be adverse. Carbon emissions would reduce broadleaved and mixed woodland could be expected to expand and there may be improvements in water quality and a reduction in flood risk.

172. The study also looked at other scenarios including a baseline scenario, where the current pattern of subsidy continues and a scenario where LFA support was concentrated on the SDA areas and fully integrated into agri-environment schemes.

173. Under the baseline scenario, continued payment of the HFA would mitigate – but not prevent – many of the problems listed above that would occur following complete removal of LFA support.

174. In particular, the trend towards fewer cattle, particularly suckler cows, and relatively more sheep would continue, though within the context of continued extensification. The trends towards simplification of farm systems, larger farm size, fewer farm workers and greater polarisation between intensively managed in bye and extensively managed fell and mountain area would all continue, though generally less rapidly due to the cushioning effect of HFA payments. Continued payment of the HFA should be sufficient to prevent net loss of heather moorland and bog, particularly if agri-environment scheme coverage continues to increase. The report estimates that it would slow, but not prevent the decline in some other habitats, including upland hay meadows and arable land. There would still be some encroachment of bracken and gorse.

175. However, the report suggests that the scenario where support is fully integrated into agri-environment funding (for example through an Uplands Entry Level Stewardship scheme), and is concentrated on the SDA (74% of the LFA), would generally bring greater benefits than retention of the HFA, as it has the potential to halt or reverse most of the adverse environmental changes that are otherwise likely to occur in these marginalised areas.

176. In particular, it could significantly enhance participation in agri-environment schemes in the SDA, thus bringing more upland farmland under agri-environment scheme prescriptions. This would include increased higher tier management (through greater participation in the Higher Level Stewardship scheme). This scenario is likely to slow down the loss of suckler cows as these animals are retained to deliver agri-environment management. An increasing number of farmers will develop an 'environmental enterprise' combining agri-environment scheme and SPS payments and output from an extensive grazing system. Some may switch to low maintenance, hardy breeds to deliver this grazing.

177. Under this scenario, greater participation in agri-environment schemes is expected to improve the extent or quality of heather moorland and bog, broadleaved woodland, field boundaries, cultural heritage and water quality. Remaining upland hay meadows are safeguarded and encroachment by bracken and gorse is further controlled. It would also slow the trend towards intensification of improved grassland.

178. However, the report does point out that, because agri-environment agreements are voluntary, farmers who are unable or unwilling to enter into agreements might be left with less support.

179. The report also concludes that there is little current risk of widespread land abandonment in England, even in the most marginalised areas. This is confirmed by a survey of farmer attitudes published in the past year[142]. The report suggests however that continued public subsidy aimed at the most marginalised areas is necessary to avoid the acceleration of a number of adverse social and environmental trends. However, the report also suggests that whilst continuing the current pattern of support would slow these adverse trends, a different approach will be needed to halt and reverse them. The conclusions of this report are in line with our intention to retain the HFA as a transitional measure before fully integrating LFA support into Environmental Stewardship by 2010.

3.1.3.2 Overall description of biodiversity

180. Due to the long history of agricultural production in England, the majority of valued species rely upon habitats that result from low-intensity agriculture. However, there was a great expansion and intensification of agricultural production from the

[142] ADAS UK (2006) Farmers' intentions in the context of CAP reform – Analysis of ADAS Farmers' Voice 2006 Surveys of England and Wales.

Second World War onwards. This was driven by national policy. Food self-sufficiency was a priority for much of this period and farmers were offered a range of financial incentives to encourage increased production. The expansion was enabled by mechanisation and by advances in livestock and plant breeding, crop protection technology and many other aspects of agricultural science and technology. The combination of financial incentives and advances in technology resulted in very large-scale intensification, consolidation of holdings and streamlining of production systems.

181. These changes continued into the 1970s and 1980s and during their latter stages were partly driven by the various coupled payments and direct subsidies provided by the CAP. With the development of environmental science, these changes were found to have had serious detrimental effects on the environment.

182. Subsidies linked to livestock numbers encouraged very heavy grazing of many upland areas, leading to deterioration in habitat quality, increasing run-off and erosion. Away from the uplands, the area of semi-natural habitat has been greatly reduced, and the surviving habitat patches have become isolated and fragmented within otherwise intensive agricultural landscapes. Some examples demonstrate the scale and pace of historical change:

- published statistics[143] for agriculturally unimproved lowland pasture show a 97% loss in England and Wales between 1932 and 1984. During the same period there was an 80% loss of chalk grassland;
- estimates of the rate of loss of English lowland heath show a 40% loss between 1950 and 1984[144] with a further 7% loss between 1984 and the late 1990s[145];
- the length of hedgerows in Britain fell from 611,000 km in 1984 to 468,000 km in 1998[146].

183. Woodland is one habitat that has shown an increase in overall area in Britain since the Second World War. The total resource in England has expanded from approximately 755,000 ha in 1947 to approximately 1,121,000 ha in 2006[147], but there has also been significant turnover, with losses of ancient woodland in the post-war decades and a gain from new planting.

184. The area of ancient woodland, which supports the most complex and fragile woodland ecosystems, (High Nature Value Farmland and Forestry Baseline Indicator), has declined due to both outright loss, mainly through clearance for agriculture (7% of area) and through conversion of native stands to plantations (38% of area). Both these trends largely ceased in the 1980s as a result of changes in government policy, and some progress has been made since then in restoring areas damaged by conversion to plantations[148].

185. Structural change has also occurred within existing semi-natural woodlands, due in part to a reduction in traditional forms of management. In 1947, 21% of woodland was classified as coppice, which supports some of the most diverse woodland plant and animal communities, and only 52% was classified as high forest. In 2002, 97% of forest was classified as high forest.

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[143] Fuller R M (1987): The changing extent and conservation interest of lowland grassland in England and Wales: A review of grassland surveys 1930 – 1984. Biological Conservation **40** 281 – 300.
[144] Nature Conservancy Council (1984): Nature Conservation in Great Britain. Nature Conservancy Council, Peterborough.
[145] Unpublished data from Natural England.
[146] Indicator Land Use and Landscape, Environment Agency website http://www.environment-agency.gov.uk/commondata/103196/112360?referrer=/yourenv/eff/1190084/land/213950/landuse/
[147] Forestry Statistics (Table 1.2) 2006, Forestry Commission website. http://www.forestry.gov.uk/website/ForestStats2006.nsf/byunique/index_main.html
[148] Hopkins JJH and Kirby KJ (In press, 2007): Changes in British Woodland since 1947. Submitted to IBIS.

186. The best of England's wildlife and geological sites are now legally protected through designation as Sites of Special Scientific Interest (SSSIs). These sites include all internationally important terrestrial sites in England designated under the EU Habitats and Birds Directives (Natura 2000 sites) and the Ramsar Convention.

187. The EU has the objective of halting biodiversity loss and the aim of achieving this by 2010. The UK Biodiversity Action Plan (UK BAP) was published in 1994 as part of the UK response to the Convention on Biological Diversity signed at the Rio Earth Summit. Under the plan, there are 436 costed and targeted national action plans for our most threatened habitats and species in the UK, known as 'Priority Habitats and Species', and these are supported by approximately 150 Local biodiversity action plans, often at County level. The UK BAP has action plans for 475 priority species and 47 priority habitats (some of these are in grouped plans). Of these, 77 priority species, including the skylark, the tower mustard and the Adonis blue butterfly, and 10 priority habitats (including cereal field margins, ancient species-rich hedgerows and upland hay meadows), are associated with farming or agriculture in England.

188. Following devolution, the England Biodiversity Strategy "Working with the grain of nature" was published in 2002 to bring together England's key contributions to achieving the 2010 target.

189. Progress under the strategy is measured by a series of headline and sectoral indicators, which were published in 2003[149]. A full report on progress in the first four years of the strategy and a full update of these indicators was published in 2006[150]. Within the wider trends identified for the UK, this report highlights some notable successes and some causes for concern.

190. The report lists nine overall indicators of progress, shown in Table 3-26. Of the seven where it was possible to make an assessment, six show an overall clear positive trend, the exception being populations of wild birds, which shows no overall trend.

[149] Measuring Progress: baseline assessment - www.defra.gov.uk/wildlife-countryside/biodiversity/biostrat/indicators/index.htm

[150] Defra 2006: Working with the grain of nature – taking it forward: Volume 1 Full report on progress under the England Biodiversity Strategy 2002 – 2006. Volume II. Measuring progress on the England Biodiversity Strategy: 2006 assessment. Defra, London.

Table 3-26 - Headline indicators under Biodiversity Action Plan[151]

	Summary Assessment of headline indicators	2003 assessment	2006 assessment
H1	Populations of wild birds in England	No trend or uncertain trend	No trend or uncertain trend
H1B	Populations of butterflies in England	Indicator not developed	Clear positive trend
H2	Condition of Sites of Special Scientific Interest (SSSI) in England	No trend data	Clear positive trend
H3	Status of Biodiversity Action Plan Priority Species and Habitats in England	Clear positive trend	Clear positive trend
H4	Area of land under agri-environment scheme agreement in England	Clear positive trend	Clear positive trend
H5	Biological quality of rivers in England	Clear positive trend	Clear positive trend
H6	UK fish stocks fished within safe limits	No trend or uncertain trend	Clear positive trend
H7	Delivery of local biodiversity targets in England	Indicator not developed	No trend data
H8	Public attitudes to biodiversity	Clear positive trend	No assessment
Indicator trend moving towards objective		4	6
Indicator trend uncertain or insufficient data		5	3
Indicator trend not moving towards objective		0	0

191. However, when the indicators are applied specifically to farmland a more mixed picture emerges. Of the six indicators of biodiversity on farmed land two could not be assessed, two showed a clear positive trend and two showed no clear trend.

192. The two indicators showing no clear trend for farmland were the populations of farmland birds and populations of butterflies. For farmland birds, the overall index appears to have stabilised, albeit at a much lower level than in the 1970s. This is discussed further below. For butterflies, it is the more specialised species that have suffered decreases in population. Generalist species have done better.

193. The two indicators showing a clear positive trend were the condition of farmland SSSIs, and the status of farmland Biodiversity Action Plan Priority Species and Habitats. 72% of SSSIs are currently in favourable or recovering condition, with a target of 95% by 2010. The positive assessment for the status of farmland Biodiversity Action Plan Priority Species and Habitats is based on a comparison with the 2002 reporting round. The status of individual Priority Habitats and Species associated with farmland still shows a mixed picture. For the Priority Habitats of farmland, only 30 % were assessed as stable or increasing. The remaining 70% were still declining, though in all cases the rate of decline was slowing. For the Priority Species of farmland, 55% were assessed as stable or increasing, 4% were declining but the rate was slowing and for 13% the decline was continuing or accelerating. The remainder could not be assessed for a variety of reasons.

194. The species conservation successes include the Adonis blue, the Deptford pink and the stone curlew, and the habitat conservation successes include cereal field margins and upland heathland. The continued and in some cases accelerating declines in some species and habitats are a cause for concern. A recent report[152]

[151] Extract from ch 5 p 50 of Defra 2006 'Working with the grain of nature- taking it forward: Volume I and II' (Defra 2006).

[152] Nisbet A & Shere P 2006. Predicted changes in Livestock farming in England, Possible environmental impacts and problems of undergrazing. Rural Development Service, Exeter.

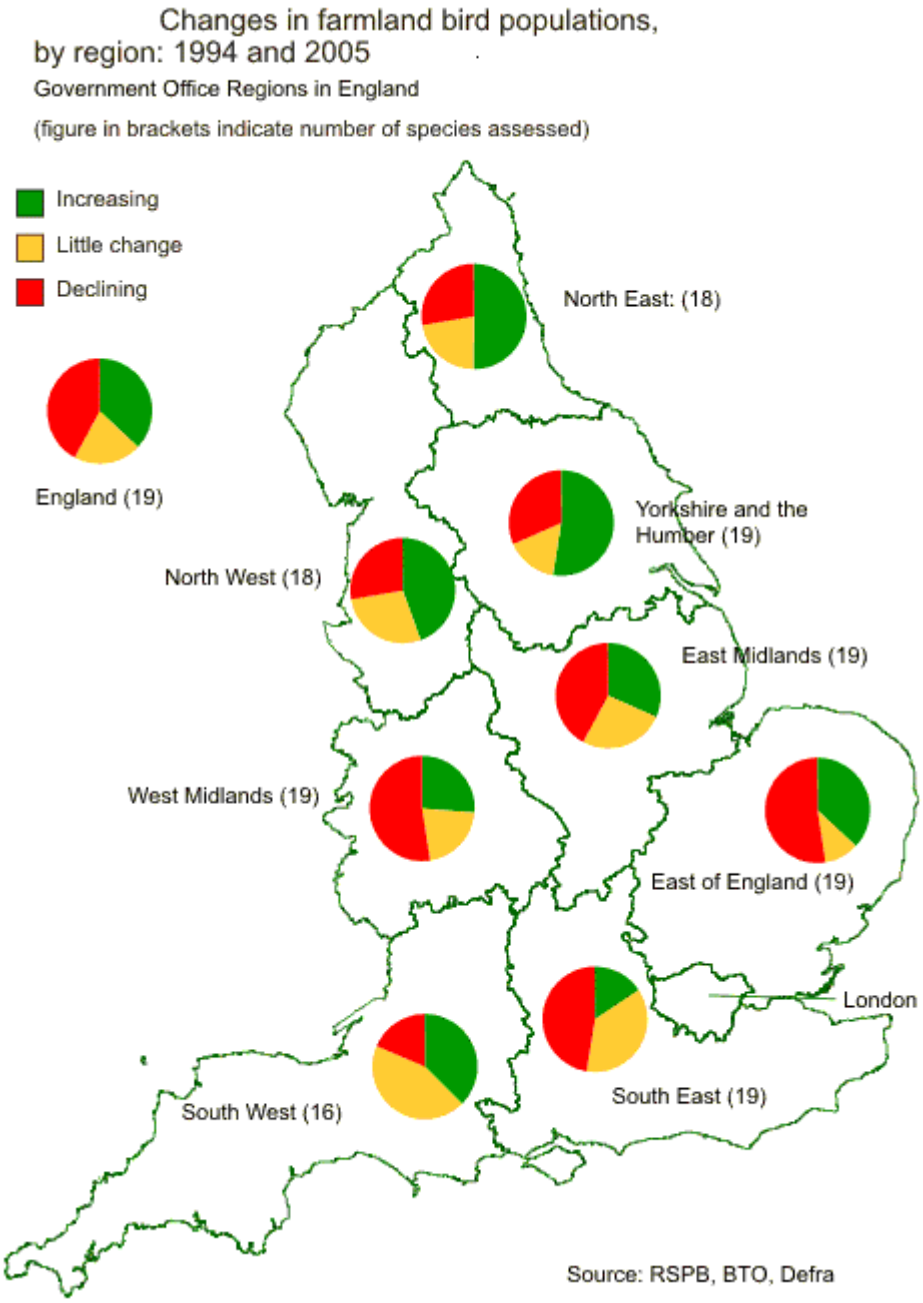
highlights a further potential threat to some habitats posed by undergrazing as a result of current trends within livestock farming in England. This threat is particularly acute in South-East England.

Farmland Birds at the Regional Level

195. There is a very extensive set of data for the farmland bird index. Regional data is produced annually and gives a snapshot of what is happening to bird populations in each English region. The regional data is not statistically reliable because the sample size is considerably smaller and regional indices can only accurately measure very large changes in farmland bird populations.

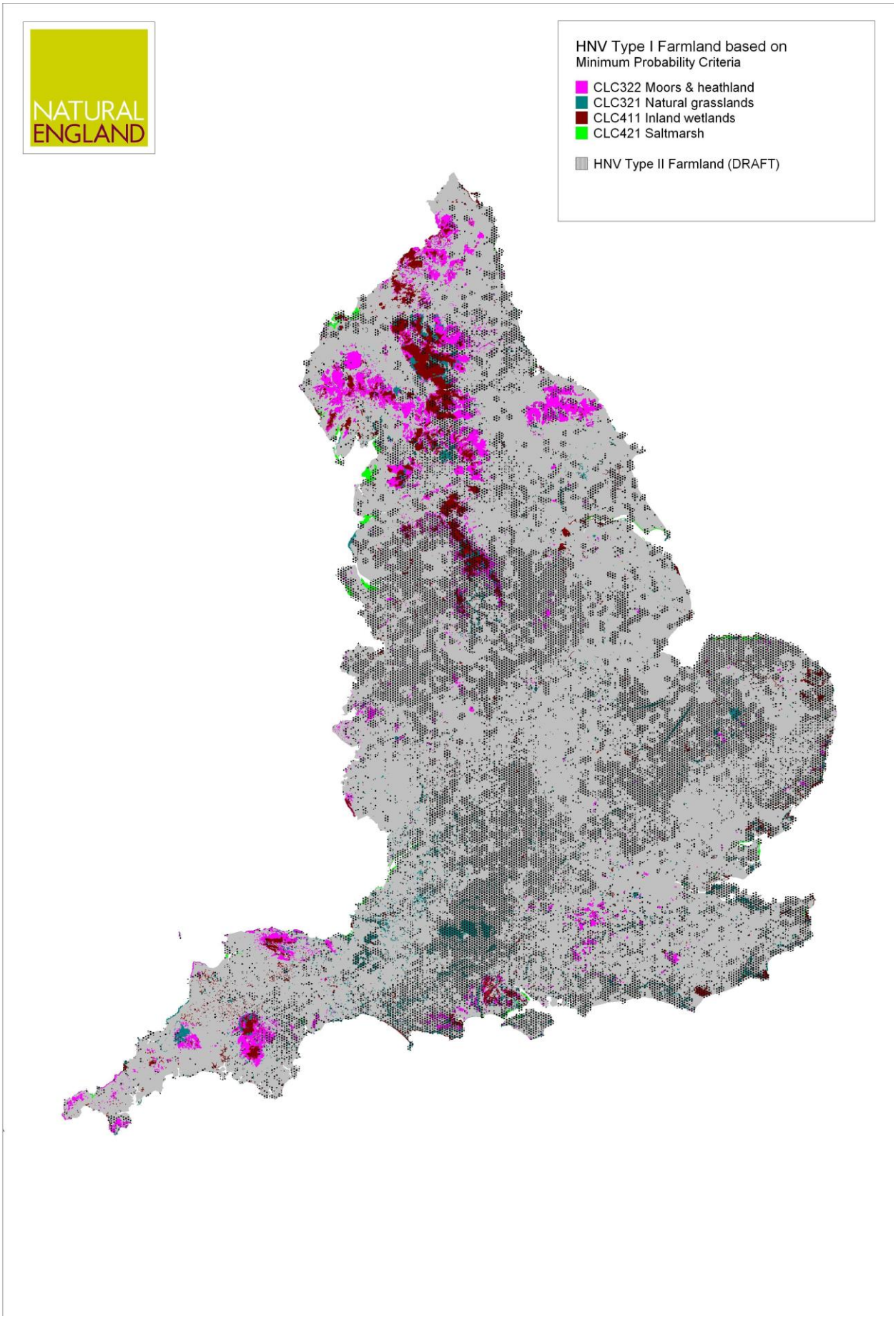
196. Noting the caveats set out in the above paragraph, the regional results for farmland birds show that (see also the map below) :

- most English regions showed no significant change in farmland bird populations over the period 1994 to 2005. The exceptions were the West Midlands and the South East, where the farmland bird indices fell by 15 per cent. This compares with an overall England decrease of 6 per cent over the same period.
- the largest increase was in the North West, where woodland bird populations rose by 33 per cent between 1994 and 2005. There was also an increase of 18 per cent in the Yorkshire and the Humber region. There was a decrease of 10 per cent in the South East, but little change in the remaining regions. This compares with an overall England decline of 3 per cent over the same period.



197. Taken together, the condition of SSSIs and of farmland Priority Habitats gives an indication of the overall status of High Nature Value Farmland (HNVF) in England. However, work on defining an accurate baseline for High Nature Value Farmland in England is still in progress. A brief description of this work is in Chapter 12. The early draft map below shows the rough pattern of HNVF. It must be stressed that this is work in progress. It requires further development, through both national consultation and subsequent regional refinement, before an operationally useful map can be produced. It is estimated that this will take until late 2007.

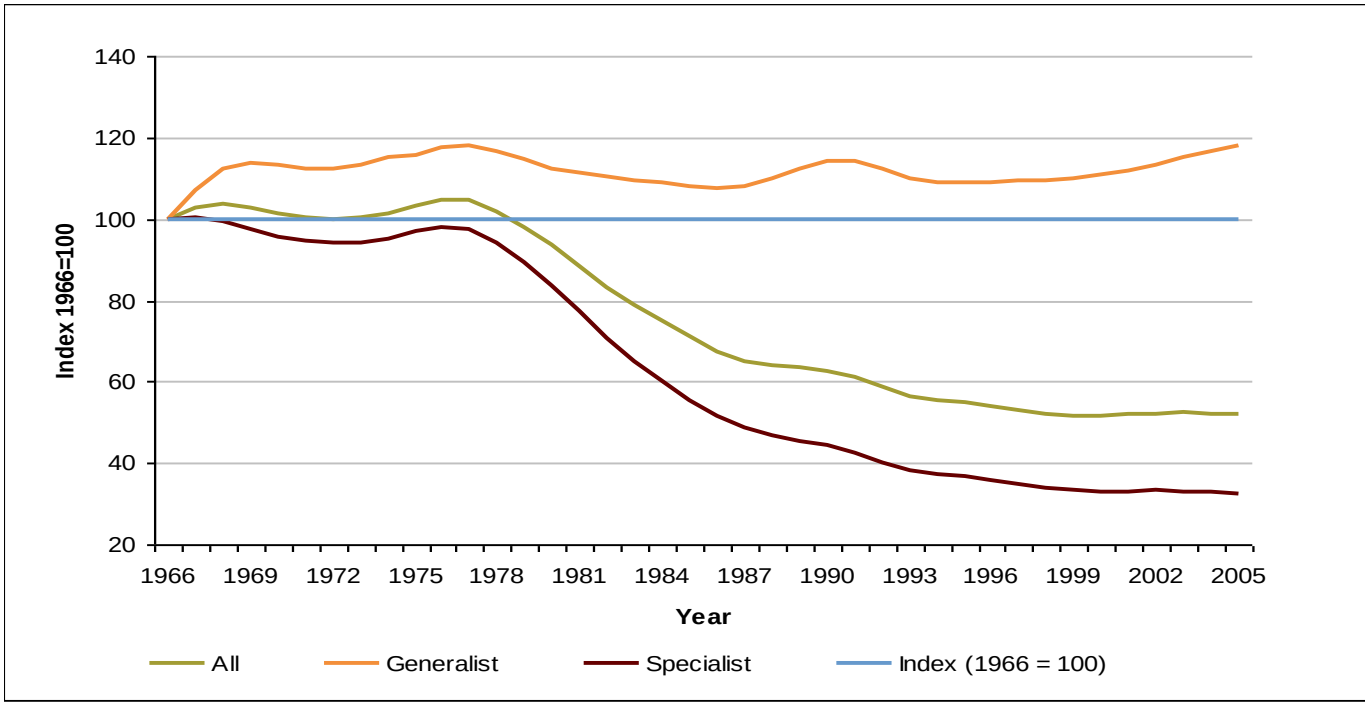
Figure 3-28 – DRAFT MAP - HNV Farmland in England



198. Wild bird populations are considered a good indicator of the overall health of large-scale ecosystems, and the index of farmland birds is a UK biodiversity indicator and an EU Common Baseline Indicator. Since the mid-1970s, farmland bird populations have seen significant decreases of nearly 50%, reflecting the scale of changes in agricultural practices and the farmed landscape in recent decades. Amongst the farmland birds, the farmland specialists (those species that breed solely or mainly on farmland) that have suffered the sharpest declines. However, more recently farmland bird populations appear to have stabilized, with little change since 1996.

199. Although populations of the more common farmland birds have declined since the 1970s, rare bird populations, which are not included in this index, have been stable or rising. This reflects conservation efforts focused on these species.

Figure 3-29 - UK Farmland Bird Index 1966-2005 [153]



200. In terms of woodland, earlier declines in the quantity and quality of woodland are being reversed. As mentioned earlier, since the mid 1980s many conifer plantations on ancient woodland sites have started to be restored to native broadleaves, indicating a positive trend in relation to the Tree Species Composition baseline indicator.

201. Recent changes in total woodland area in England are shown in Table 3-27[154].

[153] Defra e-digest Environmental Protection (Defra 2006).
[154] Extract from table 1.3, Woodland areas and planting (Forestry Statistics 2006).

Table 3-27 - Annual average change in forest coverage

Year	Area (kha)
2002	1104
2003	1110
2004	1115
2005	1119
2006	1121

202. This shows an average rate of expansion of 4250 hectares per annum. The vast majority of new woodland is broadleaved and is dominated by native species. This is a net figure, but woodland loss is carefully controlled and limited in extent. In some localised cases, deforestation may be encouraged to restore open habitats such as heathland.

203. Although woodland bird populations have shown a rather less marked decline than farmland birds, there has still been a decline of about 20%, though the overall decline again appears to have halted during the 1990s.

204. Evidence[149] suggests that overall, woodland specialist species and those characteristic of open spaces within woodlands seem to be doing less well than woodland generalists are. Cessation of traditional forms of management is one cause of this change, but woodlands are also impacted by other changes, including increased grazing by deer, game management and pollution. Woodlands have also become more ecologically isolated, which may hinder the ability of woodland species to adapt to climate change.

205. An assessment of the condition of 115,000 ha of woodland SSSIs was made as part of the overall programme of SSSI condition assessment[155]. These included all woodland Natura 2000 sites and represented an 11% sample of all woodlands, and about a 20% sample of native woodland. This and further analysis of the reasons for unfavourable condition in woodland[156] showed that the known dominant reasons were excessive deer populations, non-native tree species (especially conifers) and uncontrolled livestock grazing. The other most common problems were lack of coppicing or poor understorey, invasion by rhododendron and drainage issues.

206. Storm damage to trees is a significant and widespread occurrence, with extensive damage having occurred across much of England in recent decades, for example in the South-East in 1987, 1990 and in the North-West in 2005. Susceptibility to windthrow tends to be increased in uniform/even -aged stands with more densely crowded trees. The impacts of storm damage are however not entirely negative. Many deciduous trees survive windthrow, and the damage can have the beneficial effect of diversifying woodland structure[157] and increasing the amount of available dead wood.

207. When combined with other direct agricultural or land management impacts, such as diffuse pollution, scrub control, undergrazing, forestry management, and ditching, it is clear that agriculture and bad land management practices are

[155] England's best wildlife and geological sites. English Nature 2003.
[156] Unpublished data from Emma Goldberg and Keith Kirby, English Nature.
[157] Rackham O 2006 Woodland. Collins New Naturalist Library. London. Pages 8-10.

responsible for the major part of habitat damage and loss in England. Many areas are affected by a combination of factors.

208. In addition to the causes identified above, air pollution is also a significant cause of damage and as such a significant risk to achievement of favourable conditions in many SSSIs. Recent studies have shown that 60 – 70 % of SSSIs are at risk from nutrient nitrogen and deposition of acidifying pollutants. (See section 3.1.3.6 for more information).

209. Evidence is accumulating that agri-environment schemes can successfully reverse declines in biodiversity in the areas where they are targeted. A recent review[158] of efforts to conserve the arable biodiversity of England has highlighted several examples, including conserving the flora of arable field margins and reversing declines in populations of cirl bunting and stone curlew. For instance, there has been an 83% increase in cirl bunting abundance in areas targeted for creation of cereal field margins and retention of stubble, compared to a population increase of just 2% elsewhere. In addition, overall trends in decline in farmland habitats and farmland species have tended to slow since the introduction of agri-environment schemes, and other changes in agriculture policy, since the early 1990s.

210. The decoupling of direct payments from production has gone some way to addressing the root causes of losses of biodiversity within the farmed environment. The progressive expansion of agri-environment agreements now provides mechanisms for addressing both the specialised management needs of particular habitats and the broader interventions needed to ensure the health of widespread species populations. The evidence suggests, however, that whilst there have been considerable successes, particularly in slowing the rate of habitat loss, restoring some habitats and conserving some rare species, biodiversity is still subject to many pressures.

211. The condition of some Priority Habitats and a significant number of Priority Species continues to give cause for concern. There appears to be particular set of problems around some upland habitats. At a wider level, the farmland bird index, an indicator of the overall health of the farmland environment, shows that the decline may have been halted, but there is as yet little evidence of a recovery to the levels seen as recently as the 1980s. This suggests that widespread action is required to address the negative influences on widespread species.

212. Good progress has already been made on reversing the damage done to ancient woodland in the 20th century. By 1985, 139,000 ha of ancient woodland had been converted to plantations, mostly coniferous[159]. By 1998 36% (51,000 ha) of this area was dominated by broadleaved species, with some of this change derived from active restoration and some from natural processes. The evidence from assessments of woodland SSSIs[160] shows there is, however, still much to do to optimise the management of broadleaved woodland in England for biodiversity, and climate change is adding to the challenges.

3.1.3.3 Water quantity and the role of agriculture

213. Within England, both water shortage and flooding are issues. While parts of England are well supplied with water, there are significant pressures on water resources in many of the drier areas of the country, particularly the East and South

[158] Grice P V et al (in prep): Conserving England's arable biodiversity through agri-environment schemes and other environmental policies: a brief history. Submitted for publication to Aspects of Applied Biology.
[159] Spencer and Kirby, 1992, An ancient woodland survey for England and Wales. Biological Conservation 62, 77-93.
[160] English Nature 2003: England's best wildlife and geological sites

East Regions. Much of southern England has little surplus surface water available during the summer.

214. Groundwater provides about a third of total potable water supplies in the UK as a whole, and around three-quarters in the South East of England. Many rural communities are dependent on this water resource and many rivers are groundwater-fed during dry periods. Over the past 15 years or so winter rainfall has often fluctuated between very dry and very wet, leading to periodic shortages. Greatest seasonal variability has been in the limestone and chalk aquifers, thus contributing to the surface water pressures in southern England.

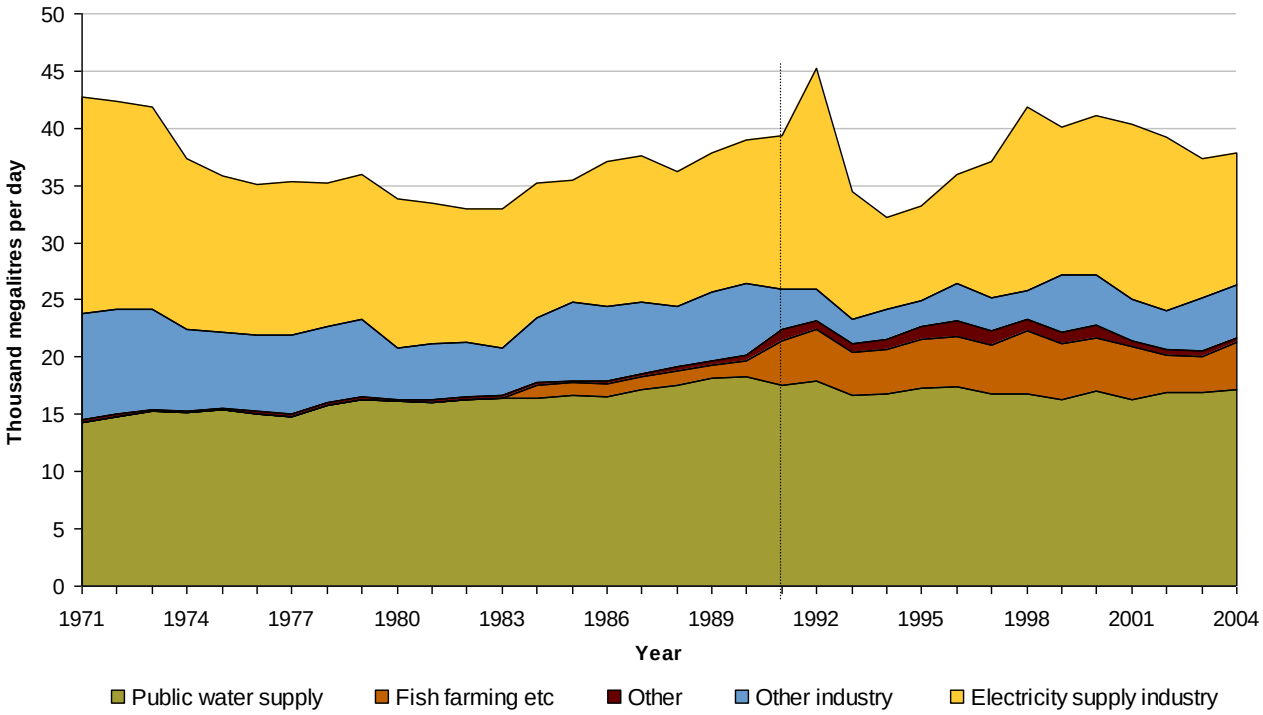
215. It is also likely that there will be reduced availability of water in the future. Global climate change suggests a pattern of drier summers, and at the same time water consumption remains very high, especially in the areas worst served by rainfall. These problems are likely to be particularly accentuated in certain regions, especially the densely populated South East.

216. If abstraction levels increase as a result of high levels of consumer demand, it could harm river flows and wetlands. In some cases, existing licences are already damaging the environment[161]. There is, in consequence, a need to balance the competing demands of domestic, industrial and agricultural consumers with the need to protect and maintain the environment.

217. At about 1.5%, agriculture's share of total water use in the UK is small compared to 45% for public water supply and 30% for power stations (see Figure 3-30). However, the concentration of agricultural abstractions in drier areas increases its significance and the continuing pressure on water supplies, especially in the South and East during the drier summer months of the year, means that there is a need both to contain total water use by agriculture and to increase water storage to minimise summer abstractions from surface water in some areas. It has been estimated that the benefit to society of reduced water abstraction by agriculture in England and Wales is £36m[162].

Figure 3-30 - Abstractions from non tidal surface water and groundwater by use 1971-2003 in England and Wales [163]

[161] Environment Agency Website (http://www.environment-agency.gov.uk/yourenv/eff/1190084/water/213872/609264/#abstracts)
[162] Table E.3, Framework for Environmental Accounts for Agriculture, Final Report (Eftec, 2004)
[163] Extract from e-digest Environmental Statistics- Key facts about inland water quality and use. (Defra 2007) http://www.defra.gov.uk/environment/statistics/inlwater/kf/iwkf12.htm



218. In parallel with these pressures on water resources, the frequency and severity of flooding has also increased in recent years. Agriculture is affected by flooding, with 12% of farmland in England located in areas prone to flooding. Much of this land is however in river flood plains, some of it in forms of agricultural management, such as summer grazing, that are compatible with seasonal flooding. This land plays a key role in the management of flooding. Saltmarshes are also an important energy-absorbing component of coastal flood defences.

219. Research commissioned by Defra[164] on the impacts that rural land use and management have on flood generation has provided evidence that changes in land use and management practices can, and do, affect run-off generation and flooding at a local scale. However, the heterogeneous nature of catchments means that the impacts at a larger catchment-wide scale are more difficult to ascertain. The right agricultural management can play a role in mitigating flooding by increasing the interception of precipitation and so slowing the release of water. Conversely, soil compaction, which can result from heavy stocking rates or the inappropriate use of machinery, can increase run-off[165]. The English uplands are the major water gathering and storage area for much of England's water supplies. The Framework for Environmental Accounts values agriculture's contribution to flood damage in the UK at £153m (2003 prices) per year[166].

220. A number of factors, including relative sea level rise, have led to widespread erosion of saltmarshes and intertidal mudflats around much of the English coast in recent decades. In Essex, the rate of loss of saltmarsh between 1973 and 1998 was 40 ha per year[167]. Combined with past land reclamation, this has led to the phenomenon of 'coastal squeeze'. Loss of protective saltmarshes and the lowering of

[164] Review of Impacts of rural land use and management on flood generation; short term improvement in modelling and future research plan (R& D Technical Report FD 2114/TR. P.E. O'Connell, K. J. Beven, J. N. Carney, R. O. Clements, J. Ewen, H. Fowler, G. L. Harris, J. Hollis, J. Morris, G. M. O'Donnell, J. C. Packman, A. Parkin, P. F. Quinn, S. C. Rose M. Shepherd and S. Tellier . November 2004).
[165] Environment Agency 2004 The state of soils in England and Wales p.7.
[166] Framework for Environmental Accounts for Agriculture, Final Report (Eftec, 2004).
[167] Coastal Geomorphological Partnership 2000: Erosion of the saltmarshes of Essex between 1988 and 1998. Report to the Environment Agency.

intertidal flats can make the continued defence of low-lying areas against tidal flooding prohibitively expensive.

221. Land management may also have a role in the management of flooding, by influencing the run-off characteristics of the major catchments, by providing areas of floodplain and flood storage in river valleys and by setting back the defended line on low-lying coasts to provide space to restore intertidal flats and allow saltmarshes to regenerate. Thus, maintaining or recreating energy-absorbing buffer zones in front of tidal flood defences. This technique has now been proven through a series of pilot projects and the Environment Agency is preparing estuary flood risk management strategies to identify sections of coast where this course of action will be needed.

3.1.3.4 Water quality and the role of agriculture

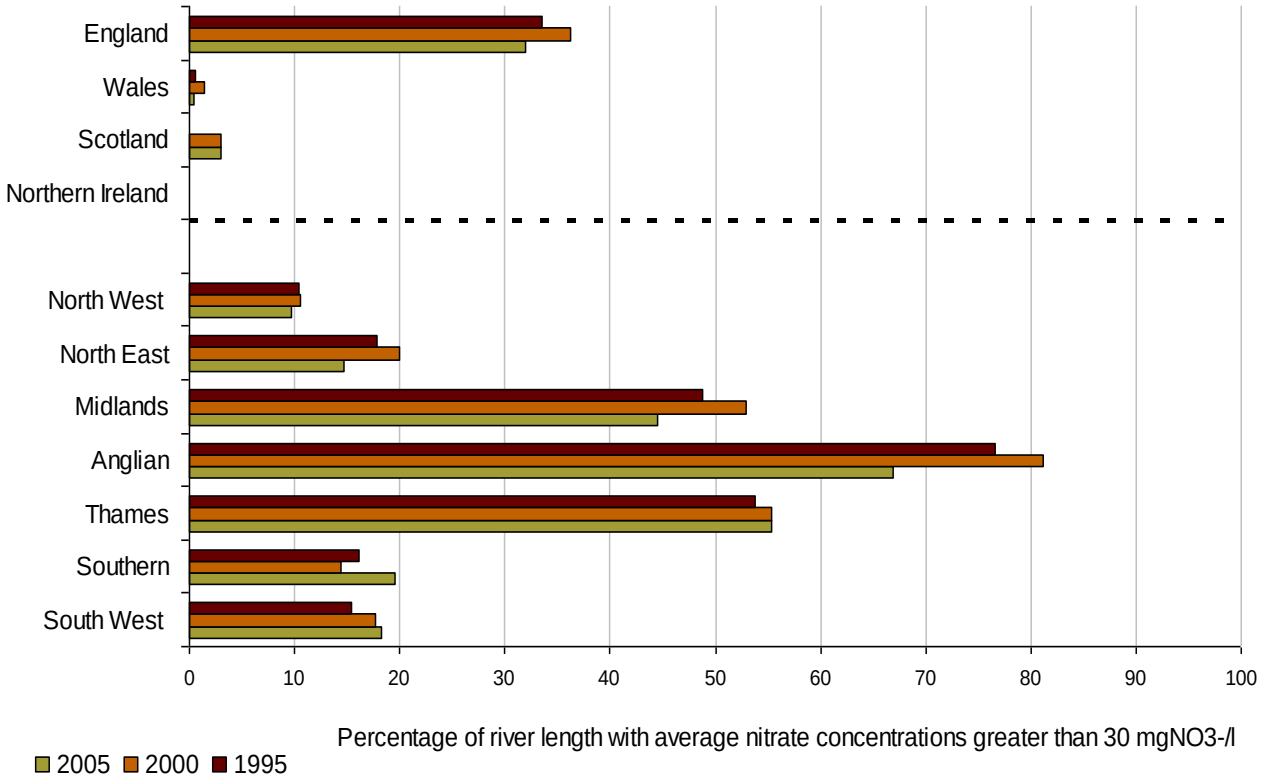
222. In recent decades, pollution of water from point sources has declined. This is largely due to water industry investment, and better regulation. At the same time, agricultural production has become more intensive. The combined effect of these two long-term trends has been that diffuse pollution from agriculture has become comparatively more important.

223. Nitrate pollution in sensitive waters is a significant environmental issue. In saline and brackish waters, it may contribute to eutrophication (the enrichment of water by nitrogen compounds, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms in the water). Nitrate pollution of water by agriculture, expressed in terms of surplus kilograms of nitrogen per hectare, is a contextual baseline indicator for the Common Monitoring and Evaluation Framework.

224. Although nitrate enters surface waters from sewage treatment works, agriculture is the main source of nitrate in water in rural areas. Arable farming activities produce a surplus of nitrate in the soil post-harvest. Being highly soluble, if there is no plant cover to take up the nitrate, it is very vulnerable to being leached out of the soil by autumn and winter rainfall. The same effect occurs from grassland with high soil nitrate levels, even though the grass will be utilising some of the nitrate. Nitrate lost in this way will, depending on the soil type, either be washed into rivers, estuaries and coastal waters (i.e. surface waters), or leached down through the soil into porous rock aquifers (i.e. groundwater).

225. In 2005, two-thirds of English rivers had Nitrate levels below 30mg/litre as measured under the General Quality Assessment scheme (GQA - the Environment Agency's national method for classifying water quality in rivers and canals). However, this average masked notable regional differences (Figure 3-31). Rivers with the highest concentrations of nitrates are mainly in central and eastern England, reflecting the geology, patterns of agriculture and higher population. In the Anglian region, nearly 70% exceeded 30mg/litre.

Figure 3-31 - Nitrate concentrations in rivers in United Kingdom: 1995 and 2005



226. Phosphorus also causes widespread concern, as elevated levels of phosphorus can lead to eutrophication in freshwater. Unlike nitrate, phosphate is relatively insoluble, and losses from agriculture tend to be associated with the loss of soil particles by soil erosion. This can occur by water and wind erosion or by the loss of very small particles in drainage waters. In some soils that have high levels of accumulated phosphorus, there can also be some loss of soluble 'phosphate' in drainage water. There was a fourfold increase in phosphorus losses to water from cereal land between 1931 and 1991[168].

227. In 2005, around 58% of English rivers showed evidence of phosphate enrichment. Inputs from agriculture vary substantially across English River Basins ranging from 9.7% in the Thames to 48.2% in the Severn[169].

228. In 2005, as Figure 3-32 shows, around 76 per cent of river lengths in Thames, Anglian and Midlands regions had average phosphate concentrations greater than 0.1 mgP/l. In England in 2005, the North East had the lowest phosphate levels, but even here, 39 per cent of the river lengths had concentrations greater than the guideline value.

Figure 3-32 - Phosphate concentrations in rivers in United Kingdom: 1995-2005

[168] Environment Agency 2004 The state of soils in England and Wales p.7
[169] 2006 Warwick HRI P Apportionment Study.

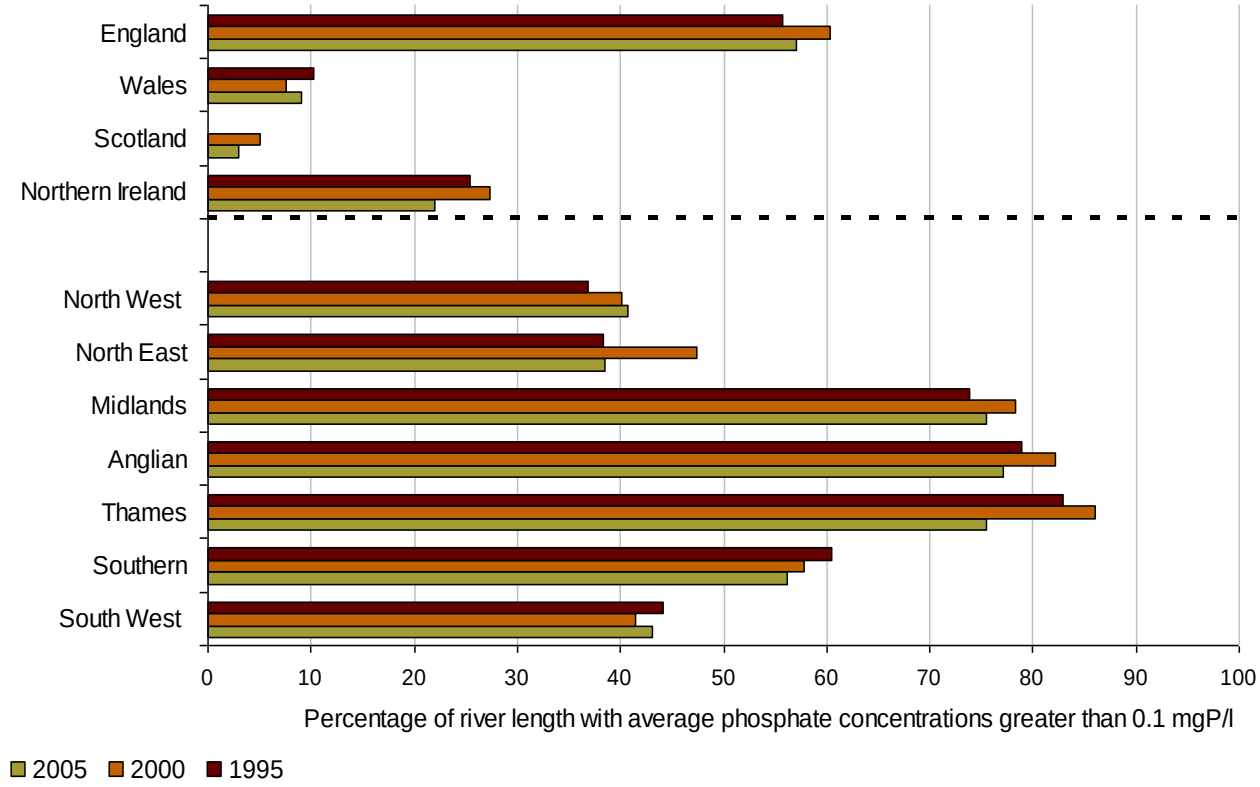


Table 3-28 - Percentage of river lengths with concentrations greater than 0.1 mgP/l[170]

	1995	2000	2004	2005
England	56	60	58	58
Wales	10	8	8	8
Scotland	..	5	4	4
Northern Ireland	25	27	23	23

229. The area at risk of soil erosion is an EU Baseline indicator. The Environment Agency reviewed the scale and causes of soil erosion in England and Wales in 2004[171]. They concluded that soil erosion is estimated to account for 2.2 million tonnes of arable topsoil annually and 17% of land shows sign of erosion.

230. Although annual losses from cultivated soils are generally less than 5 t/ha, they can occasionally exceed 100t/ha, equivalent to the loss of a 1cm thick layer of soil. The report concludes that the main causes of structural damage and erosion in soils are:

- intensive cultivation, particularly when soils are compacted by heavy machinery or left exposed to heavy rain (as with winter cereals and maize);
- heavy trampling of soil by sheep and cattle, and rooting by free-range pigs;
- poor forestry practice, for example during road construction and harvesting;
- run-off from urban land, especially building sites.

[170] Extract from Defra e digest of environmental statistics: Key facts about inland water quality and use (Defra 2006) http://www.defra.gov.uk/environment/statistics/inlwater/kf/iwkf09.htm
[171] Environment Agency 2004 The state of soils in England and Wales p.6 – 7.

231. Much of the soil lost from agricultural land ends up as sediment in rivers. The Environment Agency report quoted above estimates that its annual bill for dredging in England is about £3 million[172].

232. The cost of dredging is not the only problem caused by the loss of soil to watercourses. Eroded silt can smother riverbed gravels, harming aquatic plants, invertebrates and the eggs of fish. The Environment Agency's report states that trout spawning beds in 29 out of 51 river reaches surveyed across southern England contained more than 15% of fine sediments, a threshold at which half the eggs and larvae are likely to die. In the Test and Itchen, over 95% of fine sediment came from the surrounding land, where arable crops are a major land use. This siltation could have a direct economic effect since anglers spend £3 billion on their sport annually, in England and Wales[173]

233. Eroded sediment is also, as has already been noted, a major source of phosphate pollution.

234. In 2006, English Nature estimated that around 7.73% of SSSIs by area were in unfavourable condition due to diffuse pollution[174]. However, for specific habitats like rivers and lakes, which account for a small percentage of total SSSI area, the rate is much higher, in 2003, 69% of SSSI rivers, and 31% of SSSI lakes were reported to be in unfavourable condition due to significant diffuse pollution[175].

235. Agriculture also contributes to water pollution in two other ways[176]:

- up to half of England's bathing waters are affected by short term contamination by agricultural pollution, mainly by microbes from livestock manure being washed off farmland after rain;
- pesticides are contaminating drinking water sources, requiring expensive additional treatment at water works to remove pesticides before this water can be supplied to consumers.

236. Reducing the impact of diffuse water pollution from agriculture requires mitigation across a wide range of farming activities such as reducing levels of nitrate and phosphorus in animal feeds; better management of manure, nutrient inputs, soils and cropping regimes.

237. Soil, nutrient, manure and crop protection management plans offer farmers a structured framework for making and recording decisions on how to minimise the risk of pollution from their farming operations.

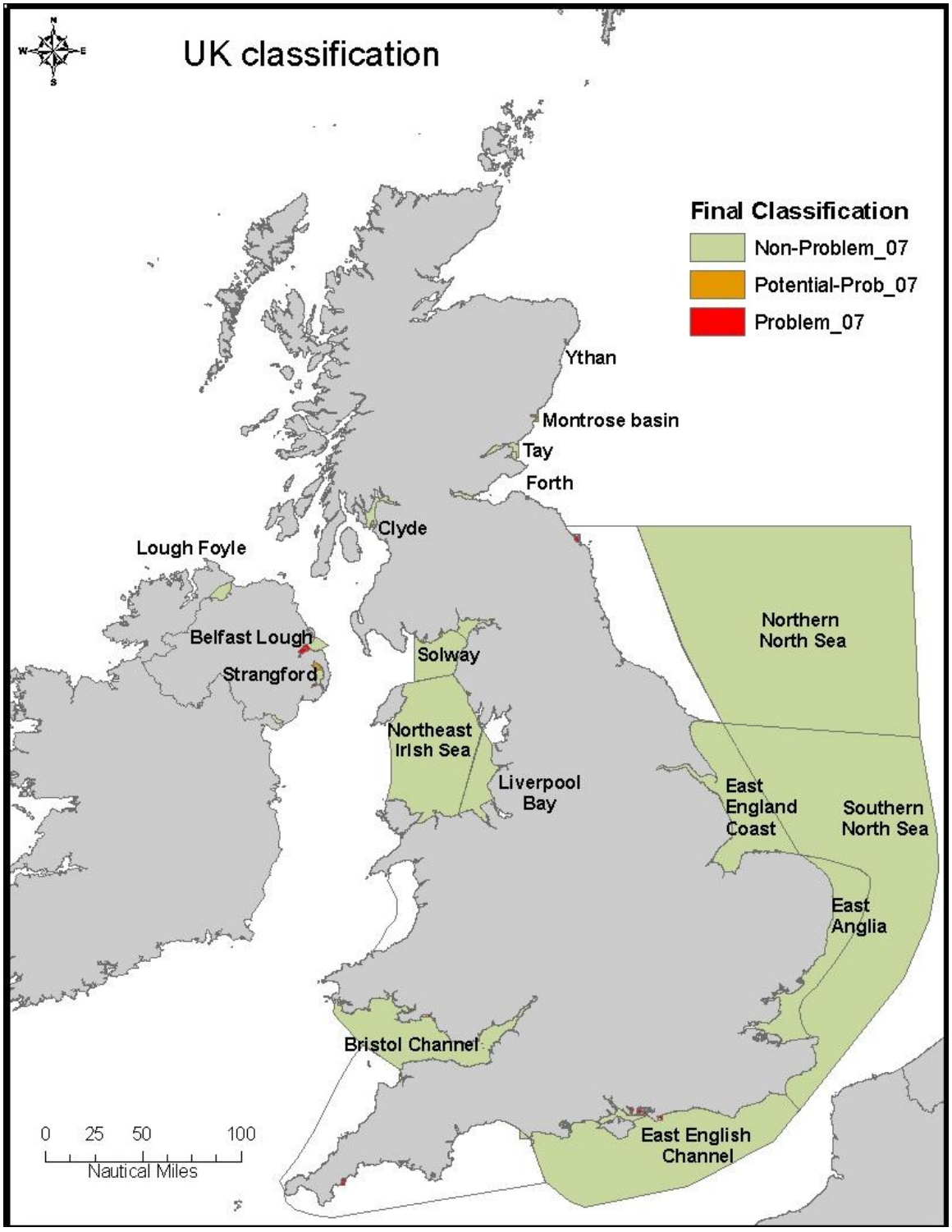
Coastal Eutrophication

238. The UK assesses the eutrophic status of its marine, coastal and estuarine waters under the OSPAR Convention, the EC Nitrates Directive and the EC Urban Waste Water Treatment Directive. The "Summary report on the second application of the OSPAR Comprehensive Procedure by the United Kingdom" (2007, in draft) highlights that the evidence revealed by UK monitoring programmes shows that its coastal and marine waters show no signs of undesirable disturbance and are therefore not considered to be eutrophic, or at risk.

[172] Environment Agency 2004 The state of soils in England and Wales p.8
[173] Environment Agency Strategy 2006-11
[174] English Nature SSSI reports http://www.english-nature.org.uk/special/sssi/report.cfm?category=N
[175] England's best wildlife and geological sites (English Nature 2003)
[176] Defra Website, water quality pages:
http://www.defra.gov.uk/Environment/water/quality/nitrate/intro.htm

239. However, the evidence confirms that there are a number of small estuaries, loughs and harbours, which are eutrophic, or at risk, due to factors such as restricted circulation.

240. The map below shows the final classifications of eutrophication in the UK:


UK classification
Final Classification
Non-Problem_07
Potential-Prob_07
Problem_07
Ythan
Montrose basin
Tay
Forth
Clyde
Lough Foyle
Belfast Lough
Strangford
Solway
Northeast Irish Sea
Liverpool Bay
Northern North Sea
East England Coast
Southern North Sea
East Anglia
Bristol Channel
East English Channel
0 25 50 100
Nautical Miles

3.1.3.5 Implementation of the Nitrates and Water Framework Directives on farmland

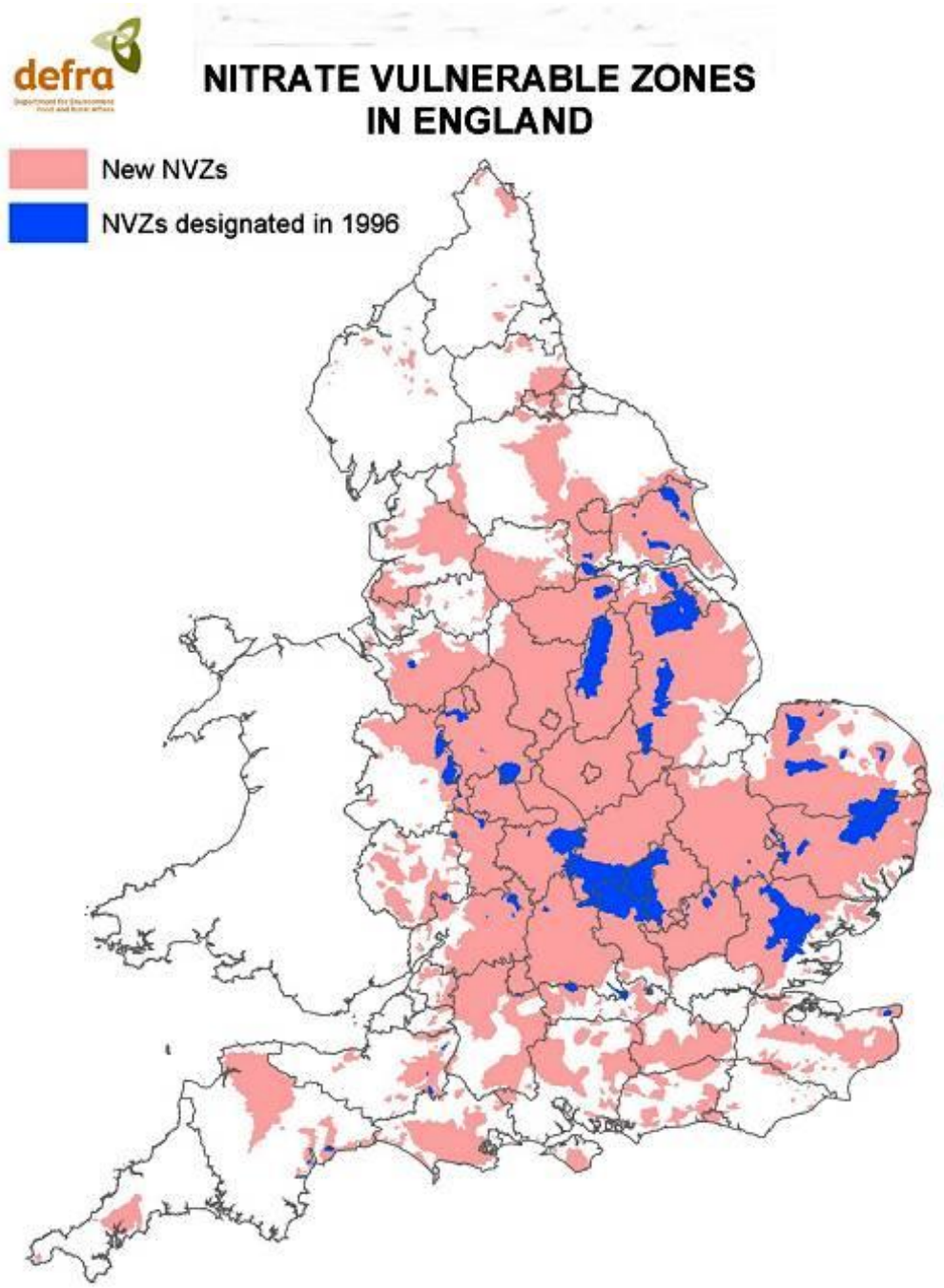
241. The Water Framework Directive (WFD) (2000/60/EC) is the vehicle through which the Government's desired improvements in water quality, including those relating to diffuse water pollution in general and diffuse water pollution from agriculture in particular, will be achieved. It works by imposing an obligation to bring all groundwater and inland and coastal surface water bodies up to "good status" by 2015 (subject to the setting of alternative objectives where certain criteria are met, for example in avoiding disproportionate cost or in cases of technical infeasibility). To underpin this, the Directive introduces the establishment of River Basin Districts, a river basin planning process and a timetable for river basin characterisation, monitoring, the establishment of water body objectives and taking action to meet them. There are also requirements to protect drinking water catchments through the provisions of Article 7 of the WFD.

242. The WFD takes account of the provisions of pre-existing EU Directives relating to water quality by replacing them or incorporating them into WFD requirements as basic measures and by making areas designated under them 'protected areas' under the WFD. In the case of the 1991 Nitrates Directive, its requirements are brought within the integrated river basin management planning process and must be complied with if WFD objectives are to be met. So, in specific relation to diffuse pollution from agriculture, the WFD requires the UK to maintain and develop actions to meet the requirements of the Nitrates Directive (which include designating Nitrate Vulnerable Zones, reducing nitrate loss and restricting the application of nitrates by farmers), whilst at the same time requiring river basin management plans to address as appropriate other sources of diffuse pollution (e.g. phosphates, sediments, faecal indicator organisms) in a way which must, take account of economic considerations.

243. The drive and impetus that these Directives provide towards improving water quality is extremely welcome, providing as it does the means to deliver what the Government considers important improvements in water quality. The various strands of activity that comprise implementation of the Nitrates Directive (ND) and the WFD in relation to agriculture are summarised in the following paragraphs.

244. 8% of land in England was designated in Nitrate Vulnerable Zones (NVZs) in 1996, rising to 55% in October 2002, following a review. The current extent of NVZs in England is shown in Figure 3-33.

Figure 3-33 - Current extent of NVZs in England



245. Farmers within areas designated as NVZs are required to follow an Action Programme aimed at protecting waters from nitrate pollution arising from agricultural sources. The current Action Programme for England was established in 1998 and contains measures directed towards promoting best practice in the use and storage of fertiliser and manure, building on the guidelines set out in the Code for Good Agricultural Practice for the Protection of Water. The Government also encourages farmers outside NVZs to follow this voluntary Code of Good Practice for the general protection of the water environment.

246. Reviews both of the extent of NVZ designations in England and of the terms of the current Action Programme are nearing completion and Defra expects to issue a public consultation on proposed revisions in mid-2007. Revised measures, which will be put in place in early 2008, will be aimed at achieving the objectives of the ND while reflecting the need to maintain a sustainable farming industry. Particular care is needed to meet the terms of the ND in ways that do not increase other forms of

pollution (e.g. phosphorus, ammonia). The new Nitrates Directive Action Programme will require farmers in NVZs to reconsider their farm management practices. For some, this could mean they will need to discontinue or alter those practices, potentially at significant cost.

Implementing the Water Framework Directive in relation to agriculture

247. Under the Directive, six river basin districts have been defined solely in England, two more straddle the border with Wales, and a further two straddle the border with Scotland. Each of these River Basin Districts must have a River Basin Management Plan (RBMP). A summary of the Programmes of Measures (i.e. the actions that will be taken to achieve WFD objectives) must be included in each RBMP, the first of which must be finalised in 2009. An early part of the process for developing management plans and programmes of measures for each district is the characterisation of River Basin Districts (RBD) required by Article 5 of the Directive. This involves:

- an analysis of the basin's characteristics;
- a review of the impact of human activity on the status of the water bodies within the RBD;
- an economic analysis of water use.

248. The UK submitted its Article 5 reports to the European Commission in March 2005. The reports included an assessment of the risk that identified water bodies may not achieve WFD objectives by 2015 if no action is taken, and the main contributory pressures relating to that risk.

Table 3-29 - Percentage of waterbodies at risk of not achieving WFD objectives[177]

Pressures	Rivers	Lakes	Estuaries	Coastal Waters	Groundwater
Point discharges	23.1	20.1	48.5	18.2	3.9
Diffuse pollution	82.4	53	25	24.2	75.3
Abstraction	10.7	2.1	14	N/A	26.1
Physical changes	48.2	59.3	89.7	77.8	N/A
Alien species	21.1	9.3	36.8	45.5	N/A
Overall % of waterbodies at risk	**92.7**	**84**	**98.5**	**84.8**	**75.3**

249. Diffuse pollution is clearly a major pressure for all types of waterbody. Within this broad category, the Environment Agency, as competent authority in England for the WFD, found that nutrients such as nitrogen, coming mainly from agriculture, accounted for almost 40% of rivers, nearly 20% of estuaries and over 50% of groundwater being at risk of not achieving good ecological and chemical quality by 2015. The analysis also found that phosphorus accounts for nearly 50% of rivers and over 25% of lakes at risk. Agricultural pesticides and sheep dip were also found to pose a substantial risk to 20% of rivers and groundwater.

250. In view of the importance of tackling diffuse pollution from agriculture, Defra has set up a workstream to establish how best to develop Catchment Sensitive

[177] Environment Agency 2005: Briefing – Assessing risks to the water environment River Basin Characterisation – Results 2005 (http://www.environment-agency.gov.uk/commondata/acrobat/rbc_res_leaflet_v1.1_1009289.pdf)

Farming (CSF). A major public consultation was carried out on CSF from August to November 2007, setting out the analysis of the best balance to be struck between regulatory, economic or supportive mechanisms such as agri-environment schemes. The intention is to make sure that the measures ultimately incorporated into WFD River Basin Management Plans and Programmes of Measures to address diffuse pollution from agriculture will be based on the most thorough public consultation and debate.

251. Defra also launched, in April 2006, the England Catchment Sensitive Farming Delivery Initiative[178] (ECSFDI), in forty priority catchments. This initiative engages with farmers through dedicated CSF Officers with the aim is to raise awareness of diffuse water pollution from agriculture, and encourage farmers and land managers to take early voluntary action.

252. As part of the England Catchment Sensitive Farming Delivery Initiative the RDPE provides training and information to farmers and landowners in priority water catchments on nutrient management. The RDPE also supports a programme of small scale capital grants for investments which protect and improve water quality . A number of options under agri-environment schemes such as ELS and HLS also tackle diffuse water pollution.

253. Although progress has been made, a considerable further improvement in farming practice will be needed, particularly in relation to standards of nutrient management, to meet the tighter standards that will be introduced during the Programme period.

254. The Rural Development Programme for England will be crucial in providing many of the mechanisms by which the agricultural pressures identified on England's water environment can be tackled, in particular using agri-environment schemes. The UK is co-leading with France and the European Commission the Strategic Steering Group on WFD and Agriculture. This activity, under the WFD Common Implementation Strategy (CIS), is examining, amongst other things, how European agricultural policy under the CAP and European water policy can be integrated more in order to deliver the objectives of the WFD.

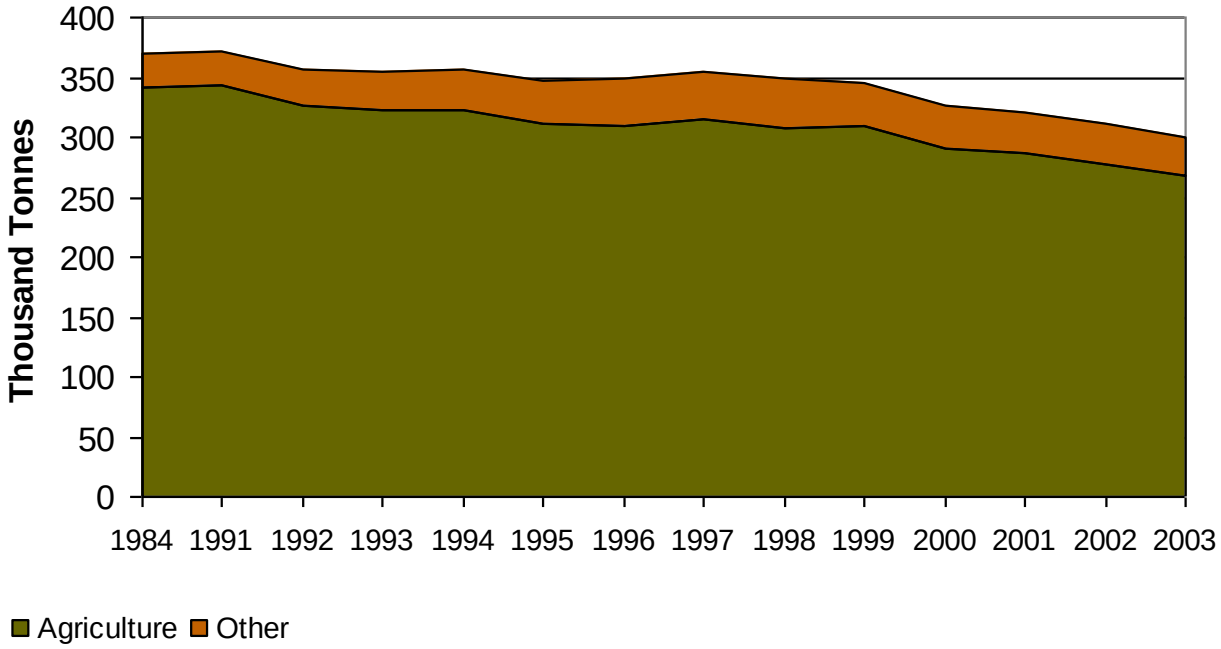
255. It will be important to be able to monitor any upward or downward trends in the agricultural pressures operating in the water environment and Defra will use, together with established domestic monitoring, the WFD monitoring regime to help do this. More immediately Defra will evaluate, through targeted monitoring, the effectiveness of the approaches being taken already in the England CSF Delivery Initiative. Monitoring and evaluation will be vital in assessing the effectiveness of any measures that are introduced to help address agricultural pressures on the water environment.

3.1.3.6 Air pollution and the links to agriculture

256. Atmospheric emissions of sulphur and nitrogen compounds can have significant effects on sensitive ecosystems through deposition, and on human health. Industrial and transport related sectors are primary sources of oxides of nitrogen (NO_x) and sulphur (SO_2) (see Figure 3-34 below). Agriculture is the greatest source of reduced nitrogen, ammonia (NH_3), emissions. The remainder is from a variety of sources including transport and waste disposal.

[178] www.defra.gov.uk/news/2005/051219a.htm

Figure 3-34 UK ammonia emissions by source 1990 to 2003[179]



Source: Netcen, Defra e-Digest of Environmental Statistics

257. Ammonia, SO_2 and NO_x can lead to acidification, and in case of NO_x and NH_3, also to eutrophication, of terrestrial and aquatic ecosystems. Deposition results in damage to biodiversity in semi-natural environments and upland rivers and lakes - many of which are of high conservation value (SSSIs and Natura 2000 sites).

258. The impact of air pollution on ecosystems is difficult to assess. Critical loads[180] are used to assess impact of deposition of pollutants on ecosystems. Exceedance of critical load is used as an indication of the potential for harmful effects to systems in steady state i.e. it is an indication of risk.

259. Gas emissions from agriculture are an EU baseline Indicator. Available figures in this area mostly relate to the UK as a whole rather than specifically to England.

260. There have been reductions in land-based emissions of SO_2 and NO_x, both in the UK and across Europe, in recent years (see Figure 3-35). In the UK, emissions of SO_2 have reduced by around 80% between 1970 and 2002, primarily through reductions in emissions from the energy industry. Likewise, emissions of NO_x have reduced by around 40% over the same period largely due to reductions from combustion industry and transport.

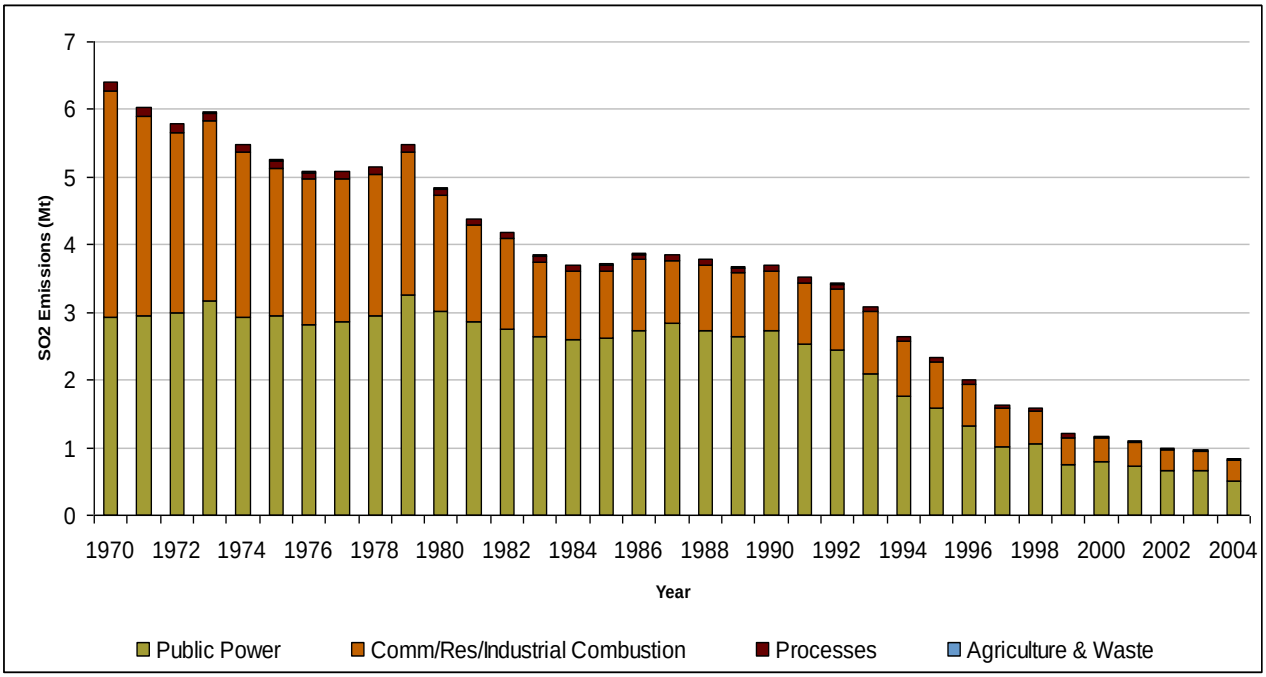
261. Over the same period, there have been only modest reductions in ammonia emissions. Approximately 89% of ammonia emissions are derived from agriculture, mainly from livestock manure and slurry[181]. During the 10 years prior to 2005 agricultural emissions of ammonia reduced by 17%. Without greater future reductions in ammonia emissions, NH_3 deposition is forecast to increasingly dominate acid and total nitrogen deposition.

[179] Sustainable Farming and Food Strategy: Forward Look - Supporting economic and statistical analyses http://statistics.defra.gov.uk/esg/indicators/documents/sffsforwardlook.pdf

[180] Critical loads are usually defined as “quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specific sensitive elements do no occur according to present knowledge”.

[181] Defra 2005: Agriculture in the United Kingdom 2005, The Stationery Office, Norwich p. 121

Figure 3-35 - Trends in SO_2 emissions from 1970 [182]



262. The most recent assessments (2004) of the effects of air pollution for various sensitive habitats are shown in Table 3-30.

Table 3-30 - Exceedance statistics by habitat for the UK (UK National Focal Centre)[183]

Broad Habitat	% Exceeded for acidity	% Exceeded for nutrient N
Acid grassland	92.2	99.6
Calcareous grassland	0	74.5
Dwarf shrub heath	70	99.7
Bog	88.9	100
Montane	95.8	100
Coniferous wood (managed)	79.9	100
Broadleaved wood (managed)	75.8	100
Unmanaged woods	70	100
Atlantic oak (epiphytic lichens)	-	100
Freshwaters	29.2	-
Supralittoral sediments	-	69.6
All Habitats	72.6	94

263. Table 3-31 below shows that over the last few years there have been significant reductions in areas where critical loads are exceeded, and that this trend is set to continue. Despite this, the figures in Table 3-32 below show that a significant

[182] From National Atmospheric Emissions Inventory website http://www.naei.org.uk/
[183] Extracted from Table 6.2 and Table E2b, Addendum- The status of UK critical Load Exceedences, April 2004 (UK National Focal Centre, 2004)

number of designated conservation sites (over 60 % of Natura 2000 and SSSIs) are still considered at risk or in unfavourable condition due to acidification and/or eutrophication through deposition of air pollution. The trend data in the previous table suggests that this position is only likely to improve quite slowly, at least up to 2010.

Table 3-31 - Trends in natural and semi-natural habitat exceedence of critical loads, England 1995-2010 (All habitats, % area of habitats exceeded for acidity and nutrient nitrogen)[184]

	1995-1997	1997-2001	2010
Acid deposition	75.7	71.6	63.1
Nitrate deposition	94.0	92.3	80.3

Table 3-32 - Exceedance statistics for acidity and nutrient nitrogen for designated sites in the UK (UK National Focal Centre)[185]

Site type	Percentage exceeded area for acidity*	Percentage exceeded area for nutrient nitrogen*
A/SSSIs	68.9%	67.4%
SACs	70.0%	62.5%
SPAs	67.7%	58.4%

* The calculations are based on areas of designated sites that occur in 1km grid squares for which critical loads for terrestrial habitats are mapped.

264. For woodlands in England, 98% exceed the critical load for nutrient nitrogen. Linkages to changes in forest condition or productivity have not been demonstrated, but some negative impacts have been observed in ground flora. Vegetation management on nutrient poor sites can be used to reduce the level of eutrophication and limit impacts on some sites of high conservation value. Improvements are needed in the storage, handling and spreading of manure in the context of both meeting Nitrates Directive requirements and reducing ammonia emissions.

265. Avenues for actively reducing ammonia and other emissions to air include the purchase and use of low emission spreaders, better storage facilities to reduce emissions (roofing for slurry tanks etc), better manure management and more efficient management, storage and use of organic and chemical fertilizers.

3.1.3.7 Action to reduce ammonia emissions and meet international targets

266. The UK has signed up for international targets to reduce ammonia emissions. These include the EU National Emission Ceilings Directive (NECD) and the UNECE Convention on Long-Range Transboundary Air Pollution (CLRTAP Gothenburg Protocol). Both set annual emission levels for ammonia for the UK to achieve from

[184] Extract from tables 4.1 and 4.3 Hall, J. Heywood,L. Smith, R. 'Trends in critical load exceedances for acidity and nutrient nitrogen for the years 1995-97, 1998-2000, 1999-2001 and 2010 (CEH July 2004)
[185] Extract from tables 2.3 and 2.4, Hall, J. Bealey, B.,Wadsworth, R. ' JNCC Report 387- Assessing the risks of air pollution impacts to the condition of Areas/Sites of Special Scientific Interest in the UK' (JNCC 2006)

2010 onwards. In addition, the first Air Quality Daughter Directive sets binding limit values for concentration of particles (as PM_{10}) of which ammonia is a precursor.

267. Current regulatory controls on ammonia are primarily through the EU Pollution Prevention and Control (IPPC) Directive, implemented in England and Wales through the Pollution Prevention and Control (PPC) (England and Wales) Regulations 2000. Through a permitting process, these regulations control emission to air, water and land from a range of industrial sources, including intensive indoor rearing of pigs and poultry. Permit conditions require use of Best Available Techniques (BAT) in relation to all significant emissions (which, for intensive livestock rearing, includes ammonia).

268. However, there are a number of current and forthcoming policy levers and controls that have impacts on ammonia losses. Of most significance are:

- the review and likely tightening of the action programme under the Nitrates Directive;
- the CSF programme to tackle diffuse water pollution from agriculture under the WFD.

269. There is at present, however, little data quantifying the level of reduction in ammonia emissions likely to result from these policies. Defra has commissioned work to attempt to assess the effects of these changes on the baseline scenario.

270. Within England and Wales, the Water, Air and Soil Codes of Good Agricultural Practice (GAEC) also provide practical guidance to help farmers and growers avoid causing pollution to water and air and to protect soil as their most valuable resource. These have been in existence since 1991. The Codes describe the main risks of pollution from different agricultural and horticultural sources.

271. The existing Codes are currently being revised into a single document, which is due for publication later in 2007.

3.1.3.8 Climate change and agriculture, including bio-energy

293. There are two main categories of response to climate change - climate change mitigation (actions aimed at reducing the causes of climate change) and climate change adaptation (actions aimed at adapting to the climatic changes that are already inevitable).

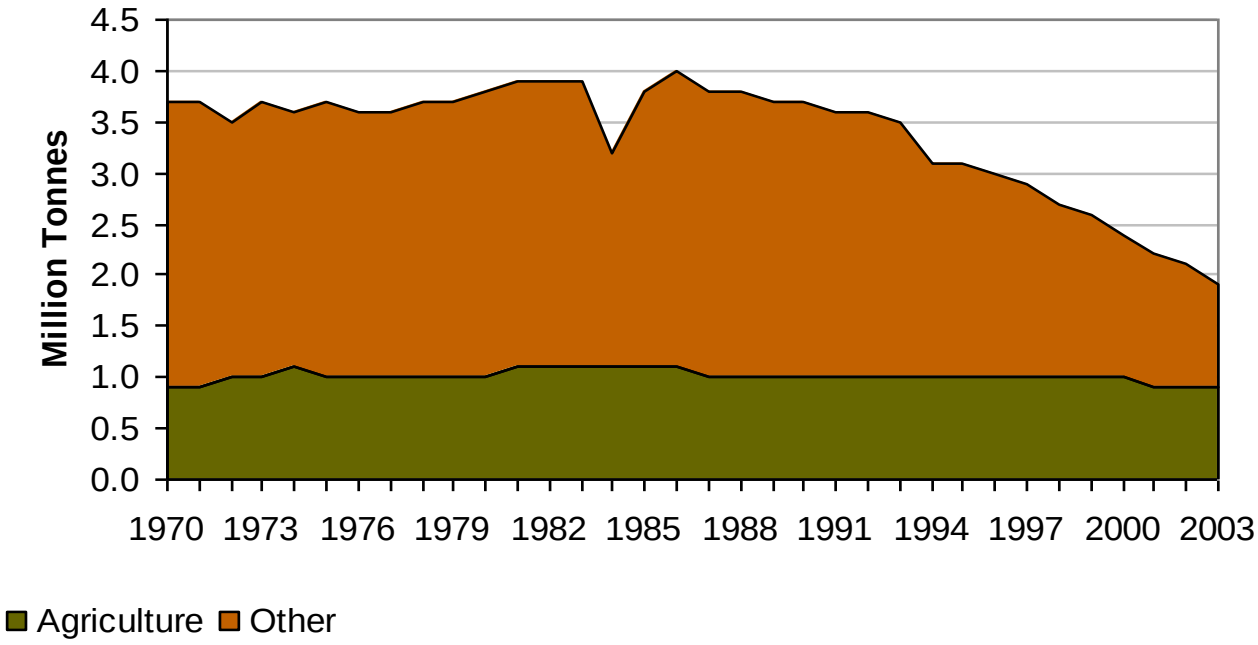
294. In terms of climate change mitigation, the agriculture and forestry sector is unique in having the ability both to produce and to sequester greenhouse gases, as well as to provide biomass-derived renewable energy. Agriculture and forestry currently account for about 7% of UK's total greenhouse gas emissions[186]. The focus is on non-CO_2 emissions, with this sector accounting for around 36% of methane emissions in the UK and 67% of nitrous oxide emissions. About 86% of this methane comes from enteric fermentation in the digestive system of animals and 14% from manure management. The nitrous oxide emissions arise from manures and artificial fertiliser. . Methane and nitrous oxide have global warming potentials that are greater than carbon dioxide by 21 and 310 times respectively. Emissions of carbon dioxide are from direct energy use, such as diesel in tractors, gas to heat greenhouses, and electricity in livestock buildings. Although agriculture is only directly responsible for around 1% of CO_2 emissions, the sector can help to mitigate CO_2 emissions from other sources through carbon sequestration in soils and timber, and by producing energy crops to replace fossil fuels.

295. Total UK emissions of methane (CH_4) have declined considerably over the last 30 years. Emissions from agriculture increased up till the mid 1980s, then stabilised. Emissions have declined by about 11% over the past 10 years, mainly as a result of

[186] Defra 2005: Agriculture in the United Kingdom 2005, The Stationery Office, Norwich p. 120.

reduced livestock numbers. Overall, the level of emissions is now more or less the same as it was 30 years ago, and as a result, the proportion of emissions from agriculture has risen to 36%[187]. (See Figure 3-36 below.)

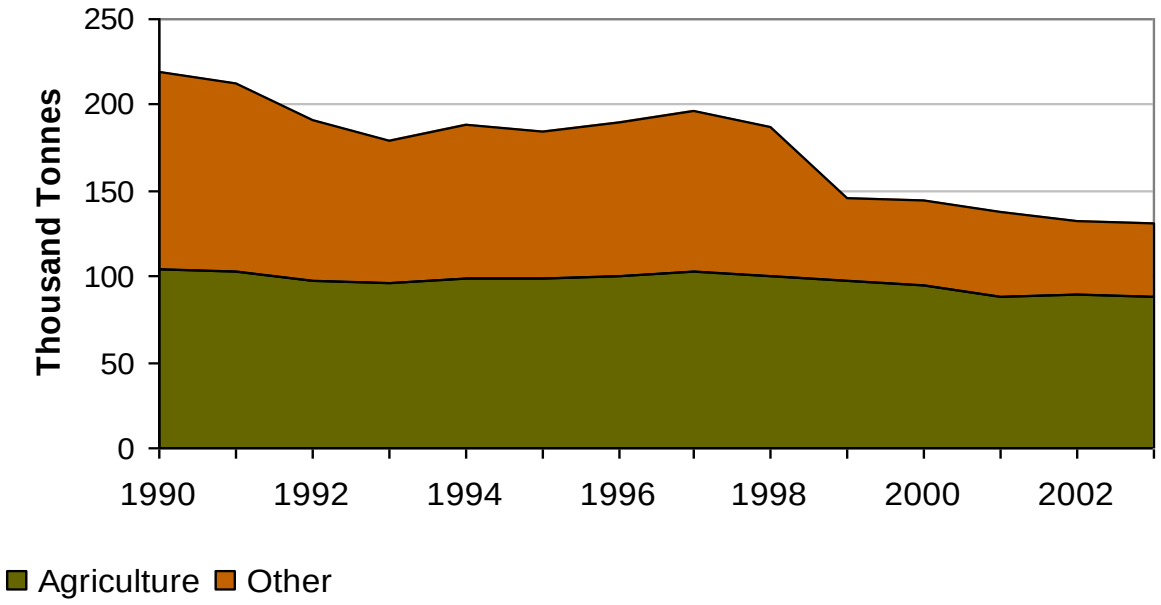
Figure 3-36 UK methane emissions by source 1970 to 2003[188]



296. Agricultural emissions of nitrous oxide (N_2O) have fallen slightly since the late 1990s, probably due to reductions in fertiliser use. However, this fall has been slower than the decline in emissions from other sources, and as a result, agriculture's contribution has risen to 67% of all UK nitrous oxide emissions. (See Figure 3-37 below.)

[187] Defra 2005: Agriculture in the United Kingdom 2005, The Stationery Office, Norwich p. 120.
[188] Sustainable Farming and Food Strategy: Forward Look - Supporting economic and statistical analyses http://statistics.defra.gov.uk/esg/indicators/documents/sffsforwardlook.pdf

Figure 3-37 UK nitrous oxide emissions by source 1990 to 2003[189]



272. The previous paragraphs highlight that agricultural emissions of methane and nitrous oxide have declined in recent years, largely because of a reduction in livestock numbers and fertiliser use. However, because the declines have generally been slower than those in other sectors have, the relative importance of agriculture as a source of greenhouse gas emissions is still significant.

273. On the positive side, growing trees provide an important potential 'carbon sink'. The UK Greenhouse Gas Inventory[190] reports that UK woodland planted after 1990 under the Woodland Grant Scheme sequesters around 0.6 Mt/C/yr[191], while the sink strength of all woodlands is over 4MtC/yr, which is around 3% of total UK emissions. However, the report also points out that because of the age structure of UK woodland, the sink strength of forest biomass will fall over next 10 -15 years[192].

274. Harvesting timber on a regular basis helps sustain high growth rates and in turn sustains higher rates of carbon sequestration. If the wood harvested is used to substitute for non-renewable energy sources then there will be a net reduction in emissions[193]. The contribution from forestry to climate change mitigation can be even larger if timber and wood products are used to substitute for materials such as concrete and steel with high-embodied energy[194]. Potential savings are probably largest in the construction sector and, where wood is used in construction or other non-ephemeral products, they will act as a long-term carbon store. A recent study

[189] Sustainable Farming and Food Strategy: Forward Look - Supporting economic and statistical analyses http://statistics.defra.gov.uk/esg/indicators/documents/sffsforwardlook.pdf

[190] Milne R, Thomson A and Mobbs DC 2006: Land Use Change and Foresry: The 2004 UK Greenhouse Gas Inventory and projections to 2020. http://www.nbu.ac.uk/ukcarbon/docs/Defra_Report_2006_Section2.pdf

[191] Million Tonnes of Carbon per year.

[192] Dr Mark Broadmeadow, Forestry Commission (FC). Presentation to Natural England workshop on carbon management, 28th November 2006.

[193] Elsayed, Matthews and Mortimer, (2003). Carbon and energy balances for a range of biofuels options. Contract report to the Sustainable Energy Programmes of the Department of Trade and Industry. Resources Research Unit, Sheffield Hallam University.

[194] Burnett J 2006: Forestry Commission Scotland Greenhouse Gas Emissions Comparison Carbon benefits of Timber in Construction. Edinburgh Centre for Carbon Management. http://www.forestry.gov.uk/pdf/Carbonbenefitsoftimberinconstruction.pdf/$FILE/Carbonbenefitsoftimberinconstruction.pdf

showed that replacing typical building materials with timber would result in an 86% reduction in the greenhouse gas emissions arising from the materials used[195]

275. The Government's Woodfuel Strategy for England[196] includes a target to deliver to market, annually, an additional 2Mt of woodfuel. This amounts to a saving of 400,000 tonnes of carbon, equivalent to supplying 250,000 homes with energy and replacing 3.6 million barrels of oil.

276. Short-rotation coppice willow provides a low-input, high yield means of producing renewable energy. It can save around 2.3 tonnes of carbon per ha of crop grown per annum when used in heating, through substituting for fossil fuel use.

277. Agriculture can also be used to produce renewable energy, both as biomass and biofuels. Sources of energy include both residues from crops grown for other purposes and purpose-grown crops such as miscanthus, cereals and oilseeds. Miscanthus can save around 3.2 tonnes of carbon per hectare per annum, through substituting for fossil fuel use.

278. While the carbon savings from using perennial energy crops are significant, net carbon savings from annual food crops such as wheat and oilseed rape, which can also be used to produce transport fuels, are much lower and have different environmental impacts. These are currently being explored by the EU-funded MEACAP research programme, which is due to report in the summer of 2007.

279. Concerns over the environmental impacts of the widespread deployment of perennial energy crops such as short rotation coppice and miscanthus have also been raised. These range from high water use to biodiversity and landscape issues and are currently being explored as part of the Rural Economy and Land Use - Biomass Project. Data from this project so far suggests that impacts of growing energy crops can be positive, but that this depends on where the crops are located e.g. what they replace, what the landscape character of the area is, the water availability in the region, and also the size/scale and arrangement of planted fields. These studies will inform the development of energy crop deployment to ensure that it continues to meet both sustainable energy and environmental objectives.

280. Soils, particularly peat soils, are both potential carbon sources and sinks. One estimate for England and Wales is that there is a loss in excess of 3 million tonnes of carbon each year from soils, mainly through peat loss in the uplands[197]. Climate change may further exacerbate this loss.

281. Another estimate, by scientists at the University of Durham, is that for England alone up to 400,000 tonnes of carbon per annum could be lost from upland peat, much of it to the atmosphere as carbon dioxide. By contrast, these scientists estimate that if all the upland peatlands in England were restored to good condition, these areas could become a modestly significant sink for up to 40,000 tonnes of carbon per annum[198].

282. No estimates are currently available for the potential of lowland peat to add to these figures, but there are known to have been large-scale and continuing losses of peat due to the drainage of the fen basin in Eastern England and from peat extraction from lowland raised mires.

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[195] Carbon Benefits of Using Timber in Construction. A report for the Forestry Commission by the Edinburgh Centre for Carbon Management, August 2006.
[196] "A Woodfuel Strategy for England", http://www.forestry.gov.uk/england-woodfuel
[197] Bellamy P.H., Loveland P.J., Bradley R.I., Lark R.M. & Kirk G.J.D. (2005) Carbon losses from all soils across England and Wales 1978–2003. Nature, 437, 245-248.
[198] Dr Fred Worral, University of Durham. Presentation to Natural England workshop on carbon management, 28th November 2006.

283. There is unequivocal evidence that the climate is already changing. Eleven of the last twelve years have been the warmest on record. The effects on agriculture and wildlife are discernible. Spring is occurring earlier and autumn later, with a consequent change in the growth cycle.

284. Agriculture will itself need to adapt to climate change, coping with different conditions and exploring which crops and farming systems are best adapted to the changed conditions.

285. As the most important single land use in England, agriculture will be central to facilitating the process of adaptation by habitats and species, especially through the provision of ecosystem services, which will increasingly be needed, and valued, by society as a whole. At present many valuable habitats are fragmented and isolated, surrounded by intensively managed farmland with little semi-natural habitat. To improve the resilience of valuable habitats and allow species to migrate in the face of changing climate, this isolation needs to be reduced and the environmental quality of the surrounding matrix improved.

286. Some species will benefit from climate change. It is predicted that these might include plants characteristic of dry calcareous and sandy grasslands and bird species currently confined to southern England[199]. However, species that are already at the edge of their range, such as those characteristic of montane conditions, may face local extinction.

287. Climate change is also predicted to result in more frequent droughts, increased flooding and rising sea levels, all of which will impact upon agriculture and forestry. Land use can also contribute to the management of these threats.

288. The evidence presented above suggests that agriculture, forestry and land management can help to mitigate climate change by:

- reducing direct greenhouse gas emissions from the land based sectors;
- offsetting and reducing greenhouse gas emissions from the UK as a whole, through providing crops as a source of renewable energy, and by providing and protecting carbon stores in soils and forestry.

289. Land management will need to adapt to the inevitable impacts of climate change; for example, action on adaptation within the sector may include measures to[200]:

- preserve biodiversity by protecting valuable habitats and species and helping them to adapt;
- help minimise the impacts of climate change in other sectors, e.g. through water management to reduce the risk of flooding;
- protect livestock from impacts such as heat stress, and the increased risk of pests and diseases;
- make the most of the opportunities presented by climate change, such as the opportunity to provide new crops, including as a source of renewable energy.

290. UK Government commitments to help the agriculture, forestry and land management sector play its full part in tackling climate change were set out in the new UK Climate Change Programme published on 28 March 2006. They include:

- promoting resource efficient farm management;

[199] Townshend D., Stace H. & Radley D. 2004. State of Nature: Lowlands – future landscapes for wildlife. Peterborough: English Nature p79.
[200] Further information about projects which considered the impact of climate change can be found at: http://www.ukcip.org.uk/resources/sector/ci_sector_projects.asp?sector=15

- examining the scope and feasibility of a market based mechanism to facilitate trading of greenhouse gas emission reductions from agriculture, forestry and other land management sectors;
- developing a communications strategy to raise awareness and communicate climate change issues to land managers;
- exploring how Environmental Stewardship can make a greater contribution to achieving the Government's climate change objectives;
- taking forward the Non-Food Crops Strategy to substitute renewable products for those based on fossil fuels;
- ensuring that the development of measures under Catchment Sensitive Farming Programme and Nitrates Action Plan also support our climate change goals.

3.1.3.9 Soil quality and protection

291. Soil is a fundamental and irreplaceable natural resource. It provides the platform for built development and helps protect our cultural heritage. Soil is the growing medium for the majority of our food, timber and other crops. Soil stores vast quantities of water and carbon and can buffer and transform chemicals that could otherwise cause water or air pollution and/or contaminate our food. Soils also provide an essential component of our biodiversity and contain many raw materials.

292. Soil quality and protection face a number of challenges in England:

(i) Erosion

293. While soil erosion occurs as a result of natural processes, rates have accelerated in recent years as a result of land use changes and changes in agricultural practices. In the 2006 Farm Practices Survey for England, 53% of farmers stated that they had experienced some indicator of soil erosion on their land.

294. Evidence cited in section 3.1.3.4 shows that agriculture is the main source of silt in rivers through soil erosion and channel bank erosion. Siltation of rivers affects the lifecycle and diversity of fish, invertebrates and plants and the over-enrichment of rivers and lakes by phosphorus give rise to changes in the biodiversity of the habitat.

295. The water treatment costs directly associated with the presence of phosphate in sources of drinking water have been estimated at £80.2 m in the UK with 43% of this cost assigned to agriculture[201], much of which will be due to agricultural soil erosion. The total additional off-site costs incurred as a result of the physical effects of soil erosion (mostly dredging of watercourses) were estimated to be £9.2 m per year.

(ii) Organic Matter decline/climate change

296. Organic matter plays a key role in maintaining soil attributes such as fertility and structural stability. Soils are a major reservoir of carbon, with around 10 billion tonnes of carbon being stored in UK soils[202]. A project carried out by the National Soil Resources Institute (NSRI), looking at the levels of Soil Organic Matter (SOM) in samples taken from National Soil Inventory (NSI) sites, detected that between 1978 and 2003 there had been a loss of soil organic carbon at a rate of 0.6% per year, over all soil types, and at higher rates (2% per year) in soils with high carbon contents[203]. This lost soil carbon is likely to be contributing to the increasing CO_2 in the atmosphere, and exacerbating global warming. Loss of soil carbon is also likely to affect soil structure and function, resulting in an increased likelihood of erosion, diffuse pollution and loss of soil biodiversity.

[201] Eftec, 2004 Framework for environmental accounts for UK agriculture.
[202] Environment Agency (2004). The state of soils in England and Wales.
[203] Bellamy et al, 2005.

(iii) Buffering pollutants

297. Soils play an important role in buffering and transforming chemicals that could otherwise cause water or air pollution and/or contaminate our food. Soil microbes are capable of degrading and consuming a variety of contaminants, which can be exceedingly harmful in the wider environment.

298. When the buffering capacity of a soil is exceeded further additions of chemicals will have a negative impact on soils and the wider environment.

299. The significance of heavy metals and organic chemicals accumulating and persisting in soils from a range of sources is becoming more apparent. Some areas retain heavy metal or toxic contamination from ancient industrial processes. In most cases, these are unwanted, but in some cases, disused industrial sites provide ecosystems for rare or endangered plants and animals.

(iv) Flooding

300. Soil plays an important role in storing and transporting water - it absorbs rainfall, reduces run-off and the risk of flooding. A single hectare of soil will store and filter enough water for 1000 people for 1 year[204].

301. Soil structural degradation due to compaction reduces the infiltration capacity of the soil and increases the risk of infiltration excess runoff leading to flooding. A recent major research study has shown that there is substantial evidence that current rural land management practices, such as cultivation practice, have led to increased surface runoff at the local scale[205].

(v) Biodiversity

302. Little is known about soil biodiversity compared to other environments, even though terrestrial ecosystems cannot function without it. New molecular techniques have been used to estimate that a single gram of good quality arable soil can contain as many as 600 million bacteria from up to 20 thousand species [206].

303. The Soil Action Plan published in May 2004, with a three-year time frame, lists a wide variety of measures aimed at addressing these issues. The Action Plan commits the Government and partners to 52 actions to improve the protection and management of England's soils. The English Soil Management Strategy from 2007 is currently being drafted to follow this.

304. As part of the English Catchment Sensitive Farming Delivery Initiative, Defra is also funding a complementary project in 8 of the 40 identified priority catchments, exploring practical management solutions that could lead to improved soil organic matter levels (either through a slowing or halt of the decline or active measures to build up levels), and thus encourage more resilient soils capable of resisting erosive and other damaging forces.

3.1.3.10 Pesticide use

305. The way that pesticides impact on non-target species has changed since the 1960s, when persistent organo-chlorines caused mass poisonings of birds and other wildlife[207] and an accumulation of toxins along food chains that had long term, adverse effects on birds of prey and other predatory species. Direct toxicity is no longer such

[204] Environment Agency 2006. Soil quality indicators. IPSS Meeting, Leeds.
[205] FD2114 Review of impacts of rural land use and management on flood generation: short term improvement in modelling and research plan.
[206] NSRI 2005. Personal communication from K. Ritz..
[207] Carson R 1962. Silent Spring, Hamish Hamilton, London.

an acute problem. However, the use of pesticides, in combination with other associated changes in agricultural practices, alters agricultural ecosystems so as to make them less attractive to many wildlife species. The pathways by which these effects occur are often complex, which makes the impacts and risks of the agricultural pesticides used currently more difficult to measure[208].

306. The vast majority of pesticides are used to protect crops; relatively few are used on grassland. This pattern of usage is reflected in

307. Table 3-33, which shows the most recent figures available for pesticide use in England, broken down by region. The highest figures for both amount of active substance and formulation treated area being in the predominately arable East.

308. The quantities of active ingredient vary by crop, pest and climate, but almost all conventionally grown crops are treated with pesticide at least once a year, and have been for at least the last decade. Despite this, from 1988 to 2002, there was a steady increase in the formulation treated acreage. This was due to an increase in the number of times each crop is treated and the number of products applied at each treatment. Table 3-33 shows that this trend continued until 2004.

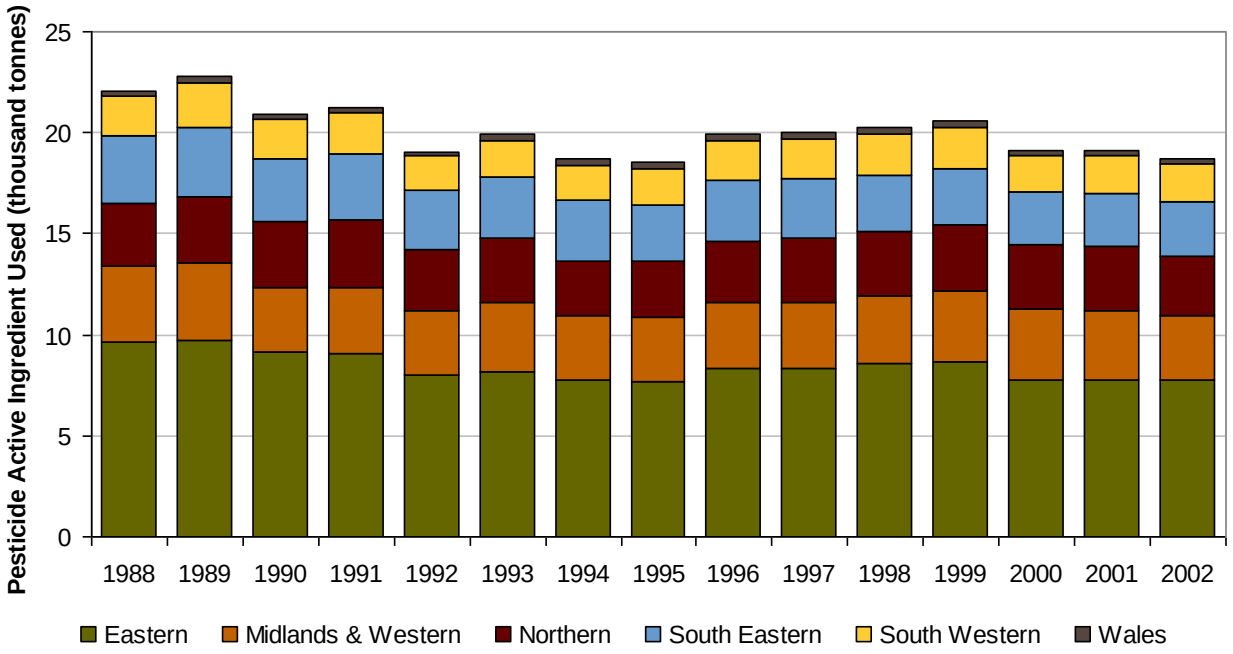
309. Amounts of active ingredient have remained relatively stable, though a comparison of Table 3-33 and Figure 3-38 shows there was an increase between 2002 and 2004. There is however no simple relationship between amount of active ingredient and ecological impact because pesticide chemistry has evolved over the years.

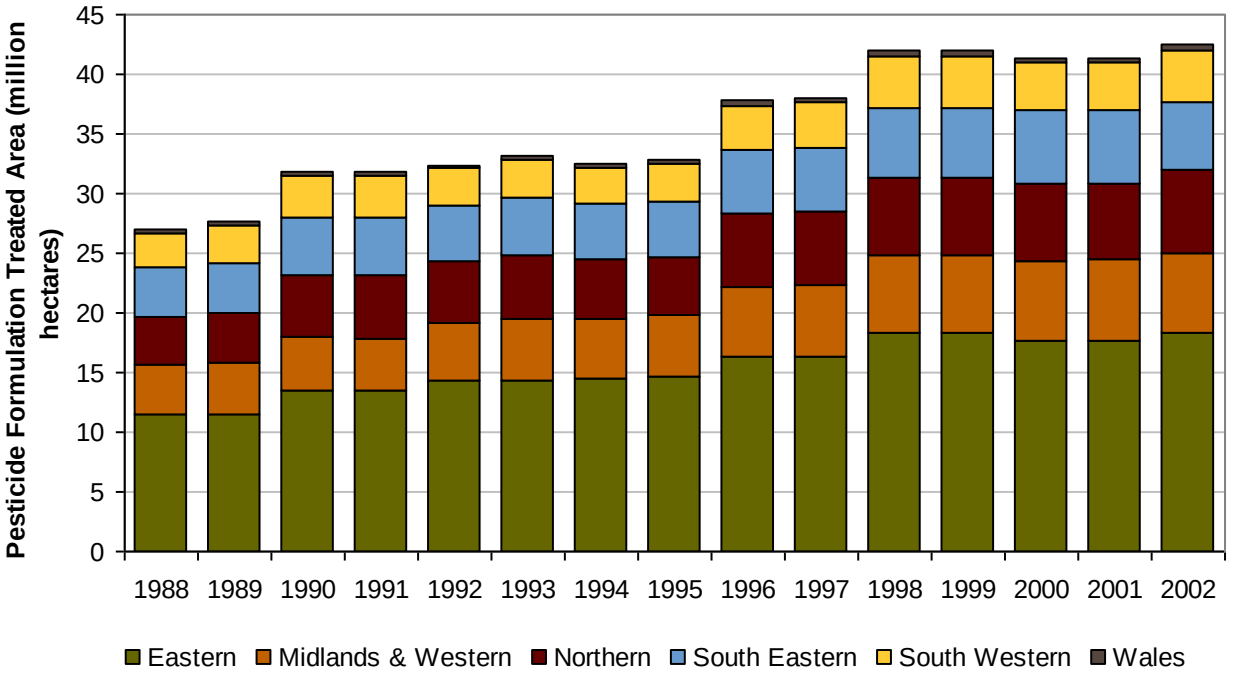
Table 3-33 - Pesticide use in England 2004

Region	Amount of active substance applied by region in 2004 (M Tonnes)	Area treated by region in 2004 (formulation treated M ha)
Eastern	10.92	20.25
Midlands and Western	2.84	6.05
Northern	4.95	7.28
South Eastern	2.67	6.23
South Western	1.83	4.37
England Total	**23.22**	**44.18**

[208] Townshend D., Stace H. and Radley D. 2004 State of Nature: lowlands – future landscapes for wildlife. Peterborough: English Nature. P 41.

Figure 3-38 - Pesticide use in agriculture and horticulture in England and Wales, 1988 to 2002[209]





310. Even modern pesticides have the potential for serious adverse consequences if abused. The problem of pesticides entering waterbodies for example, has already been mentioned. Regulation, cross-compliance, good training and advice are all important tools for ensuring minimum standards of pesticide use. There are, however, techniques available for further reducing the adverse impacts of pesticides whilst retaining their benefits. These include Integrated Crop Management techniques, the pesticide industry's Voluntary Initiative and Crop Protection Management Plans.

[209] Department for the Environment Food and Rural Affairs

3.1.3.11 Organic farming

311. Organic agriculture is defined by the International Federation of Organic Agriculture Movements (IFOAM) as "a whole system approach based upon a set of processes resulting in a sustainable ecosystem, safe food, good nutrition, animal welfare and social justice. Organic production therefore is more than a system of production that includes or excludes certain inputs." Within the EU, organic farming is governed by Council Regulation 2092/91 (as amended), which establishes Community standards for the production and marketing of organic produce. There are nine approved certification bodies operating in the UK, each of which set their own standards based on a common minimum set of standards. To become a recognised organic producer, a farmer must register with one of the certification bodies and commit to a two-year conversion process, during which the land is farmed according to organic principles and standards but produce from the land is not certified as organic and so cannot be sold as such. Once conversion has started, the certification bodies inspect producers on a regular basis to ensure their continuing compliance with organic standards. Organic farming is listed as an EU common baseline indicator for soil within Axis 2.

312. It is estimated that in 2002, 240,057ha of agricultural land in England was being managed organically, representing 2.5% of agricultural land in England and 34.3% of the organic farmland in the UK. Within England, the highest concentration of organic producers is in the South West.

313. There is an imbalance in the use of land in organic agriculture. Across the UK as a whole, permanent pasture (including rough grazing) made up 61% of agricultural land, but represented 81% of organically farmed land. By contrast, crops occupied 25% of UK agricultural land, but only made up 7% of organically farmed land[210]. This probably reflects the fact that extensive livestock producers can convert to organic production with fewer changes to their farming system than those engaged in more intensive forms of agriculture.

314. Independent research funded by Defra[211] and published in 2003 compared the environmental impacts of conventional and organic farming. Table 3-34 summarises the results of this research using two comparisons, by area and by unit of yield:

[210] Shepherd M. et al. 2003. An assessment of the environmental impacts of organic farming, Defra, ADAS, Elm Farm Research Council & IGER p.8/9.
[211] Shepherd M. et al. 2003. An assessment of the environmental impacts of organic farming, Defra, ADAS, Elm Farm Research Council & IGER.

Table 3-34 - Summary of the environmental impacts of organic farming compared to conventional farming

		Assessment of impact		
Area of impact	**Indicator**	**Per unit area**	**Per unit yield**	**Comments**
Ecosystem	Biodiversity	Better	Better	Organic principles encourage a wide variety of habitats.
Soils	Organic matter content	Better/no difference	Better/no difference	Potential benefits from organic farming, depends on organic matter.
	Biology	Better/no difference	Better/no difference	Literature tends to support a benefit, but not always.
	Structure	Better/no difference	Better/no difference	Literature tends to support a benefit, but not always.
	Erosion susceptibility	Better/no difference	Better/no difference	Few direct measurements, but should decrease risk.
Water quality	Nitrate leaching	Better	Better/no difference	Potentially large losses from ploughed leys, but smaller losses, on average, from other points in the rotation.
	Phosphorus leaching	No difference	No difference	Insufficient information.
	Pesticides	Better	Better	Few pesticides used.
	Human pathogens	No difference	No difference	Insufficient information.
Air quality	Ammonia	Better	No difference	No direct studies; assessed from what is known about processes.
	Nitrous oxide	No difference	No difference	Insufficient information
	Methane	Better	Worse	Most data relate to dairy systems. Lower emissions on an area basis due to lower livestock densities.
	Carbon dioxide	Better	Better	Main energy input relates to fertiliser manufacture.
Resource use	Energy efficiency	Better	Better	Depends where boundaries are drawn when comparing systems, but main energy input to conventional is fertiliser production.
	Nutrient balance	Better	Better/no difference	Smaller surpluses, ok if not over-depleting soil fertility
	Controlled waste	Better	Better	Emphasis on recycling, less packaging and no agrochemical waste.

315. The report makes clear some of the complexities behind this summary. In relation to biodiversity for example, there are real benefits from organic systems:

- the fact that organic farms use no synthetic pesticides allows some broadleaved weeds to survive in cropped areas, which in turn provide a food source for farmland birds;
- greater cropping diversity on organic farms produces greater structural diversity, which is reflected in a greater variety of habitats and species;
- studies on the wild flora of organic farms have shown greater species diversity within the crop, at the crop margins and in non-farmed areas.

316. However, the report also makes it clear that the difference between organic and conventional farming systems does depend on the farming system. Conventional management of marginal and upland permanent pasture differs very little from organic management of similar situations in terms of inputs, though in organic systems there

is less opportunity to maintain artificially high stocking levels and a greater incentive for mixed stocking.

317. Organic farming can even have some detrimental impacts on biodiversity. The mechanical weed control that is necessary in organic systems can have adverse effects on ground-nesting birds, though it is not clear whether this results in an overall decline in breeding success.

318. The overall conclusion of the report is that organic farming can deliver positive environmental benefits, but the report contains a number of important caveats:

- although some of the benefits are an automatic by-product of the system, much of the benefit is dependent on the standard of husbandry exercised by the individual farmer, as is the case with conventional systems;
- the outcome of the comparison depends on the type of farm. There is less difference between conventional and organic extensive upland livestock systems;
- for some impacts, particularly gaseous emissions, the results depend on the basis of comparison (per hectare or per unit of production) and are not easy to interpret.

319. A more recent report[212] has compared the energy use and total Global Warming Impact (GWP) of organic and conventional production of a number of field and protected crops and livestock production systems using the principle of life cycle assessment. GWP values aggregate the global warming impact of all the different emissions, including carbon dioxide (CO_2), nitrous oxide (N_2O) and methane (CH_4). The comparisons were made per unit of production.

320. A mixed picture emerges for both energy use and GWP. Organic wheat uses about 27% less energy than conventional wheat, whereas potatoes use about the same. Organic tomato production in heated glasshouses uses 88% more energy than similar conventional tomato production. This is because of the lower productivity of organic production, so that fewer tomatoes are produced per area heated.

321. Most organic animal production reduces energy use by 15 to 40%, but organic poultry meat and egg production increase energy use by 30% and 15% respectively.

322. The GWP values for field crops are 2-7% lower for organic production, as the lower energy inputs that result from avoiding synthetic nitrogen production is partially offset by lower yields and higher energy inputs to field work. Production of organic tomatoes under glass however nearly doubles the GWP relative to conventional production, mainly due to the difference in energy consumption.

323. For sheep, the organic GWP value is 47% less than for conventional. For poultry though, organic GWP is 45% more than for conventional. Organic beef also has a slightly higher GWP value.

324. The data suggest that there are some clear environmental benefits to be had from increasing the percentage of farmed land in England that is managed organically, but that the benefits differ between farming systems.

325. The data also makes it clear that organic certification alone cannot deliver the full range of potential environmental benefits. Careful, active management is needed to secure these.

326. It is also clear from these reports that organic farming is not an environmental panacea. Intensive organic production systems can still produce substantial environmental impacts, in areas such as greenhouse gas emissions for example, and

[212] Williams A G, Audsley E and Saunders D L (2006) Determining the environmental burdens and resource use in the production of agricultural and horticultural commodities. Main report. Defra Research Project IS0205. Bedford: Cranfeld University and Defra

it cannot be assumed that these will always be less than those of the conventional alternative.

3.1.3.12 Animal welfare

327. The position regarding animal welfare in England is summarised in Section 3.1.2.7 within the analysis of the performance of the agricultural, forestry and food sectors. That section concludes that there is considerable scope to improve the preparedness of the farming and food sector for changes in legislative requirements and public attitudes. However, that section also concludes that the main need is to increase the opportunities for training and knowledge transfer to support improvements in animal health and welfare. The analysis does not identify a need for intervention from within the environment and land management parts of the programme.

3.1.3.13 Extent of protective and protected forest areas

328. The woodlands which are of greatest value for biodiversity are covered by the Biodiversity Action Plan (BAP) Habitat Action Plan (HAP) for Native Woodland and comprises the following categories:

- ASNW: (ancient semi-natural woodland) both ancient and semi-natural.
- PAWS: (plantation on an ancient woodland site) ancient in the sense of continuously wooded over a long period but not semi natural.
- OSNW: (other semi-natural woodland) semi natural but not ancient

Table 3-35 - Estimated areas of categories of woodland in England[213]

Category of woodland	Estimates of native woodland (ha)
ASNW	200,000
Broadleaved or restored PAWS (>80% broadleaved)	43,000
Non-ancient broadleaved woodland (>80% broadleaved)	207,000
Total	**450,000**

329. ASNW tend to be richer in plants and animals than other woodland areas. The area of ASNW has declined over the centuries and woodlands have become increasingly fragmented.

330. There is a further 96,000 ha of plantations on ancient sites, and the HAP targets envisage the majority of these having restoration to native species underway over the next 20 years. The remaining area of forest in England (approximately 681,000 ha) is on non-ancient sites and comprises mainly non-native species, grown as plantations.

331. In the pan-European classification of protected forest areas, 10,000 hectares of woodland in the UK are in the highest categories: 'non-intervention nature reserves' and 'wilderness areas in near-natural condition'[214]. The long history of woodland use and management in England means that only a very small area of English woodland could qualify for this highest category. However, the protection provided for the whole Ancient and Native Woodland resource has been deemed comprehensive.

[213] Extract from England Forestry Forum paper 11/05, using 1998 figures from NIWT.
[214] Protected Forest Areas in the UK. A report by Oxford University for WWF and Forestry Commission, 2001.

3.1.3.14 Forest areas under high/medium fire risk

332. Fire is a rare occurrence in English woodland and very limited in extent. There is, therefore, very little quantitative information on this problem in regard of English forestry. However, the only areas at any risk are stands of conifers and areas where there is a dense understorey of flammable vegetation such as bracken (Pteridium aquilinum) or heather (Calluna vulgaris)[215]. Many significant areas of publicly managed woodland, such as the protected New Forest, have published fire prevention plans, with most areas appearing to rely on good forestry practices, such as cutting firebreaks and creating water reservoirs. In many cases, the focus of these plans is on the fire risk attendant on moorland and heathland management.

3.1.3.15 Landscape

333. The English countryside has been shaped and managed by agriculture and forestry for several thousand years. Land management has interacted with climatic conditions, geology, landform, plant and animal communities, settlement patterns, and building materials to produce the wide variety of landscapes found today. Landscape has very substantial amenity, cultural and recreational value. Areas of our finest landscape have been designated as National Parks and Areas of Outstanding Natural Beauty (AONB), but work by the former Countryside Agency and English Nature, with support from English Heritage, has shown how every area of England has its distinctive landscapes, and has divided the country up into 159 Joint Character Areas, each with its own unique character.

334. In 2005, there were 36 AONBs and 8 National Parks in England, plus The Broads, which has equivalent status to a National Park. The AONBs covered just under 20,000 square kilometres (15% of total land area) and the National Parks just over 10,000 square kilometres (8% of total land area).

335. As mentioned elsewhere in this document, in the decades following the Second World War, there was a dramatic loss of landscape features as agriculture was modernised, fields were amalgamated and marginal land brought into production.

336. Table 3-36 below is based on an extrapolation from a series of 1km squares surveyed as part of the Countryside Survey 2000. It appears to show that at least for linear features, the situation has largely stabilised in recent decades, though the figures for hedgerows conceal a degree of turnover, with some established hedges continuing to be lost, but with these losses being offset by new planting.

[215] Rackham O 2006 Woodland, Collins New Naturalist Library, London. Pages 56– 59.

Table 3-36 - Change in stock of linear landscape features in England and Wales 1990-1998[216]

Feature	1998 length (1000 Kms)	Change in length 1990-1998 (1000 Kms)	Change in length 1990-1998 (%)
Hedge	449.3	-0.4	-
Remnant hedge	52.3	-13.5	-20.9
Wall	105.8	-2.7	-2.5
Line of trees/shrubs/relict hedge and fence	70.0	15.5	30.8
Line of trees/shrubs/relict hedge and fence	83.4	19.6	31.4
Bank/grass strip	70.0	-1.9	-2.5
Fence	423.2	25.6	6.6
Totals	**1253.9**	**42.3**	**3.5**

337. Historic environment features, defined as above and below ground archaeological remains, historic and designed landscapes and historic buildings, make a vital contribution to the character and appearance of landscapes, but agriculture has had, and continues to have a serious impact on the preservation of historic features in the countryside. These impacts are the more serious as historic environment features by their nature cannot be recreated. English Heritage summarised what was then the scale of the problem for the House of Commons Environment and Rural Affairs Select Committee in 2002[217]:

- since 1945, agriculture has been the single biggest cause of unrecorded loss of archaeological sites. The Monuments at Risk Survey (MARS) demonstrated that agriculture has been responsible for 10 per cent of all cases of monument destruction between 1945 and 1995 and for some 30 per cent of piecemeal, cumulative damage during the same period. This has resulted in the wholesale loss of at least 2,350 unique and irreplaceable archaeological sites;
- 32% of all archaeological field monuments and 21 per cent of all scheduled (i.e. nationally important) field monuments were also shown by MARS to be under damaging arable cultivation when surveyed in 1995. The quality of survival of 68 per cent of all recorded earthwork monuments was categorised as "very poor" or worse;
- a combination of erosion and desiccation induced by cultivation and agricultural drainage has irrevocably damaged or destroyed over 13,000 historic sites in the wetlands, generally the most valuable and best-preserved archaeological resource. These losses are in addition to those cases of damage identified by the MARS survey;
- one third of hedges in England were lost between 1984 and 1993 and one-third of dry stone walls were derelict in 1994. Although the Countryside Survey 2000 suggests that the net losses of hedgerows may have now been halted, this is a result of the establishment of new hedgerows. Older hedgerows - with far greater historic interest and biodiversity value - were continuing to be lost at that time.
- other distinctive landscape features were also being rapidly destroyed as a result of farm intensification, particularly the ploughing up or improvement of old grassland. An English Heritage study of "ridge and furrow" earthwork remains in the Midlands

[216] Defra 2005: Agriculture in the United Kingdom p. 116, quoting CS2000 results
[217] House of Commons Environment Food and Rural Affairs Select Committee 2002: Ninth Report. The future of agriculture in a changing world: Appendix 20. Submission by English Heritage

demonstrated that of 2,000 medieval townships studied, only 104 retained more than 18 per cent of their ridge and furrow earthworks in 1998, with many serious losses having occurring in the previous five years.

338. The expansion of agri-environment schemes in recent years has helped to mitigate for these impacts. However, despite these improvements English Heritage reported a number of ongoing problems in 2005[218]:

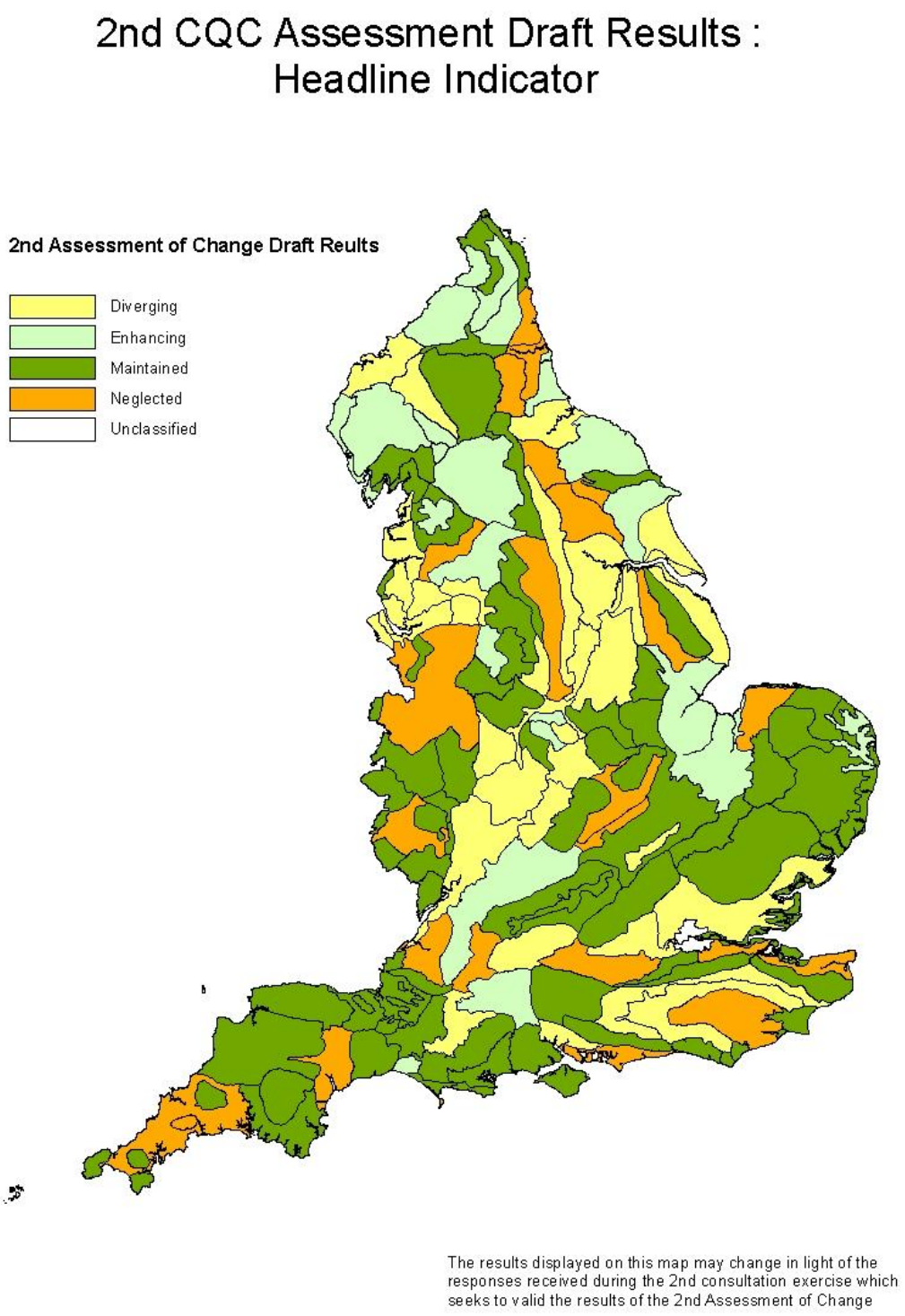
- of the more than 30,000 listed working farm buildings in England, some 2,420 (7.4%) are in a severe state of disrepair and almost one in three have already been converted to other uses;
- nearly half of the historic parkland recorded by the 1918 Ordnance Survey edition no longer existed by 1995. In some parts of the country, the rate of loss has been as high as 70%. Conversion to arable land, the disintegration of country estates and more recently, golf developments, have all contributed to the loss;
- 451 coastal archaeological sites in the National Trust's care in England face the possibility of flooding or erosion within the next 100 years;
- the shortage of craft skills is particularly acute in the countryside. According to the Campaign to Protect Rural England and National Farmers' Union, more than two-thirds of farmers said that there were no skilled builders or thatchers within ten miles distance of their farms. Dry-stone walling, thatching, millwrighting, earth walling and flint-knapping traditions are seriously threatened.

339. An innovative method has been developed using web-based consultation and analysis of data sets to evaluate change in landscape character for each Joint Character Area in England[219]. The results show that in terms of magnitude of change, 71% of our landscape areas were stable between 1999 and 2003, but 29% were changing in relation to key elements that defined their character. In terms of direction of change, 62% of our landscapes have sustained existing character, but 38% show transformation of character.

340. The magnitude and direction of change have been combined and mapped to form the headline indicator (see Figure 3-39) to show areas where landscape character is maintained (51%), enhanced (10%), neglected or loss of character (20%) and with new characteristics emerging (19%). Comparison with a previous assessment of landscape for 1990-1998 shows that there has been some improvement, with reversals in loss of character or stabilisation for many character areas.

[218] English Heritage 2005: Heritage Counts 2005.
[219] Natural England/Defra (in prep). Unpublished research report: Phase 4 of Countryside Quality Counts (CQC) – an assessment of change in landscape character in England 1998-2003.

Figure 3-39 – Second Countryside Quality Counts Assessment Draft Results: Headline Indicator



341. Landscape is in many ways the result of the sum total of all the efforts made to conserve the rural environment. Although the work quoted above suggests that progress has been made in the conservation of overall landscape character, the preservation of some categories of irreplaceable historic features remains a problem area. Monuments and historic parklands in arable cultivation are particularly vulnerable to damage, as are unmaintained non-domestic historic buildings on agricultural holdings. As agricultural systems change, in the wake of CAP payment decoupling and with the growing demand for energy crops there is a risk that rates of loss of such features and detrimental change to landscapes as a whole may increase again.

3.1.3.16 Access

342. There is no general statutory or customary right of access across farmland in England. There are only specific statutory rights of access to certain areas and routes, which are shown on maps:

- access on foot to mountain, moor, heath, down and common land, known as 'open access land' and shown on the Defra website at www.countrysideaccess.gov.uk, together with any restrictions applying to individual locations. Also shown on Ordnance Survey Pathfinder maps;
- access on foot to areas 'dedicated' for open access. The Forestry Commission freehold estate has been so dedicated. Any other landowner may dedicate land in this way too, but to date the area is minimal;
- there are a number of other areas, many of which overlap with open access land, where the public has been given a right of access under a local enactment. The rights will often include access on a horse as well as on foot;
- the public can use, as a right, footpaths (on foot!), bridleways (on foot, horse or bicycle) and byways (all the above plus motor vehicles), all of which are also shown on Ordnance Survey maps. The legal record of such routes is held on 'Definitive Maps' maintained by the local Highway Authorities. Routes can be added to the network when evidence is presented that a legal right exists along a route, or by agreement with the landowner, or by Creation Order;
- there is no statutory right of access to beaches or the foreshore. However, because of the need to allow the public to exercise their right of navigation, access cannot be restricted unless a landowner controls all the means of access. The Government has committed to improving public access to the coast.

343. In addition to areas where statutory rights exist, public access can be granted by landowners on a voluntary or a commercial basis:

- a number of areas of farmland have access provided by agreement. This may be withdrawn at any time, as with permissive paths, or the access may have been provided for a fixed period of time under an agri-environment scheme;
- many extensive areas of parkland are grazed, but primarily provide for public recreation. They may be owned by a local authority, a private landowner or a voluntary body such as the National Trust, and an entry or a parking fee may be charged.

344. The area of each type of land above is as follows:

- open access land: 865,000 ha, some 6.5% of England. Concentrated in the North and West. Around half of this land is in National Parks;
- Forestry Commission land dedicated for access: 141,000 ha;
- access under local enactments: an additional 12,000 ha, much of which is in the East and South, where there is little other open access land;
- 120,000 miles of rights of way, found across the whole country, with 96,000 miles of footpath, 20,000 miles of bridleway and 4,000 miles of byway;
- the estimate of the length of the coast for access purposes is around 3,000 miles;
- approximately 2700 agri-environment schemes include permissive access options providing approximately 4744 kilometres of permissive footpaths, 2603 kilometres of bridleways/cycleways and 9338 ha of open access.

345. There were 700 million day trips to the countryside recorded in 2005. 251 million or 36% were walks, hill walks or rambles. A further 15 million trips in the countryside were for off-road cycling and at least a further 7.5 million trips to the

countryside were for horse riding.[220] All these trips will have primarily used the rights of way network.

346. A 2001 survey[221] found almost half of those who had walked in the last year would do more if there were more provision. See Table 3-37.

Table 3-37 - Results of survey into users likely reactions to additional access provision

Activity	% taking part in previous year	% anticipating increased activity if more provision
Walking	48	47
Cycling	23	32
Horse riding	5	3

347. The survey also found evidence that the network of routes over which statutory access is available is inadequate. 34% of cyclists and 26% of horse-riders admitted to using rights of way that they were not legally entitled to use i.e. footpaths, giving as their reason to allow them to complete circular routes. The survey showed overall 40% of respondents agreeing there were enough rights of way, and 30% saying there were too few.

348. This survey suggests that the main gaps in the provision of rights of way are for cyclists and horse riders, with the main problem being fragmentation. This makes trips of any distance difficult, and pushes riders onto busy roads.

349. In relation to the coast, a recent survey[222] showed that 10% said they would definitely visit the coast more frequently if there were a network of managed paths, which allowed walking continuously along the coast. The Government has committed to improving public access to the coast.

350. All local authorities have a statutory duty to prepare a Rights of Way Improvement Plan (ROWIP) by November 2007, which will assess demand and need for improving the network of routes in their area. This will include for example, information on where there is a need to improve routes to connect new open access land, or routes to attractions such as woods and water or historic features. Some authorities have already completed their ROWIP and are seeking ways to make the improvements identified.

351. Approximately 680 agri-environment agreement holders host educational access visits from schools and other group. Approximately 40, 000 people visited these farms in 2004-2005.

352. In November 2006, the Government published its 'Learning Outside the Classroom Manifesto', which states: "We believe that every young person should experience the world beyond the classroom as an essential part of learning and personal development, whatever their age, ability or circumstances". Farms are specifically mentioned as appropriate places to learn. Consultation responses to the draft manifesto identified the cost of transport as a major constraint on learning outside the classroom, so provision within easy reach of towns is needed.

[220] England Leisure Visits 2005.
[221] "Rights of way use and demand study" survey by Ecotec 2001 Unpublished.
[222] Survey by Ipsos Mori for Natural England.

353. The UK Government's Chief Medical Officer's recommendation is that 'every adult should accumulate/undertake at least 30 minutes of moderate activity on at least five days a week'. Walking is an effective and popular way of reaching this goal, particularly through led walks. Increased provision of access land close to urban areas will extend the range of opportunities people have to be active.

354. Commercial provision of access is only viable for high intensity activities e.g. paint balling or activities where exclusive access is required, e.g. fishing. The many public benefits in terms of health and well-being that also flow from public access cannot be captured by farmers through charging.

355. Although there are extensive statutory rights of access in England, the analysis above shows that there is both a demand for additional access and gaps in its provision that cannot be filled either by statutory provision or by the market. Particular needs include:

- additional access, especially for cyclists and horse-riders to bridge gaps in the rights of way network;
- additional access around towns;
- access along and to/from the coast (to create circular walks);
- connections to open access land and other features of interest;
- educational access.

3.1.3.17 Overall assessment of the range of information presented

356. There is relatively little risk of land abandonment, even in the SDAs of England. There is however evidence that economic pressures are leading to farming systems being changed and simplified in ways that are likely to have adverse environmental impacts. This implies a need for intervention, but one that is able to influence farming systems.

357. Biodiversity emerges as an area where, despite the achievements to date, there is still a need for large scale action at all levels, to secure the management necessary to maintain and restore the condition of protected areas, including Natura 2000 sites, to meet the targets for Priority Habitats and Species and to improve the overall condition of the wider farmed environment. Most of this requires active management by land managers.

358. There are major issues relating to water resources and flooding, but this is an area where the mainstream solutions lie outside the Rural Development Programme. There is a well-established licensing system for water abstractions, and a substantial capital and maintenance programme for flood management. The main role for the Rural Development Programme is at the interface with land management, and in areas not otherwise covered by regulation.

359. There is a major need to reduce the level of water and air pollution resulting from agriculture. This will be driven at least in part by the requirements of the Nitrates and Water Framework Directives. Meeting these challenges will require a range of instruments including advice, regulation and cross-compliance. However, incentives will also need to play a part, particularly during the period where farmers are adapting to the new, higher standards. There is a major overlap between the measures needed to control pollution and those needed to conserve soils.

360. The need to control gaseous emissions contributing to climate change further increases the need for action in this area, but the response to climate change will need to go well beyond this and will need to encompass both mitigation and adaptation. Mitigation measures will need to encompass the control of carbon losses from soils, especially peat soils, and renewable energy production.

361. Many of these changes will go well beyond the scope of what can be achieved either by regulation or by current market mechanisms. There is therefore a need for action under the Rural Development Programme, though it is also important to explore what can be achieved by developing new markets, including carbon trading.

362. Adaptation measures will be needed in relation to rising sea levels, increased flooding, extreme weather conditions, increased pressure on water resources, changing growing seasons, ensuring the survival of wild species and facilitating changes to habitats. These can all be addressed by improving the environmental quality, and hence ability to adapt to change, of the wider countryside. The Rural Development Programme will be the key tool in achieving this.

363. Organic farming offers some real environmental benefits, and the scale of these would be increased if the area managed organically could be increased. Organic farming is not, however, an environmental panacea, and there is a need to encourage organic as well as conventional farmers to undertake additional environmental management beyond the baseline standard. There is a role for the Rural Development Programme in meeting both these needs.

364. Conservation of landscape is perhaps the most complex challenge that has to be addressed over the period of the Rural Development Programme. It depends on the sum of all the interventions made in the rural environment. A key challenge related to landscape conservation appears to be the safeguarding of irreplaceable historic landscape features, especially as a number of factors seem likely to drive continued, rapid change in farming systems. The Rural Development Programme would have a role in this, as many of these features are not subject to legal safeguards.

365. Access to land is a major factor in attracting visits to rural areas and an important health resource. The network of access can be further improved. Educational access funded under the previous Programme, as a state aid, is the main means available to schools and other groups to visit farms and thereby increase their understanding of rural issues. This provision needs to be maintained. Access will continue to be funded as a state aid under the 2007-2013 Programme.

3.1.3.18 Summary table for environment and land management

366. The following table summarises the strengths and weaknesses identified in the analysis above. It should be noted that climate change will impact across all areas cited in this table for at least the next 50 years, and adaptation strategies will be needed.

Topic	Strengths & weaknesses, including disparities and gaps		Needs
	Strengths	Weaknesses	
Land abandonment and lack of appropriate management	There is relatively little risk of land abandonment in most areas of England.	Within the Severely Disadvantaged Areas, there is a risk that farming systems will change and be simplified in ways that will have environmental effects that are on balance adverse. This is of some concern as these areas also contain a large area of Natura 2000 sites and other valuable areas for biodiversity and landscape.	Secure effectively targeted support that maintains land management infrastructure and recognises and helps farm managers to maintain and enhance the special value of upland landscapes and habitats.
Priority Habitats, species and designated sites	Evidence shows that agri-environment expenditure has been effective at reducing habitat loss, improving the condition of many protected areas and reversing the decline of several species.	Despite these localised successes, there is a very long way to go to address the wider losses of habitats and species that occurred from the second world war onwards. Indeed, the quality and resilience of many habitats and their ability to maintain species populations is still declining or threatened. Of the Priority Habitats and Species targeted by the UK Biodiversity Action Plan, only 30% and 55% respectively are currently assessed as stable or increasing.	Focused management action on SSSIs and Priority Biodiversity Action Plan Habitats and Species.
Farmland birds and wider rural environment	R&D and pilot scale projects have shown that it is possible to mitigate many of the impacts that modern commercial farming has on biodiversity through the adoption of a range of management practices alongside commercial farming practice.	The decline in farmland bird populations indicates a wider decline in the quality of the farmed environment. Compared to the extent of long-term decline, improvements to date in the health of the natural environment to date have been more localised.	Build on work with the farming industry to reduce the adverse environmental impact of some agricultural practices and systems, and to enhance benefits from agricultural practices and systems more generally. Expansion of the area of farmed land managed for environmental outcomes to improve the environmental quality of the countryside as a whole, in addition to high value sites.

Topic	Strengths & weaknesses, including disparities and gaps		Needs
	Strengths	Weaknesses	
Woodlands	The total area of woodlands has increased steadily since the 1940s. Moreover, the balance of species composition of woodlands in new plantings has shifted from non-native conifer to native broadleaf species since the late 1980's.	Woodland area still small and until the 1980's there were significant losses of native woodland, and most new planting was of non-native conifers. Traditional management of native woodlands also declined sharply. Despite recent improvements, there have been continuing declines in woodland biodiversity (albeit reducing in recent years).	Support for the restoration and management of native woodland, for control of invasive and damaging species and for carefully targeted additional planting.
Water resources	Much of England is well supplied with water, and the proportion used for agriculture is small by comparison with usage for public water supply and power generation	In some parts of England, abstraction of ground and surface water for agriculture is significant and can exacerbate problems for rivers and wetlands caused by public water supply abstractions. The timing of its use is important (during the drier months). It has been estimated that the benefit to society of reduced water abstraction by agriculture in England and Wales is £36m.	Improve the efficiency of water use in agriculture. Localised need for support in provision of winter storage of water for irrigation.
Flood management	Some forms of agricultural management, particularly low intensity summer grazing, are compatible with the use of land for flood storage and for re-establishing buffer zones outside sea walls.	Agriculture's contribution to flood damage in the UK was estimated to be £153m in 2003. The frequency and severity of flooding has increased over recent years, with 12% of farmland in England located in areas prone to flooding. Soil compaction associated with agriculture is beginning to be recognised as increasing the risk of flooding.	Reduce contribution agriculture makes to flooding. Support use of farmland for fluvial and tidal flood management.
General	Advances have been made in controlling pollution from urban and industrial pollution and in mitigating its impact.	As urban and industrial pollution of water has become better controlled, emissions from agriculture have become comparatively more important.	Further work needed to help farmers address and remove both diffuse and point source pollution to air and water. These require a combination of regulatory and advisory measures and incentives.
Phosphates and soils		Diffuse pollution from agriculture is a major cause of pollution from both silt and phosphorus, which has a range of damaging impacts on watercourses.	As part of a wider approach to tackling water pollution from agriculture, further work is needed to help farmers tackle soil erosion. This requires a combination of regulatory and advisory measures and incentives.

Topic	Strengths & weaknesses, including disparities and gaps		Needs
	Strengths	**Weaknesses**	
Nitrates management, including meeting the requirements of the Nitrates Directive	A set of NVZs covering 55% of England has been in place since 2002 and has been subject to an Action Programme. Outside NVZs a voluntary code is in place.	Agriculture is the main source of nitrates in water in rural areas. The Commission has advised that the current Action Programme is insufficient and work is underway to develop a revised, stronger programme. This, together with the Water Framework Directive, is likely to set new, higher standards of performance for farmers in relation to nutrient management. Farmers in England will need to make substantial adjustments to their business and costly capital investments to fully meet these requirements.	Better management of manure storage, nutrient inputs, soils and cropping regimes are needed to reduce nitrate pollution and ammonia emissions. Ensure that farmers have access to support, such as information and advice, that enables them to manage nutrients effectively
Water Framework Directive	Characterisation of River Basin Districts has been completed. This has given a good overview of the scale and causes of the problem. The England Catchment Sensitive Farming Delivery Initiative project is up and running in 40 catchments.	The results of the characterisation and other analysis indicate that the way that agricultural land is managed is a major cause of the risk of waterbodies failing to achieve 'good' status.	The England Catchment Sensitive Farming Delivery Initiative, other projects within catchments and the Programmes of Measures for each River Basin District will identify the areas where farmers need to take action. Meeting these needs is likely to require a combination of incentives, advisory services, cross-compliance requirements and regulation.
Air quality	Emission projections show that there has been a steady decline in ammonia emissions in the last 15 years, primarily through a reduction in livestock numbers and use of fertilizers. Significantly, greater reductions have been achieved in emissions of SO_2 and NO_x.	Levels of atmospheric deposition of acidity and nitrogen still exceed the critical load for a range of terrestrial habitats. The proportionately greater reductions in emissions of SO_2 and NO_x mean that ammonia emissions are becoming of increasing significance. Agricultural emissions have generally declined more slowly than those from other sources. Agricultural emissions have therefore become proportionately more important. Agriculture is now the major source of ammonia, mainly derived from livestock manure and slurry.	Reducing atmospheric emissions requires a range of actions including use of low emission spreaders and roofed storage facilities for slurry.

Topic	Strengths & weaknesses, including disparities and gaps		Needs
	Strengths	**Weaknesses**	
Greenhouse gas emissions	Emissions of methane, nitrous oxide and ammonia from agriculture have declined substantially in recent years, largely because of a reduction in livestock numbers and fertiliser use.	Agriculture still contributes about 7% of total UK green house gas emissions. It is the major source of emissions of the most powerful greenhouse gases; Methane (36%), NOx (67%) and Ammonia (89%).	The priorities for reducing greenhouse gas emissions are likely to be similar to those listed for the reduction of air pollution generally. A progress review of Environmental Stewardship is planned for 2007/08. This will include work to identify potential for using the scheme to help farmers mitigate greenhouse gas emissions.
Energy crops	Energy crops, once established, are in the ground for 20-30 years. They need few fertiliser or pesticide inputs, and when used in the production of energy, displace fossil fuels, thus saving carbon.	Careful management is likely to be needed to maximise net carbon saving and minimise incidental impacts on the rural landscape and natural resources.	Action is needed to encourage market growth and ensure the supply of energy crops in a co-ordinated way, with the minimum impact on biodiversity and the rural environment.
Carbon sequestration	Woodland and peatland management both have the capacity to sequester significant amounts of CO_2.	Erosion of upland and lowland peat is likely to add further to CO_2 emissions if left unchecked.	Incentives needed to improve the management of both upland and lowland peat to help check erosion and help re-start peat accumulation. Ensure owners have access to information and advice to enable them to improve the management of woodland to increase the capacity to sequester carbon.
Climate change adaptation	Climate change will benefit some species, with some expanding their range northwards.	Climate change is likely to place greater stress on already stressed natural ecosystems. Habitat conditions will change and many less mobile species may find themselves in locations where they can no longer compete, but may be unable to move to areas that are suitable.	Improve the environmental quality of the wider countryside, so that it is possible for species to migrate with the changing climate. The isolation and fragmentation of areas of high biodiversity needs to be reduced. Support needed to manage the wider impacts of climate change, such as flooding.

Topic	Strengths & weaknesses, including disparities and gaps		Needs
	Strengths	**Weaknesses**	
Soils	All farmers in receipt of the Single Farm Payment must adhere to four standards to better protect agricultural soils, focussing on erosion, soil structure and soil organic matter decline. As part of these requirements, farmers must also conduct a Soil Protection Review.	Soils face a number of challenges, including erosion, decline in organic matter content, pollutant loads and loss of structure due to compression.	Land managers need a decision-making framework, support and advice to improve their standard of soil conservation.
Pesticides	Crop Protection Management Plans provide a framework for minimising the environmental impacts of pesticide use.	There has been a steady increase in the formulation treated area in recent years, mainly as a result of an increase in the frequency of applications and the range of chemicals used. Environmental impacts of modern pesticides are often hard to quantify.	Action needed to encourage the widespread use of existing best practice on pesticide use and seek ways of further improving the standard of use of these chemicals on farms.
Organic Farming	Organic farming can offer a substantial range of environmental benefits compared to conventional systems, particularly in the lowlands.	The area of land farmed organically in England is still relatively small. Organic systems still have an environmental impact, and many of their benefits depend on good husbandry, some of which goes beyond that needed to meet certification requirements. In some areas such gaseous emissions organic systems appear to offer little advantage, at least when compared on the basis of units of production.	To obtain the full environmental benefits of organic farming it is important to do all of the following: Expand the acreage that is farmed organically, especially in the more intensively farmed lowlands. Educate organic farmers in good husbandry. Encourage them to go beyond the minimum environmental requirements of organic certification.

Topic	Strengths & weaknesses, including disparities and gaps		Needs
	Strengths	**Weaknesses**	
Landscape	A landscape characterisation system exists covering the whole of England. A substantial proportion of England's land area is protected because of its landscapes. The post-war decline in stocks of some landscape features seems to have largely stopped. Evidence shows that agri-environment expenditures, combined with reformed Pillar 1 payments, has been effective at reducing loss and damage to historic environment features, improving the condition of many designated features and areas, and helping to conserve landscape character.	Agriculture is a major and continuing cause of loss and damage to irreplaceable historic features in the landscape. For traditional farm buildings and stone walls, neglect is a problem, exacerbated by a shortage of suitably qualified craftspeople to undertake maintenance and repair	Landscape conservation requires individual interventions in the rural environment to be widespread, co-ordinated, planned and in keeping with local character. Continued action is needed to ensure that farmers preserve irreplaceable historic features when planning both day-to-day and future agricultural operations. There is a need to maintain a supply of competent crafts people to maintain traditional landscape features. Focused management action on Scheduled Monuments and historic features most at risk.
Access	A widespread network of linear access in addition to areas of open access. Many trips to rural areas for the purposes of utilising access. Provision of educational access to farms under previous Programme.	No general right of access to farmland. Fragmentation of access.	Improve links between access areas. Increase access generally and specifically to the coast and around urban areas. Maintain provision of educational access.

3.1.4 Rural Economy and Quality of Life

3.1.4.1 The structure of the rural economy

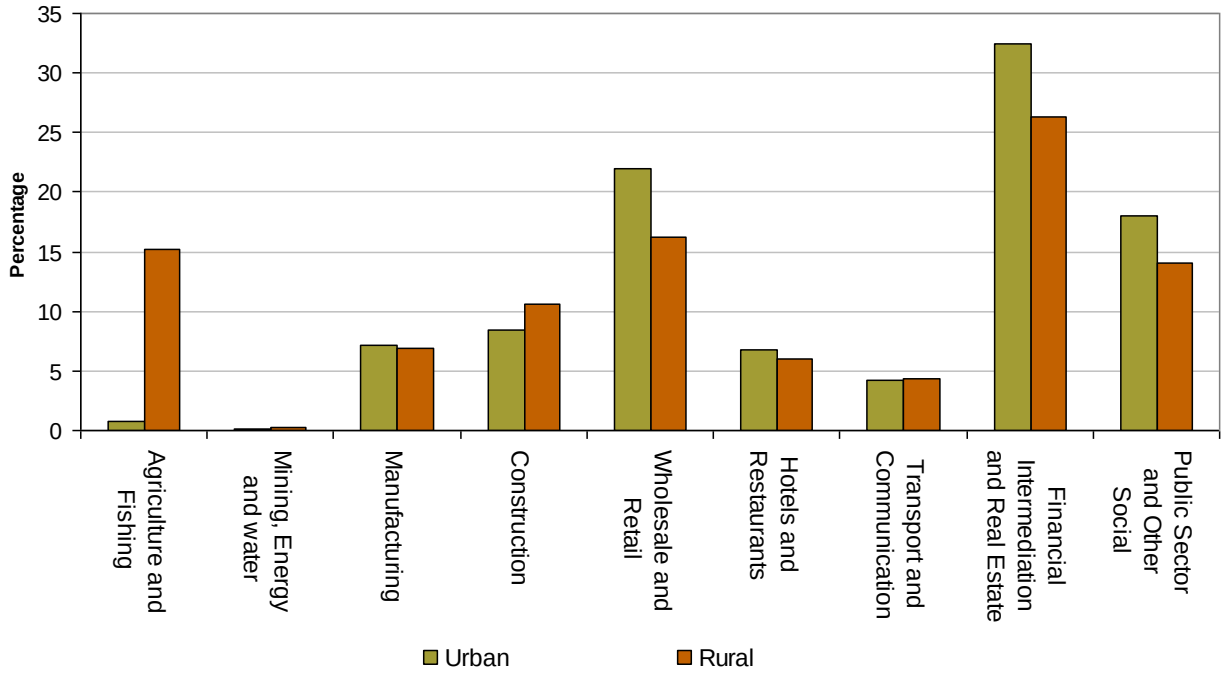
367. The structure of employment in the rural economy has been described in section 3.1.1.6 above. In general, rural areas perform well against urban areas in terms of employment and unemployment rates, although this does not indicate the quality of jobs or how well vacancies and skills are matched. Differences in employment between males and females are comparable between rural and urban areas, with no specific gender bias in employment in rural areas. The distribution of the labour force by sector is similar between rural areas and urban areas, although larger differences emerge when comparing the most rural areas with urban areas.

368. In rural areas, a higher proportion of businesses have no employees or are micro-businesses, resulting in a higher proportion of businesses per head (as discussed in section 3.1.4.3 below). However, many of these small businesses are in agriculture so, looking beyond this sector, the distribution of businesses by industry sector in urban and rural areas is similar.

369. Agriculture accounts for a much higher proportion of business in rural areas, as would be expected from the higher proportion of the labour force being employed in this sector in rural areas (see Figure 3-4 above). There are also three other industry sectors where there is a difference in local businesses by sector between urban and rural areas.

370. As shown in Figure 3-40 below, the three sectors which have the largest proportions of local business units in urban areas (financial intermediation, public sector and wholesale and retail industry sectors) are three out of the four sectors (including agriculture) which have the largest proportions of local business units in rural areas.

Figure 3-40 - Percentage of local business units in England by industrial sector [223]



371. This description of the structure of the rural economy demonstrates that it is no longer driven by land-based industries. Employment in agriculture has declined by

[223] Figure 2.9, Page 40, Rural Economics Unit 'Productivity in Rural England' (Defra 2005).

30% in the last 20 years. In 2004, the agriculture, hunting and forestry sector accounted for 2.6% of total employment in predominantly rural areas[224]. The shift from a sectoral to a place-based policy approach in rural areas has been described in detail in Section 3.1.1.

372. However, the share of total employment in farming and other land-based industries does not reflect the greater role of the industry that is played in some rural areas of England, typically the rural areas at greater distance from urban centres. It is also important to note that the "decline" in agriculture's economic status in rural areas is relative rather than absolute: other sectors have grown more quickly. Employment in the agriculture, hunting and forestry sector can account for as much as 9% of total employment in a rural district. Farming and land based industries contribute to the wider environment which supports the quality of life which, in turn, attracts businesses to operate from and people to live in and visit rural areas (as described in Section 3.1.4.3 on entrepreneurial in-migrants and tourism).

373. Agriculture is just one part of the food chain, which includes food and drink manufacturing, wholesale, catering and retail. Altogether, the food chain accounts for 14% of total employment in England, although these industries account for up to 39% of employment in a number of predominantly rural areas[225]. Success in these sectors therefore supports wider success of the economy in rural areas.

374. Compared at this level, the rural areas of England perform well against urban areas. However, as described in Section 3.1.1, there is no such thing as a single, homogeneous 'rural England'; rural areas should be viewed in their local and regional contexts, including the relationship between rural and urban areas. There are rural areas where levels of economic performance are well below average and prospects for growth are more limited[226]. These areas share a number of characteristics:

- distance from economic mass (urban areas);
- sparse populations and associated low densities of businesses and thin labour markets; and
- a comparative advantage in low productivity activity such as agriculture and tourism.

375. Section 3.1.1.3 described the ageing profile of rural areas, as a greater number of older people wish to retire to the countryside or coastal areas. This will support comparative advantage of rural areas in low productivity industries, such as personal social services for older people. Section 3.1.1.4 discussed evidence on the slower growth prospects for rural areas outside of city regions, that is, rural areas more likely to have these characteristics.

Cornwall and the Isles of Scilly

376. Cornwall and the Isles of Scilly qualify for Convergence funding under the Structural Funds (European Structural Fund (ESF) and the EAFRD. This is because its GDP per capita was below 75% of the EU average in the reference period (up to 2004) despite the fact that the EU average GDP per capita fell as a result of the EU's expansion to the East. It is the only English area to qualify for this extra support, which is intended to address socio-economic objectives. Detailed socio-economic analysis of the sub- region was published by the South West of England Regional Development Agency in the draft Convergence Operational Programme for the ERDF[227].

[224] Annual Business Inquiry 2004 (produced by ONS).
[225] Annual Business Inquiry 2004 (produced by ONS).
[226] Rural Economics Unit "Productivity in rural England" (Defra 2005).
[227] Cornwall and the Isles of Scilly Convergence Programme - Consultation draft. Published by SWRDA November 2006.

3.1.4.2 Barriers to creation of alternative employment opportunities

377. The low proportion of employment in agriculture and the relatively high levels of employment in rural areas indicate that, in general, rural areas as a whole do not experience significant barriers to employment beyond agriculture. However, lack of skills is a potentially significant barrier to employment opportunities, as found in the Leitch review of skills, an independent review of the UK's long-term skill needs[228] (further data on skills shortages is covered in Section 3.1.4.7 – Human Potential in Rural Areas). The report highlighted significant skills deficiencies in the UK workforce, threatening future economic success. It recommends radical change across the skills spectrum and provides an aspiration for world-class skills. These recommendations apply equally to rural and urban areas in England, and to employment in land based and other sectors.

378. Agricultural workers can often be highly skilled but not necessarily highly qualified. 44% of the land-based workforce does not hold any qualification equivalent to a National Vocational Qualification, compared to 31% for all employment within the UK[229]. It is also widely accepted that the land-based sector contains many highly skilled people, yet there remains a skills shortage. Further, the skills that are present are not always appropriately recognised. Research shows that there is cultural resistance to training, reflecting primarily a poor appreciation of the business benefits. Physical barriers, such as distance and cost, have also been recognised. These issues are accepted as a hindrance to growth in this part of the rural economy.

379. Beyond the land-based sector, evidence on rural business presents quite a similar picture. One study found that firms in more peripheral areas frequently cite labour shortages, especially of managers, as a constraint to expansion[230]. This finding also extends to small and medium-sized enterprises (SMEs), with these firms in dispersed rural areas more likely to perceive a shortage of managerial skills as an obstacle to success than SMEs in urban areas, rural towns and villages[231].

380. It is also thought that the factors surrounding and sustaining those skill levels are crucial to their implementation. This includes the broader level of cultural capacity in local communities, and the openness of areas to outside influences. This is important because of the key role of labour migration in supporting economic performance in rural areas. People do leave rural areas to gain skills, experience and contacts, whereas others will relocate if the landscapes, quality of life and job opportunities are available. Highly skilled, economically active in-migrants with knowledge of externally oriented business sectors and with access to informal contact networks are an important element for achieving successful local economies. Labour market flexibility, through skills, is important for realising these positive labour flows

381. Distance and cost have also been recognised as potential barriers to rural businesses beyond the land-based sector. However, the evidence is mixed and local approaches are likely to be most suitable for addressing issues. The fact that transport issues are an obstacle in both urban and remote rural areas highlights the different needs in these areas – while urban businesses face problems such as congestion and parking, remote rural areas may suffer from a lack of access as well as higher costs of access[232]. Some studies have found that the majority of rural businesses do not consider themselves at a disadvantage in accessing services if they are within one

[228] "Leitch Review of Skills" (HM Treasury, 2006). http://www.hm-treasury.gov.uk/independent_reviews/leitch_review/review_leitch_index.cfm
[229] Skills and Rural Enterprise Division 'Learning, Skills and Knowledge Review – Final Report' Defra (2004) http://defraweb/rural/pdfs/lsk/LSK_review_final.pdf
[230] Bennett and Errington (1995, 45-54) cited in Productivity in Rural England (Defra, 2005).
[231] Small Businesses in Rural Areas: An Analysis of the Annual Small Business Survey 2004, DTI.
[232] Small Businesses in Rural Areas: An Analysis of the Annual Small Business Survey 2004, DTI

hour of a motorway[233]. While data are not yet available for businesses, around 10% of England's rural population lives over 80 kilometres (50 miles) from the nearest motorway junction.

3.1.4.3 Micro business formation and tourism

382. While the importance of sectors in terms of employment is similar between rural and urban areas, there remain some distinct business features in rural areas. Rural areas have lower population densities and greater distances between centres of population. Businesses located in such areas are likely to find it more difficult to gain economies of scale from their activities.

383. Rural businesses tend to be smaller than in urban areas, with a higher proportion having no employees. In rural areas in England, micro enterprises account for 91% of all rural businesses. By comparison, micro enterprises account for 87% of all businesses in England and 85% of all businesses in urban areas[234].

384. Rural areas of England account for approximately 19% of the population and around 25% of the business stock, resulting in more businesses per head in rural compared to urban areas. Looking at the competitive pressures on businesses, there is a lower rate of VAT registration and of deregistration as a percentage of the VAT registered business stock for rural businesses compared to urban businesses[235]. As the business stock in rural areas is already high, it might be expected that there are fewer firms being registered as a proportion of the number of firms already registered.

385. In terms of business start-ups per 10,000 of population, rural areas are roughly equal or better than the English average for business start-ups[236] when the City of London is excluded. (In the analysis of business, it should be remembered that London is a special case even among other urban areas). As there are more businesses per head, it might be expected that there would also be more start-ups per 10,000 of population. Although the business start-up rates per 10,000 population for rural areas as a whole are comparable to the England average and urban areas, there are some rural areas where economic performance is well below the England average and the average for other rural areas. In terms of VAT registrations per 10,000 population, these areas performed consistently worse than rural areas as a whole between 1999 and 2005[237].

386. Small and Medium Enterprises (SMEs) in rural areas are more likely to be partnerships than companies are, more likely to be family businesses and more likely to be in the primary sector[238]. In addition, many rural employees tend to have several jobs, often a combination of part time, self-employed and seasonal work. Many of these jobs are in the agricultural and tourism sectors, which are comparatively low-paid.

387. For businesses in any location, the four most commonly perceived obstacles to the success of the business are competition, regulations, the economy and taxation. However, businesses in rural areas are more likely than those in urban areas to cite taxation and regulation as obstacles to success although businesses in dispersed rural areas are twice as likely as those in other areas to be claiming Government grants and loans.

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[233] Rural Economics Unit 'Productivity in Rural England' (Defra 2005)
[234] 2004 data from Inter Departmental Business Register (ONS)
[235] Productivity in Rural England (Defra, 2005)
[236] Productivity in Rural England (Defra, 2005)
[237] ONS data published on NOMIS
[238] Small Businesses in Rural Areas: An Analysis of the Annual Small Business Survey 2004, DTI

388. Looking at the growth of these small businesses, it is found that businesses in dispersed rural areas have the highest growth aspirations, but are actually the most likely to have stayed the same size[239]. There are a number of possible reasons for this lack of growth. It was found that there is little difference across types of area in the proportion of businesses that had introduced innovation in the previous 12 months, so this is probably not a limiting factor for rural businesses in general. The lack of managerial skills, transport links and skills are cited as limiting factors to rural businesses and these have been discussed above.

Farm diversification

389. In England in 2005-06, half of "full-time" farms received income from diversification activities[240]. Table 3-38 below shows that 50% of farms in England had diversified by 2005-06, usually by letting buildings, either for industrial purposes or for the tourist industry.

390. The figure is likely to be an underestimate because of the difficulty of separating 'diversified income' from main farm income in the source data. It is likely that the proportion is higher for part-time farms but there are no data available.

Table 3-38 - Value of output from diversified enterprises - England 2005/06[241]

	No of farms	% of all farms	Total farm output for these farms (£M)	Output of diversified enterprise (£/farm)	Avg enterprise output (£/farm)
Farm business output (incl diversification)	61700	100	11100	-	-
Farms which engage in diversified enterprises, Of which:	31000	50	6540	620	20200
Letting buildings for non farm use	23400	38	5330	310	13300
Processing/retailing of farm produce	4900	8	880	140	28800
Sport and recreation	6100	9	1240	37	6400
Tourist accommodation and catering	2700	4	396	34	12900

[239] Small Businesses in Rural Areas: An Analysis of the Annual Small Business Survey 2004, DTI

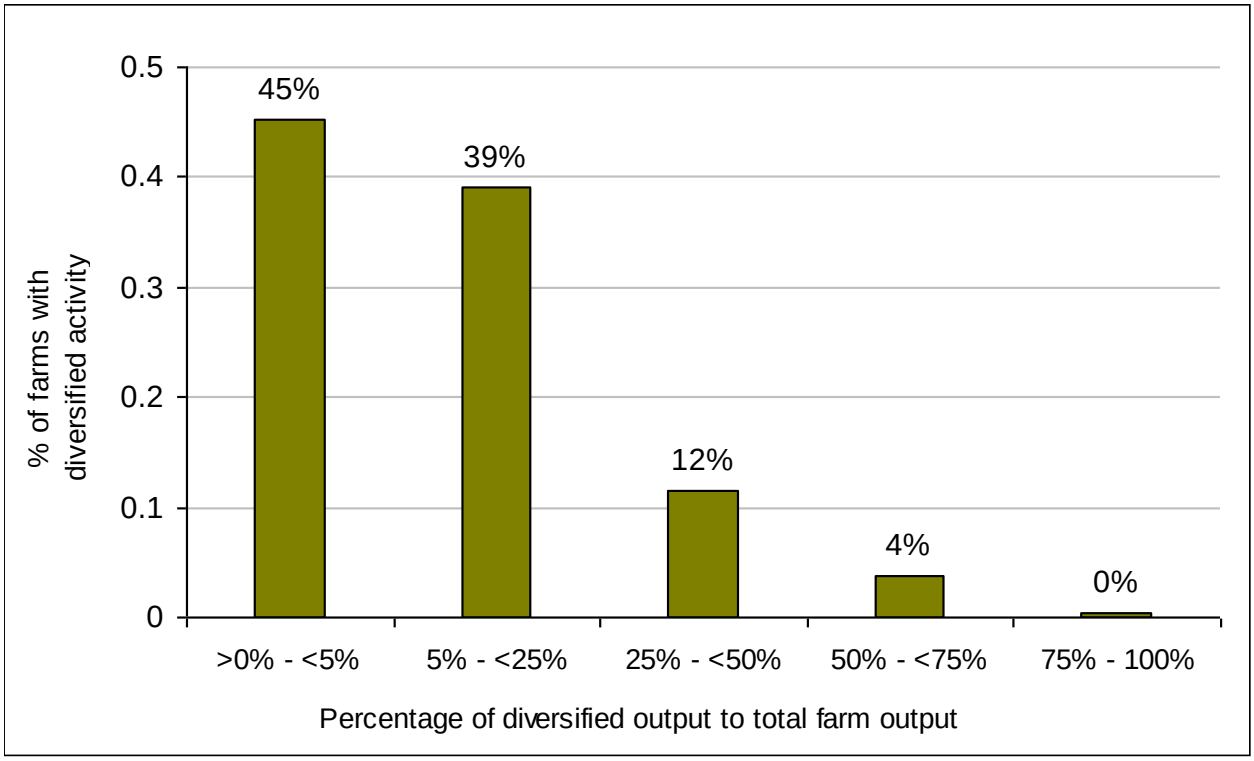
[240] Unless otherwise attributed, the data on diversification is drawn from the Farm Business Survey (FBS), which is part of the Communities Farm Accounts Data Network (FADN). This involves whole farm account data from 2,250 farms up until 2003/04, dropping to 1,850 farms for 2004/05 onwards. The survey cohort is stable, with some farms being included for up to 15 years, and 60% for at least 5 years. The survey only includes farms of a size considered sufficient to occupy a farmer for at least half-time. Although these amount to slightly less than half the total number of farms in England, they account for 90% of land area farmed and 96% of agricultural production.

[241] Extracted from Table 5 Defra/ ONS statistical release "Diversification in Agriculture –January 2007" (January 2006)

Other diversified activity	4800	8	1080	100	20700

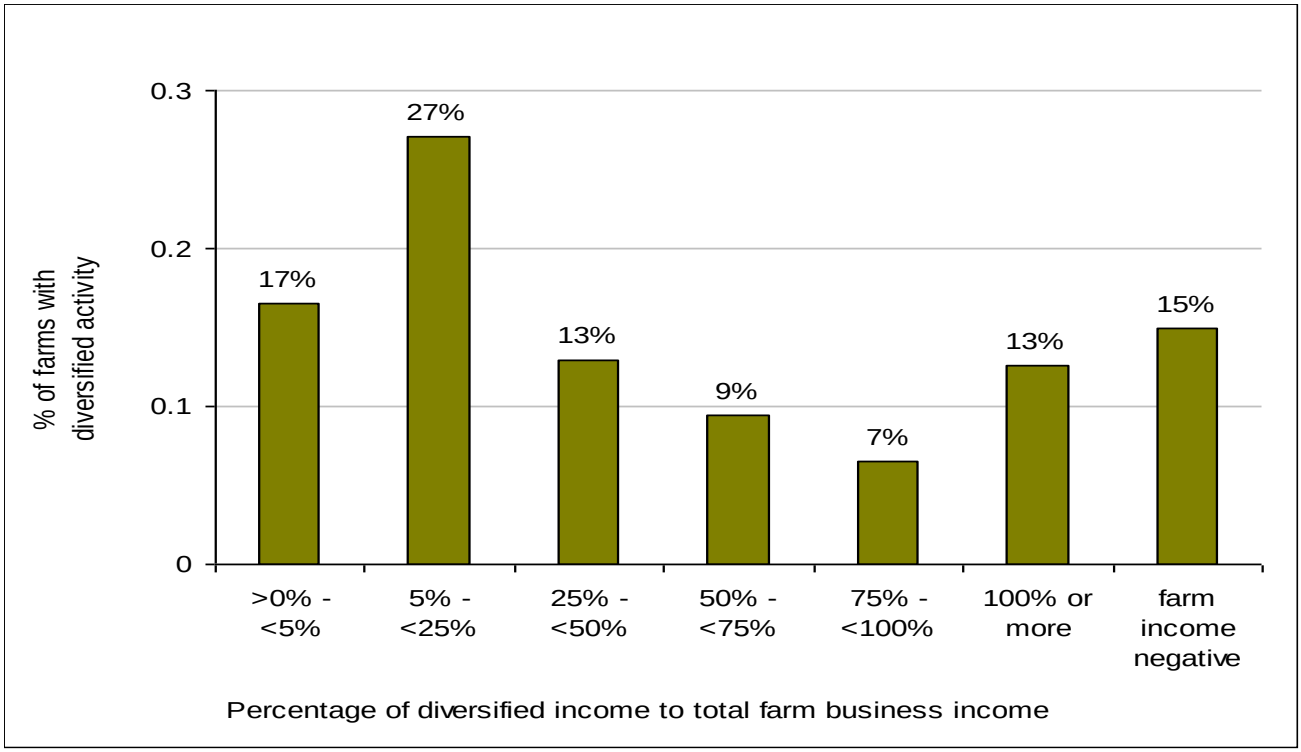
391. For most farm businesses, the contribution of diversified enterprise output to the farm business as a whole is relatively minor. However, for 16% of businesses, diversified output accounts for a quarter or more of the total farm output as shown in Figure 3-41.

Figure 3-41 - Proportion of farm output from diversification — England 2005/06



392. However, the situation is quite different for income. For 56% of businesses with diversified enterprises, diversified income or margin accounts for a quarter or more of the total farm income. This contrasts with the equivalent 16% figure when expressed in terms of output (Figure 3-41). For 28% of businesses, the estimated income from diversification exceeds that of the rest of the business.

Figure 3-42 - Proportion of farm business income from diversification — England 2005/06



393. Opportunities for diversification vary widely, however, depending in particular on the entrepreneurial skills of the farmers, financial factors, e.g. capital, the farm's location and its leisure potential. In particular, there are wide regional variations, ranging from 37% of farms with diversified activity in the West Midlands and 73% in the South East, as shown in Table 3-39.

Table 3-39 - Regional incidence of diversified activity and off farm employment – 2005/06[242]

	England	NW	NE & YH	EM	WM	EE	SE	SW
No of farm businesses >1/2SLR	61700	8300	8600	7900	6600	10300	8300	11700
% of which:								
Have diversified enterprises	50	49	45	48	37	53	73	45
Farmer or spouse have off farm employment or self employment	31	33	36	27	30	34	23	32
Have neither	34	34	34	35	43	32	20	37

[242]Extracted from table 11, Extracted from Table 5 Defra/ ONS statistical release "Diversification in Agriculture –January 2007" (January 2007).

394. Diversification of agricultural businesses is a significant source of income for a growing number of farmers. Diversification can both improve the performance of the agricultural holding, by diversifying into alternative crops or livestock, or improve the performance of the whole business, by adding value to agricultural products or by diversifying into businesses outside of agriculture. Diversification can help to broaden the business base of farmers and reduce their reliance on mainstream agricultural production. It can also contribute to the economy of the local rural area.

395. An independent study on "The effects of public funding on farmer's attitudes to farm diversification"[243] found that grant funding has a positive effect on both encouraging individual farmers to diversify and in levering in other forms of investment, bank loans for example, by reducing risk. It can also add capacity and resilience to the diversified business by increasing the financial scale of operation. In this way, supporting farm diversification can also help less viable farms continue farming and managing the land which sustains the contribution of farms to the wider environment.

396. Whilst the benefits of farm diversification to farms are quite clear, benefits of diversification activity beyond the farm gate are less clear-cut. There is very little research currently available on the multiplier benefits of diversified enterprises. Many farm diversification projects directly contribute to the local economy by providing office or workspace for other businesses or attracting tourists to the area. Local suppliers (for example builders) have also benefited from support given to farm diversification projects through spin-off economic opportunities created by the development of new farm based businesses.

Migration

397. Migration is closely linked to micro business formation in rural areas. A number of studies show that a large number of new enterprises in rural areas are formed by in-migrants, and that these start-ups by in-migrants are important for job-creation in the rural area. Entrepreneurial in-migrants are likely to be older (in their 30s, 40s or 50s) and to start businesses in more externally oriented sectors, with a greater level of informal business contacts outside the region, as well as a greater proportion of sales[244]. Perhaps the key factor in promoting enterprise in rural areas is in-migrants as owners of firms, suggesting that any constraints placed on such people, for example in the form of housing availability, might have a direct impact on productivity in rural areas[245]. Further discussion of the impact of migrant workers on the human potential in rural areas is presented in Section 3.1.4.7.

Tourism

398. Rural tourism, across a range of rural areas and regions, is closely linked with the key assets of environmental and landscape quality and the heritage and built environment[246]. Designated land such as National Parks (8% of England's total land area) and Areas of Outstanding Natural Beauty or National Scenic Areas (16% of England's total land area[247]) recognises the national importance of areas in terms landscapes, cultural heritage and opportunities for public outdoor recreation. 'Visit Britain' surveys show that historic properties form one of the principal reasons for attracting incoming tourist into the UK. 73% of incoming visitors, for example, visit

[243] Exeter University, 2006.
[244] Productivity in Rural England (Defra, 2005) – for full references see Chapter 4.
[245] Productivity in Rural England (Defra, 2005).
[246] For example: Regional Implementation Plans, various, South East Regional Development Agency, South West Regional Development Agency, North East Regional Development Agency and North West Regional Development Agency.
[247] Table 14.1 "Agriculture in the United Kingdom, 2005" (Defra, 2006).

historic buildings and 56% gardens, compared with 34% art galleries and 32% theatres. These attractions make a major contribution to the rural economy, estimated to be around £1.6bn per year.

399. As well as those rural areas within the boundaries of designated land, many other rural areas have a high potential offer to tourists and many rural areas have already developed this potential. Estimates from 2002 suggest that around £12bn per year is spent by visitors to the countryside, although this is not evenly distributed across the country, with areas such as Cumbria benefiting the most[248]. Information on day trips to the countryside, coast and parks and gardens in rural areas as well as information on rural recreation activities was presented in section 3.1.3.16 above.

400. In rural as well as urban areas, tourism supports a number of industries, as tourists require a wide range of goods and services for their visit. In addition, the growth of businesses through tourism leads to the growth of supporting professions and trades, such as accountants, surveyors and construction trades. It has been estimated that between 60% and 70% of employment in rural areas or around 320,000 full time equivalent rural jobs are supported by tourism and linked with a high quality rural environment and landscape in England[249].

401. Agriculture in particular, that is farming, fishing and forestry industries, contributes to and benefits from rural tourism activities in a number of ways. As the main use of land in England, agriculture plays an important role in providing landscapes important for rural tourism, in terms of both environmental quality and heritage, including traditional farm buildings. For example, in the Yorkshire Dales National Park, dry-stone walls and small field barns are recognised as integral parts of the attractiveness of the landscape[250]. The part played by forests in attractive landscapes and as places for recreation has been discussed above.

402. Tourism and agriculture can also benefit from linking together more directly. Farms may diversify into non-agricultural businesses, such as tourism, as a way of increasing farm incomes and increasing services offered to tourists, as has already been discussed. Furthermore, the offer of regional and local food can be part of the rural 'brand' that attracts tourists, supporting local services[251]. There is scope for development of these interlinkages and for encouraging collaboration.

403. The importance of environmental quality to rural tourism highlights the need for the impact of tourism on the environment and historic fabric to be managed effectively and sustainably[252]. In particular, there is a potential conflict between increased visitor numbers and sustainable tourism, which will need to be managed. Research on the Lake District and Peak District National Parks has found that tourism is a significant factor in causing footpath erosion and moorland wildfires[253]. Sustainable rural tourism needs vary regionally, with the South East identifying wide scope for the development of sustainable rural tourism products[254] and the South West identifying fragile environments, such as coastal and upland areas, which need particular protection from degradation due to high visitor numbers[255].

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[248] Defra (2002) http://statistics.defra.gov.uk/esg/temp_rural/sion.pdf
[249] GHK, GFA-Race (2004) *Revealing the Value of the Natural Environment in England* http://statistics.defra.gov.uk/esg/reports/rvne.pdf.
[250] Countryside and Community Research Unit, University of Gloucester and ADAS "A Socio-economic study of grant-funded traditional drystone wall and farm building restoration in the Yorkshire Dales National Park" (English Heritage, 2007).
[251] Regional Implementation Plan, North East Regional Development Agency
[252] Regional Implementation Plans, various.
[253] Cross regional research on climate change. http://defraweb/news/2006/061024a.htm
[254] Regional Implementation Plan, South East Regional Development Agency.
[255] Regional Implementation Plan, South West Regional Development Agency.

404. In the development of sustainable rural tourism, the regional context and priorities are important for identifying key activities. This is also the case for rural tourism business development. For example, in the South West, tourism in particular has been identified as an industry that is not currently making the best use of Information and Communication Technology (ICT)[256].

3.1.4.4 Provision of services in rural areas

405. The issues faced on the provision of services by the majority of rural dwellers in England are, in essence, the same as those faced by those living in the rest of the country. What may need to be different, because all communities are different, are the means by which public services are delivered. The Government as a whole has a range of policies in place to meet the needs of people living throughout the country. Increasingly, our national policy framework is designed to give local areas the flexibility to respond to local circumstances and needs. The nature and extent of the challenges vary considerably from one location to another, so a flexible approach driven by the local area delivers the most effective solutions.

406. The key distinguishing feature of needs in rural areas is that they are dispersed rather than concentrated. This may present practical service delivery challenges in relation to targeting and access. However, in aggregate, rural areas consistently perform better against all key benchmarks of success, with the notable exception of geographical access to services. In this context, the choices exercised by the relatively affluent, mobile majority to travel to access goods and services have had a direct impact on the viability of some local provision by both the public and private sectors.

407. Research into the Quality and Accessibility of Services in Rural England found that rural disadvantaged people have a great deal in common with their urban equivalents. This work explored the preferences of people from both disadvantaged and non-disadvantaged groups in both urban and rural areas. On balance, the majority of people preferred a higher quality service, even if that meant travelling further to access it. However, different groups responded differently to the relative merits of (a) 'nearby even if quite poor', compared with (b) 'distant but good' services. The former 'package' tends to be the preference of older people, disabled people, ethnic minorities and migrant workers, while for example 16 to 25 year olds (even if lacking their own transport) and part-time workers tend to opt for the 'distant but good' options.

408. Notwithstanding these geographical access challenges, the outcomes in rural areas tend to be as good (and are often better) than the national picture. For example, a recent analysis of the Government's "Opportunity for All" indicators of social exclusion, measuring the proportions of children, working age adults and pensioners living in households with low incomes[257] showed that all categories of rural areas experience lower levels of income poverty than the urban categories, and that improvements across all these groups in rural areas are in advance of or in line with national trends. This was true for both relative and absolute measures of poverty both before and after housing costs.

409. The English Longitudinal Study of Aging (ELSA)[258] found only a minority of older people to be Services Excluded[259], with minimal difference between those living

[256] Regional Implementation Plan, South West Regional Development Agency.
[257] Below 60% of the GB median household income.
[258] Wave 2 of the ELSA annual longitudinal survey, based on representative sample of approx 8,000 people aged over 50.

in urban (8%) or rural areas (9%). There was little difference between people living in rural towns (8%), villages (9%) and hamlets and dispersed areas (8%).

Rural analysis of the Index of Deprivation 2004[260]

410. Rural areas fare better than the national averages for virtually all dimensions of deprivation except for the distance travelled to access key services. This is illustrated by the income domain, which is based on the numbers of people claiming income based benefits. The national percentage of the population suffering income deprivation (14%) is almost double that experienced by rural areas generally (8%). Notwithstanding this, there are still significant absolute numbers of people living on low incomes in rural areas.

411. A higher proportion of individuals living in areas classified as sparse town and urban fringe[261] experience income deprivation compared to the proportion of income deprived individuals living in areas classified as village and dispersed. It is important to note that the actual number of people experiencing deprivation is a small proportion of the total population, (e.g. although 11% of the population in sparse town and urban fringe areas are income deprived, this only correlates to 236,000 individuals, or 0.48% of the English population).

412. Applying the rural definition to the other dimensions of deprivation, including employment, health, education, skills attainment, barriers to housing and the living environment reveals a similar picture. Areas classified as sparse town and urban fringe typically contain the highest proportion of residents experiencing disadvantage against an indicator compared to the other four rural classifications.

Access to online services and broadband

413. It is generally thought that ICT plays a central role in widening the economic base in rural areas, enabling the smallest businesses to market globally with potential environmental benefits as travel needs are reduced. Most of England now has broadband access, with almost 100% of UK households able to access some form of broadband technology[262].

414. Local and regional initiatives involving the Regional Development Agencies (RDAs) in England, Local Authorities and other partners are helping many businesses and communities to take advantage of the benefits of broadband and to bring broadband coverage to those ‘not spot’ areas where it is still unavailable.

415. In April 2005, the UK Government published, 'Connecting the UK: the Digital Strategy'. The strategy sets out the crucial role that information and communication technology will have for our future prosperity, and looks to move the focus of policy towards stimulating effective take up and use of ICT by individuals.

416. In July 2005, the report, ‘ICT in England’s Rural Economies’ concluded that in general, rural businesses adopt ICT significantly more slowly than their urban peers. As expected, ICT adoption increases as businesses get larger. However, at each size band, the average level of adoption is lower in businesses located in rural areas. This lower adoption is primarily attributable to a more limited range and intensity of

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[259] Services exclusion was defined as difficulty in accessing two or more of the following basic services using usual form of transport: Bank or cash point; Chiropodist; Dentist; General Practitioner; Hospital; Local Shops; Optician; Post Office; Shopping Centre; Supermarket.

[260] The overall Index of Deprivation (ID) is a weighted aggregation of seven domains of disadvantage: Income deprivation, Employment deprivation, Health deprivation and disability, Education, skills and training deprivation, Barriers to Housing and Services, Living environment deprivation and Crime. Each domain contains a number of indicators.

[261] Alnwick is an example of an area classified as sparse town and urban fringe

[262] Page 3, Ovum ‘UK Broadband status summary March 2006-A report for the Department of Trade and Industry’ (Ovum 2006)

'influences' promoting the use of ICT such as advertising. Micro businesses are particularly disadvantaged: the ICT 'adoption gap' between rural and urban businesses is most pronounced in the 2-9 employment band.

417. The 2005 ONS report on ICT Activity of UK Businesses reported that a broadband connection using a Digital Subscriber line was in use by 67.4% of all businesses. Almost 70% of businesses reported that they had a website in 2005. This is a 4% rise on the 2004 figure. Among the largest businesses, a position of near saturation exists, with 98% of those with employment of 1,000 or more reporting having a website.

418. Among the smaller businesses (those with employment between 10 and 49), nearly 70% reported having a website and the trend shows steady growth in this area.

419. The ONS report shows that smaller businesses are more likely to use low speed internet access. In addition, the larger the business, the more likely it is to have ICT systems that automatically link with other ICT systems, either within the business or outside. At 72%, larger businesses are more than 3 times as likely as the smallest businesses to have ICT systems for placing or receiving orders.

420. These results highlight the continuing pattern that the largest businesses continue to lead the way in the take-up and exploitation of new technologies. This does suggest that the generally smaller rural employers may lag behind on internet presence and use of new technologies, unless assistance is offered.

3.1.4.5 Infrastructure in rural areas

421. The infrastructure of rural England is typically robust and well able to meet the needs of most rural residents. As noted in previous sections, the majority of rural areas are relatively prosperous. However, we also know that that prosperity is not shared by all rural dwellers and that the most disadvantaged residents tend to experience the greatest challenges in extracting value from the services available to them[263]. The trends are of increasing car-dependence and growing centralisation of services delivered by the private sector leading to fewer local service outlets in some rural areas.

Rural Retail

422. The most basic community service for most rural communities is the local shop, sometimes combined with a post office or other service outlet. Long-term sustainability may require offering a wider range of products and services or combining them with post offices, garages, pubs and other facilities. The Government already supports the retention of shops in small settlements through local taxation measures.

423. The Commission for Rural Communities' annual State of the Countryside report for 2006 showed that 69% of rural households live within 4km of a supermarket. However, the evidence suggests that for certain groups, such as older and disabled people and migrant workers, the very local store has a higher level of importance.

424. Village shops are often seen as a centre for social contact, particularly for the elderly. One-quarter of the population is aged over 60 and one in 12 is over 75. This concentration of less mobile people in rural areas means that there is increased importance on locally accessible shops. However, many rural residents will have access to (and actively choose to use) the large out of town stores and internet shopping facilities, all of which increase pressure on village shops which cannot match the lower costs or product range available in the large stores.

[263] Improving Services, Improving Lives - Evidence and Key Themes, Office of the Deputy Prime Minister, 2005

425. Community-owned village shops and facilities are good examples of how local services can be maintained through social enterprise. Combining the post office with the village shop and, perhaps, the pub can prove a successful mix that has the potential to support small rural communities socially and economically.

Transport

426. The availability of transport, whether public or private, underpins the accessibility of services and opportunity for all rural residents. Access to private transport is high in rural areas – in all types of rural settlement, more than 75% of households have access to one or more car or van, and this increases as settlement size decreases. The 'rural disadvantaged' are much more likely to rely on 'lifts' for many trip purposes and to use public transport less[264]. The car is the main mode of transport for 77% of journeys made by people living in rural areas.

427. Government policy aims to reduce dependence on the car and improve the effectiveness of public transport and access to opportunities, while at the same time reducing the environmental impact. Currently, 55% of households in rural areas are within 10 minutes walk of an hourly or more frequent bus service, a rise from 41% in 1998/2000.

428. The Government already supports a wide range of different public transport services in rural areas. These include:

- conventional bus services;
- flexible bus routes;
- community transport;
- rail services.

429. People aged over 60 and disabled people are able to travel for free on local bus services in their area. Free local bus travel will be extended to a nationwide scheme in 2008 which means those entitled will be able to use local bus services anywhere in England.

430. The major source of funding for transport in rural areas is local authorities. Local authorities make their own decisions on level of revenue support for buses. Local transport authorities' local transport plans for 2006-2011 include for the first time, accessibility strategies which will identify areas/groups with poor access to services and how this can be improved. This has potential, longer-term, to provide more focussed funding for local transport projects in rural areas.

431. The voluntary and community sector is beginning to play an increasing part in the delivery of transport in rural areas. The Government has taken steps to encourage innovative ways to meeting rural transport needs, for example, recognising that in many rural areas bus services with conventional buses that operate to set timetables may not be the best option, and that more flexible and cost-effective alternatives may be more suitable. This is why demand responsive transport operating on a non-commercial basis, such as community buses and dial-a-ride services, has been increasingly introduced in rural areas.

432. A Defra survey of rural residents' satisfaction with the provision of services showed that 62% of rural residents are satisfied with the frequency of local transport services, and 70% satisfied with the routes offered[265].

Community buildings

[264] The Quality and Accessibility of Services in Rural England: A Survey of the Perspectives of Disadvantaged Residents, Defra, 2005.
[265] Defra Survey of Rural Customers' Satisfaction with Services (NOP Social and Political) 2004.

433. Quality of life in rural areas will benefit from high quality local amenities such as community buildings and public spaces and from strong social capital to sustain local capacity for development. The needs of rural communities are often most effectively identified by the communities themselves. There are opportunities to build on and sustain existing community ties, capitalising on the strong traditions of civic engagement in rural areas, to close local access gaps through the co-production and community ownership of services and facilities. In this context, there are potential roles for the third sector and parish councils to build community cohesion and develop the capacity of rural communities to meet their own needs where possible.

434. Village halls and other community buildings are important to people who live in rural communities, providing a meeting place for a range of activities that can serve or involve the whole community. There are approximately 8,900 halls registered with Action with Communities in Rural England (ACRE) and thousands more in rural areas managed by, for example, churches, the Women's Institute, the Royal British Legion, and the Girl Guiding UK and Scouts Associations.

435. The challenge today for those who own and manage them is to ensure that their halls are financially sustainable and are capable of meeting the needs of their community for the future.

436. Co-location and regular space in a village hall can be used by local service providers as well as providing additional income for the village hall. It also helps customers who are less mobile and who depend upon local services. Rural community buildings have the capacity to deliver a range of functions including shops, post offices, healthcare, social events, catering, advice services and farmers' markets. Community buildings can also provide venues for education and training for all age groups within the community.

Access to cash

437. People access cash by a variety of means, but by far the most common involves a trip to a bank or building society. There is also a high level of reliance on rural post offices and other retail outlets for accessing cash, particularly amongst older people.

438. The Commission for Rural Communities' annual State of the Countryside report[266] for 2006 showed, between 2000 and 2006, an increase in availability of Automating Telling Machines (ATMs) or 'cash machines' in both urban and rural areas, with cash machines now the single most accessible service in rural areas. However, one report[267] found that almost a third or rural people reported difficulties in accessing non-charging cash machines. This issue may become a bigger concern with the closures of some post offices. The impact on disadvantaged groups such as those without cars, the elderly and young families will be greater than on more affluent and mobile groups. The Government recently consulted on proposed changes to the ways in which the post office network in England is supported through subsidy.

Housing affordability in rural England

439. The availability of affordable housing is a key issue for people living and working in rural areas. Whilst the causes and experience of a lack of affordable housing are very similar in urban and rural areas, the responses for rural communities have to be tailored to take account of, for example, the environmental qualities of the countryside, and the higher unit costs of development. Initiatives include improved

[266] The State of the Countryside 2006, Commission for Rural Communities.
[267] Brunwin et al "The Quality and Accessibility of Services in Rural England: A Survey of the Perspectives of Disadvantaged Residents."

planning systems, with the new (2006) Housing Planning Policy Statement (PPS3) including specific provisions for rural housing.

440. The desirability of rural areas as places to live (as described in section 3.1.1.3) is one outcome of their relative socio-economic stability and high quality of life. Demand for housing in rural areas, and in particular in village locations with good transport links, has consistently driven up the price of housing and development sites. At the same time, planning constraints limit the supply of new housing in these most popular areas. Local low-wage economies have not kept pace with the rise in house prices, with the consequence that much of the housing stock is now beyond the reach of many local households. There are some indications that this can affect the social and economic diversity of rural communities. In particular, the combination of higher local house prices and lower local wages is one driver of the demographic trend, which sees younger, lower income households moving out of rural areas and older, higher income households moving in.

441. The Government provides 'affordable housing', targeted at households in priority need. This is non-market housing provided to those whose needs are not met by the market. It can include social-rented and intermediate housing, for example, shared equity. There is a limited supply of affordable housing in rural areas - 13% of the housing stock in rural districts is either housing association or local authority housing, falling to 5% in villages, compared with the national average of 23%.

3.1.4.6 Cultural heritage and the built environment in villages

442. The importance of the historic built environment, and many rural buildings, structures and sites is reflected by the fact that many have been given protected status because of their special interest. It is estimated that rural areas contain 47% of England's list entries, 67% of scheduled monuments, 75% of World Heritage Sites, 68% of registered parks and gardens, and 58% of registered battlefields[268]. In a European context, England has a remarkably rich inheritance of veteran or ancient trees, and these are distinctive features of many landscapes and rural settlements. The value that the public places on rural cultural heritage and built environments is also recognised under agri-environment schemes, which include objectives such as protection of the historic environment. Heritage and the built environment is a key asset for rural tourism.

443. The built heritage needs highly skilled craftspeople for conservation and, where appropriate, sensitive modification. However, shortages of key skills in repair and maintenance are reported, and this problem is becoming increasingly common, with fewer trades people having to cover wider areas. This is especially acute in rural areas. More than two thirds of farmers, for example, report no specialist builders, stonemasons or thatchers within ten miles of their farms[269]. It is estimated that nearly 90,000 people are employed nationally to provide the skills necessary to maintain and conserve the built heritage[270].

3.1.4.7 Human potential in rural areas

444. Human capital, as demonstrated by skills, is one of five key drivers of productivity. It is increasingly recognised that the capacity of the local people is a part of this, and that skills and education are central to their ability to contribute[271]. Attaining high skill levels will continue to be important if rural areas are to fully realise their economic potential. Skills gaps as a potential barrier to the potential of rural

[268] English Heritage "Heritage Counts 2005" (English Heritage 2005).
[269] English Heritage "Heritage Counts 2005" (English Heritage 2005).
[270] Table 13, National Heritage Training Group, 'Traditional building craft skills - Assessing the need, meeting the challenge' (NHTG 2005).
[271] The Determinants of the Relative Economic Performance of England's Rural Areas' (Defra 2004).

areas has been discussed in Section 3.1.4.2 and a comparison of rural and urban qualification levels was presented in Section 3.1.1.6.

445. There is some evidence that an employment market dominated by low skills, and therefore low wage jobs, can perpetuate low levels of educational attainment in the surrounding area. This could be the case in those rural areas that are characterised by a comparative advantage in low productivity and low wage sectors, such as agriculture and tourism. Such an equilibrium needs to be addressed by both widening the range of employment opportunities and the improving skill levels in the labour market.

446. Whilst skills need in rural areas is similar to that of the national economy the delivery of education and training in rural areas can present challenges. Distance and transport links can present physical barriers to accessing education and training.

447. Small businesses, which are a significant part of the rural business stock, could face problems releasing employees for training purposes in terms of time and funding. However, rural establishments are also less likely to have training plans, dedicated training budgets and training management compared to their urban counterparts. Where training is undertaken, it tends to be more reactive than proactive, and the focus more on hard/technical skills than soft/generic skills, including management training[272]. Planning and undertaking such measures in small rural businesses would help to overcome these barriers.

Impacts of migration

448. The importance of highly skilled, economically active in-migrants to local rural employment and entrepreneurship has already been discussed in section 3.1.4.3. Labour market flexibility, through skills, is important for realising these positive labour flows.

449. As noted above, international migrant workers are important both economically and socially to rural areas. The number of migrant workers coming to rural areas has grown in the last few years, with the increase mainly attributable to migration from EU accession countries. This reflects the national trend. Exact numbers of migrant workers are not known, but in 2005 up to 80,000 worked in the East of England alone. Many rural industries such as agriculture, food processing and hospitality are heavily reliant on migrant labour. For example, it is estimated that in second stage food processing some 90% of the work force supplied by labour providers is made up by non-UK migrant workers.[273]

450. Migrant workers constitute a very diverse set of people - with different skill sets. Recent research suggests that international migrants frequently possess high levels of skills and qualifications that they are not able to offer to the labour market[274]. This may be because the sectors into which they enter the labour market confine them to working in particular types of employment, as they lack appropriate qualifications or the required language skills.

[272] Shury, J; Carter K; Smith, C; Shäfer, S: "Skills Development and Deficiencies in Rural England" (Commission for Rural Communities 2004).
[273] Secondary Processing in Food Manufacture and the Use of Gang Labour, Precision Processing for Defra, August 2005.
[274] Migration: an Economic and Social Analysis, a joint study by the Prime Minister's Strategy Unit and the Home Office, January 2001.

3.1.4.8 Local capacity for development

451. Over the last several years, there has been a shift in approach to rural policy in England, away from a sectoral basis[275] and towards a place-based approach that is, supporting the economic performance, social inclusion and environmental assets of rural localities. The following paragraphs describe some of the mechanisms that support this approach.

452. Local Strategic Partnerships (LSPs) bring together at a local level the different parts of the public sector as well as the private, business, community and voluntary sectors so that different initiatives and services support each other and work together. They operate at a level that enables strategic decisions to be taken, yet is close enough to the grassroots to allow direct community engagement. One function of an LSP can be to bring together local plans, partnerships and linkages, where possible simplifying these and reducing their number.

453. 69% of all LSPs include rural areas. Of these, many consider a range of rural issues to be 'important' or 'very important'. However, recent research has demonstrated that across the board the profile of rural issues within LSPs is mixed, which suggests that the linkages could perhaps be further developed[276],[277].

454. Local Area Agreements (LAAs) set out the priorities for a local area agreed between central government and a local area (the local authority and LSP) and other key partners at the local level. LAAs simplify some central funding, help join up public services more effectively and allow greater flexibility for local responses to local circumstances. To date, some LAAs have included rural issues among their priorities, although in general priorities have been more issue-based (e.g. access to services across a whole local area, rather than specifically among the rural population).

455. LAAs also act as a vehicle for 'pooling' central government funding, some of which is specifically aimed at supporting outcomes in rural areas. In 2007-08, this includes the Rural Social and Community Programme (RSCP), and the Aggregates Levy Sustainability Fund. Local areas may also choose to 'align' other relevant funding streams. The aim of pooling or aligning funds is to allow maximum flexibility at local level as to how outcomes are supported.

456. As mentioned elsewhere in this document, quality of life in rural areas is often relatively high, not merely in a material sense, but also in the context of social capital. Survey evidence suggests that a rural settlement location is the preferred destination of the majority. Of those people living in the countryside, 89% would prefer to continue to do so. By comparison, only 21% of people living in an inner city area would prefer to continue living there, whereas 51% would prefer to move to the countryside[278]. The British Crime Survey shows that respondents in rural areas are more likely to say that people help each other than urban respondents and are less prone to problems relating to anti-social behaviour, which has a negative affect on quality of life[279]. Similarly, the British Social Attitudes Survey 2003–4 identified a

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[275] For example, see Roberts, S. 'Key Drivers of Economic Development and Inclusion in Rural Areas' (Defra, May 2002) and, more recently, OECD 'The New Rural Paradigm: Policies and Governance' (OECD, 2006).

[276] See research (esp pp 86-87): www.communities.gov.uk/pub/5/EvaluationofLocalStrategicPartnershipsFinalReportPDF1070Kb_id1163005.pdf

[277] National Evaluation of Local Strategic Partnerships: Formative Evaluation and Action Research Programme 2002–2005 - Final Report 17 January 2006 (ODPM and DfT).

[278] State of the Countryside Report, 2001.

[279] Home Office, Research, Development and Statistics – Crime Reduction and Community Safety Group, 2004. British Crime Surveys 2001–2 to 2003–4.

higher incidence of voluntary and community activity in rural areas[280]. It has even been suggested that the 'quest for community identity and a more socially fulfilling lifestyle' is one factor driving the population shift into rural areas[281].

457. The Government's policy has been to build on and sustain these strong community ties by working through the voluntary and parish councils sectors and seeking opportunities to build the capacity of rural communities to meet their own needs where possible. The RSCP is providing an investment of £27m from 2006/07 to 2007/08 to enhance the capacity-building capability of rural communities so that they can work together to shape their own future and to help socially excluded individuals improve their life chances. However, although many rural communities display signs of strong social cohesion, in terms of trust in their neighbours and strong local identity, there are also notable levels of social isolation amongst vulnerable groups. It is, therefore, important to assess critically the extent to which strong social networks benefit or exclude those from disadvantaged groups.

458. Overall, this shift in policy to a more place-based approach has important implications for the Leader approach. The widespread move to greater community engagement on decision-making through LSPs and LAAs means that aspects of the Leader approach are already embedded across the country. In particular, it is intended to focus capacity building on ensuring effective linkages between Local Action Groups and other sub-regional partnerships.

3.1.4.9 Overall assessment of the range of information presented

459. The evidence shows that, in general, rural areas are performing well. They are often on a par with or better than, urban areas for a range of social and economic indicators. There are also many more similarities between rural and urban areas, taken as a whole, than might be expected. For example, there is no such thing as a distinctive 'rural economy' – the structure of the economy in rural and urban areas is similar in terms of the mix of businesses and employment. The outcomes that are sought are the same for rural and urban areas, and can best be achieved through mainstream government interventions. There is no reliable evidence of any systemic failure in either service delivery or public policy outcomes in rural when compared to other areas. However, there are some distinctive rural aspects to the delivery of policy outcomes.

460. Rural England is not a single, homogeneous entity – it takes many forms - from commuter belts around cities to sparsely populated areas on the coasts – and the challenges that different areas face require intelligent, targeted delivery responses.

461. The majority of rural areas are thriving, suggesting that the case for specific economic intervention in the majority of rural areas is weak. Such investment as is needed is provided by mainstream government interventions in support of the development of skills and enterprise, business formation and development, ICT take-up and tourism, for instance. However, while most rural areas are doing well, there are lagging areas where economic performance is poor. These tend to be in areas more distant from economic mass, with sparse populations and associated low densities of businesses and thin labour markets, and with a comparative advantage in low productivity activities. Here, market failures related to sparsity exist and the case for specific intervention is stronger. The socio-economic resources available through the Rural Development Programme have an important role to play. Investment will focus on specific areas with challenges related to performance, rather than the rural economy as a whole.

[280] British Social Attitudes Survey, 2003–4.
[281] Countryside Agency, Rural Services Survey, 2002.

462. Evidence also shows that diversification can help to broaden the business base of farmers and reduce their reliance on mainstream agricultural production, and will continue to be important in the context of continuing CAP reforms and world trade liberalisation. Opportunities to diversify vary, depending in particular on the entrepreneurial skills of the farmers, access to capital, the farm's location and its leisure potential. There are significant regional variations.

463. In relation to social disadvantage, the available evidence suggests that rural areas fare better than the national averages for virtually all dimensions of deprivation. Fewer rural people live in poverty, whether they are children, pensioners or people of working age. Fewer are victims of crime; proportionally more people in rural areas are employed than in urban areas. The deprivation that does exist is dispersed widely (and quite evenly) across rural England, rather than being concentrated in particular areas or sectors of the population. However, there are still significant absolute numbers of disadvantaged individuals living in rural areas – as there are in all areas. It is therefore important that mainstream policy and delivery effectively meet the needs of the most vulnerable rural residents.

464. The available evidence suggests that, in aggregate, the performance of the economy in rural areas is comparable to performance in urban areas. In general, these areas face similar challenges to urban areas, and the public interventions to address such challenges should come from the mainstream. Effectively delivered mainstream policies and programmes in support of socio-economic development will be more successful than short-term, stand-alone, rural-specific interventions.

3.1.4.10 Summary table for rural economy and quality of life

465. The following table summarises the strengths and weaknesses identified in the analysis above.

Topic	Strengths & weaknesses, including disparities and gaps		Needs
	Strengths	**Weaknesses**	
Rural economy	The economy in rural areas is no longer driven by land-based industries. As such, policy focus has shifted from a sectoral to a place-based approach The main sectors of employment in England as a whole are the same as those in Predominantly Rural areas	Economic performance in some rural areas is below average due to their characteristics, such as peripherality, sparse population or comparative advantage in low productivity industries These characteristics are also likely to result in slower future growth compared to other rural and urban areas	Effective targeting of interventions to ensure that those who could benefit the most have the capacity to take advantage of the opportunities that exist.
Employment	In general, rural areas do not experience significant barriers to employment beyond agriculture	There are skills shortages in both the land-based sector and in SMEs beyond the land-based sector in rural areas, particularly managerial skills Distance and cost may be locally identified as barriers in some rural areas	Skills training that focuses on managerial skills and business skills. Local approaches suitable to addressing potential barriers of distance and cost
Micro-Businesses	There are more businesses per head in rural areas than urban areas and a higher proportion of rural businesses are micro enterprises than in urban areas In-migrant entrepreneurs moving into rural areas and setting up businesses contribute to employment	Despite high growth aspirations, businesses in the most rural areas are the most likely to have stayed the same size	To support the creation and, in particular, the development of rural micro-businesses so that they maximise their potential. To support the development of rural social enterprises.

Topic	Strengths & weaknesses, including disparities and gaps		Needs
	Strengths	**Weaknesses**	
Farm Diversification	50% of farms in England had diversified by 2005/06 Diversified enterprises generate a significant proportion of income on many farms	Wide regional variations in uptake of farm diversification opportunities Opportunities for on-farm diversification can be limited by the availability of appropriate skills, capital investment and the farm's location.	To support and develop those businesses that have already diversified to ensure that they realise their full potential. To provide the appropriate information, support and advice to allow those farm businesses that haven't diversified, and are interested, to take advantage of the business development potential of diversification. To develop the necessary skills and culture to promote entrepreneurial diversification to maximise the potential returns to farm businesses and target and develop niche markets.
Tourism	Tourism income already makes a strong contribution to rural areas in England. Agriculture makes an important contribution to tourism, through landscapes, diversification that increases tourism services and through regional and local food.	The development of sustainable rural tourism is a priority, for example, minimising the impact of visitor numbers in areas of designation land of national importance as well as impacts in fragile environments, according to the regional context. In some regions, potential for specific improvement to rural tourism businesses has been identified, such as the use of ICT. There is scope for encouraging collaboration between regional and local food producers and tourism businesses, as regionally identified.	Encourage sustainable rural tourism to limit environmental impacts from visitors on the environment or built heritage Encourage collaboration between regional and local food producers and tourism businesses to support local rural economic benefits from tourism Increase economic contribution of tourism businesses to local rural areas through improvements such as increased use of ICT
Access to Services	The issues faced on the provision of services by the majority of rural dwellers in England are, in essence, the same as those faced by those living in the rest of the country Outcomes in rural areas tend to be as good (and are often better) than the national picture	Geographical access to services is the exception to the consistently better performance of rural areas on service delivery	Support locally appropriate service delivery solutions in response to evidence of local needs.

Topic	Strengths & weaknesses, including disparities and gaps		Needs
	Strengths	Weaknesses	
ICT	99.8% of UK households have access to some form of broadband technology	Rural businesses adopt ICT significantly more slowly than their urban peers The generally smaller rural employers may lag behind on internet presence and use of new technologies, unless assistance is offered. Broadband speed can be much lower in rural areas, which could affect businesses decisions as to where to locate.	Training and facilitation for the adoption of ICT by micro businesses and SMEs. Limited support for addressing broadband 'not spots'.
Infrastructure - transport	The infrastructure of rural England is typically robust and well able to meet the needs of most rural residents Local rural shops are more important for certain groups such as older and disabled people and migrant workers, due to mobility challenges, and act as centres for social contact In all types of rural settlement more than 75% of households have access to one or more car or van and 55% of households in rural areas are within 10 minutes walk of an hourly or more frequent bus service	Social trends of increasing car-dependence and growing centralisation of services delivered by the private sector leading to a steady decline of some service outlets in rural areas Significant minority of the rural population without access to a car.	Government supports a wide range of different public transport services in rural areas, including for older people and local transport authority accessibility strategies
Infrastructure – Community Buildings	Community buildings are important for rural communities, and particularly for less mobile customers where services are co-located in community buildings	Community buildings need to be managed to ensure they remain financially sustainable and capable of meeting the needs of the community in future	Funding to upgrade community buildings where identified as a local priority Fostering social enterprise approaches to service delivery There are opportunities to close local access gaps through the co-production and community ownership of services and facilities.
Infrastructure - housing	Rural areas are a popular place to live. This drives up the price of rural housing	There is a limited supply of affordable housing in rural areas compared to the national average. Greater need to protect the natural environment	Increased stock of affordable housing will be a priority for national funding and for local capacity building.

		affects the ability for new build.	

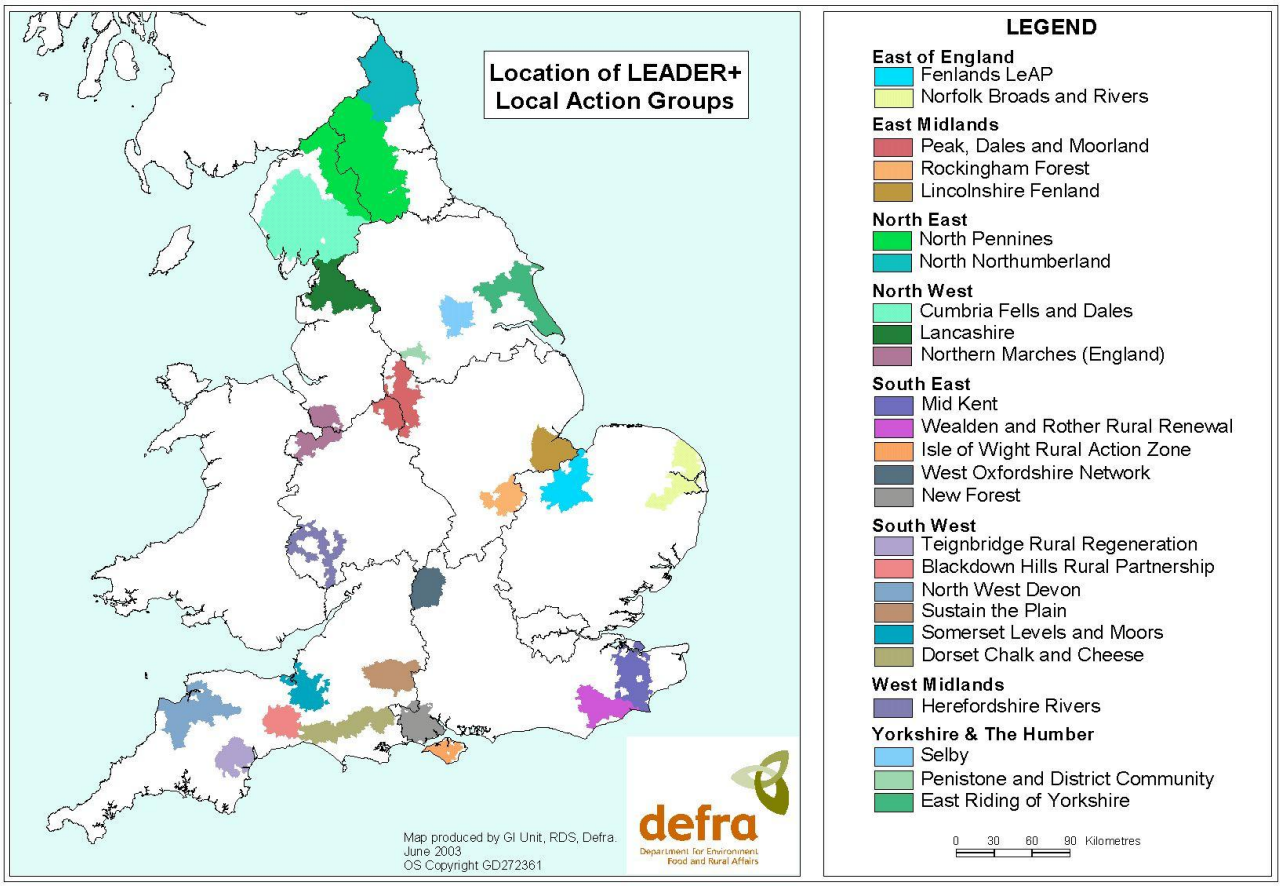
Topic	Strengths & weaknesses, including disparities and gaps		Needs
	Strengths	**Weaknesses**	
Heritage	Rural areas contain nearly half of England's listed sites The cultural heritage and built environment contribute to rural tourism	Traditional artisan skills are needed for repair and maintenance of built heritage	Provide training for traditional artisan skills where there is not currently any mainstream provision and this need has been locally identified. Provide funding for the maintenance of locally important rural cultural heritage and the built environment Domestic funding is available for maintaining the cultural heritage of England, including that in rural areas, for example, through English Heritage.
Training and Skills	Qualification levels in rural areas in aggregate compare favourably with those in urban areas	Rural areas with comparative advantage in low productivity sectors could experience a local low wage- low skill equilibrium SMEs, including farms, are less likely to have training plans, dedicated training budgets and training management.	Targeted and innovative delivery mechanisms for training and increasing skill levels in rural areas that don't duplicate mainstream provision. Facilitate development of planning for training for rural SMEs Capacity building to implement local strategies strong social capital to sustain local capacity for development.

3.1.5 Leader

3.1.5.1 Coverage during the 2000-2006 programming period

466. In the programming period 2000-2006, there were 25 LEADER+ local action groups in England. The total population covered by local action groups was 1.87m (compared with 49.1m population of England) and the groups covered a land area of 30,676 square kilometres (compared with England's total land area of 133,037 square kilometres and the total rural land area of 114,014 square kilometres using the 2004 rural-urban definition.). There were no nationally financed groups run according to LEADER principles in this period.

Figure 3-43 – Location of LEADER+ Local Action Groups



467. Figure 3-43 above shows the location and area coverage of current Local Action Groups (LAGs) in England. Each region had at least one but there was considerable variation between regions in terms of area covered by LAGs and actual numbers. The North West and North East had a relatively high proportion of area covered while the South West and South East had higher concentrations in terms of actual numbers of LAGs in comparison to other areas. In contrast, the West Midlands and East of England had both low actual numbers of LAGs as well as area coverage.

468. In 2005, Defra commissioned a consortium, led by the Rural Development Company in partnership with Fraser Associates and the Countryside and Community Research Unit of the University of Gloucester, to provide an evidence base for the

mainstreaming of the LEADER method in England[282]. The main strengths and weaknesses as identified in the report are set out below.

469. Specific features of the approach – in particular, the area-based approach and local partnership were identified as strengths. 80% of LAGs considered the area based approach to be either essential or very important in making an effective use of local resources. This was a view supported in the main by the regional stakeholder consultees. The importance of an area-based bottom-up approach in terms of creating a sense of identity and creating confidence in communities to influence the future development of their areas was highlighted. The report suggests a real sense of focus and coherence has been brought about by the area-based approach, which in turn leads to broad representation on partnerships. By bringing together these broad partnerships, a co-ordinated approach to development in an area addressing need and opportunity across social, environmental and economic issues can be achieved.

470. The report notes that the breadth of approaches adopted under the 2000-2006 Programme reveals how successfully the approach can be used to tailor responses to locally distinct issues. The partnership approach was seen as providing the fundamental mechanism, which networks the programme to the community underpinning cross community engagement, relevance and involvement. Successful partnerships were seen as a strong basis for informed decision making reinforcing local credibility; they lever in involvement and provide a basis for building wider partnership and trust. This brings local knowledge, expertise and resources to bear in identifying local priorities, opportunities and needs and developing and implementing distinctive local approaches. This networking and engagement can contribute both to strategy development and planning and to programme delivery.

471. The mainstreaming report also looked at the nature of projects supported by LEADER+ LAGs. Although a wide range of projects were supported across the country, five sectors – rural services, community training, community facilities, agriculture and tourism – collectively account for nearly two thirds of the total LEADER+ contribution. At the opposite end of the spectrum, low levels of resource have supported activities relating to the forest/woodland, manufacturing and childcare sectors. However, in individual LAGs support tends to be heavily weighted towards a much smaller number of sectors, suggesting that most LAGs are attempting to target resources towards issues specific to their areas or within their themes.

472. A number of weaknesses were also identified in the mainstreaming report. These mainly focused on the application of the LEADER model, in particular highlighting the variable understanding of the LEADER principles and their differing application between LAGs and between regions. More concerning were the findings that there appeared to be a lack of knowledge or awareness of the wider rural development context, with a considerable inward focus. Experience from the LEADER+ Programme shows that resource devoted to capacity building has taken up a very small proportion of budgets, at around 2%. The mainstreaming report raised concerns that this was being drawn towards mitigating administrative burdens for project applicants rather than addressing issues concerned with awareness of the wider rural development context or strategic complementarity.

473. The implementation of inter-territorial and transnational projects was a relative weakness in the LEADER+ Programme and has not been seen as a priority by LAGs. Only 40% of English LAGs considered co-operation of either form to be an important feature of LEADER in their area with the balance seeing it to be of moderate or little importance. A large proportion saw this activity as in some way secondary, and

[282] An Evidence Base for Mainstreaming LEADER in England, The Rural Development Company in association with Fraser Associates and the University of Gloucester, June 2005

others saw it merely as a contractual obligation. There was a clear view that communities saw the potential for benefits arising through such activity. The importance that communities place on this may be governed however by a lack of awareness of the potential and the limited capacity that they have to initiate and undertake activity in this area. The aspiration of 10% of the LEADER+ Programme to be spent on co-operation as set out in the England LEADER+ Programme document and the reality of somewhere nearer 4-5% is significant.

474. In summary, the evidence from section 3.1.4.8 (local capacity for development) and that set out above has informed how the LEADER approach will operate in England. In particular, section 3.1.4.8 set out other relevant interventions especially as far as capacity building and community engagement in rural areas is concerned. These aspects of the LEADER approach are a mainstream element of rural policy. The evidence notes a need for greater linkages between sub-regional partnerships and more local ones, which include LAG. There is a particular need for LAG to build up their knowledge of the wider rural development context and to develop strategic complementarity. The co-operation measures within the 2000 - 2006 programme have had limited success and will need to be viewed more realistically in RDPE. The partnership and area-based aspects of the approach have been seen as particularly successful and have led to real local tailoring specific to very localised issues.

3.1.5.2 Summary table for Leader

475. The following table highlights some of the strengths and weaknesses of the Leader approach identified in the analysis above.

Strengths & weaknesses, including disparities and gaps		**Needs**
Strengths	**Weaknesses**	
Existing infrastructure of Leader+ groups with knowledge and expertise in each region	Geographical distribution biased to North and west and absolute coverage relatively low (see Figure 3-43 above)	Capacity building to support expansion in geographical and absolute coverage of Leader.
Evidence of current local action groups successfully tailoring interventions to address very localised issues	Lack of knowledge or awareness of the wider rural development context with a considerable inward focus in current local action groups.	Focused capacity building on developing Local Action Groups capability of thinking strategically-particularly strategic complimentarity.
	Low levels of implementation in terms of co-operation activity.	Need for more focused approach to co-operation including support mechanism for groups and a more realistic target.

3.2 The strategy chosen to meet strengths and weaknesses

476. The background against which the Government has chosen its strategy to meet the strengths and weaknesses of rural areas in England is one in which policy is well established and set out in a number of strategic documents including, for example:

- Strategy for Sustainable Farming and Food;
- Rural Strategy 2004;
- Vision for the Common Agricultural Policy published by Defra and HM Treasury in December 2005; and
- the high-level analysis of long-term opportunities and challenges for the UK economy published by HM Treasury in November 2006.

477. These strategic documents have all highlighted the importance of land managers to wider rural development, as providers of environmental, and other, public goods that underpin sustainable economic development and quality of life. In addition, there is an increasing focus, at the domestic and international level, on climate change. Increasing pressure on natural resources and the global environment has been identified as one of the challenges requiring action by governments, businesses and individuals to maintain prosperity and improve environmental care.

478. England's chosen strategy for the rural development programme responds to that challenge. In particular, it is based on recognition of the need for healthy functioning of the environment to allow economies to grow and the fact that many of the benefits that people derive from this do not carry a price in the market, which would enable them to be realised without some form of government intervention. Many aspects of the environment are currently improving in England, such as the quality of air and water. The analysis has shown that agri-environment schemes under the England Rural Development Programme 2000-2006 have played in important role in these positive developments. However, the environment in England also faces further pressure as a result of population and economic growth, and the impact of climate change. In addition, prospective further CAP reform is likely to increase the need for agri-environment measures, both to ensure that previous positive contributions are maintained and to help enhance ecosystem resilience in the future.

479. As the evidence set out in Section 3.1 has demonstrated, the needs to be addressed in respect of the environment and the countryside are very significant, and far exceed the resources available to address them, apart from those provided from the Rural Development Regulation. This is therefore the area where the maximum community value added can be obtained from the programme, and accordingly the strategy focuses the maximum possible level of resources – nearly 80% of the EAFRD budget – on Axis 2. This means that EAFRD funding will be close to the minimum level of 10% for Axes 1 and 3 respectively, which is consistent with the position that there are other programmes, which seek to meet the needs of these axes, which are often better addressed through mainstream funding.

480. This section describes the strategy in response to the needs for each of the priority areas for the regulation, and the hierarchy of measures to be used to address them.

3.2.1.1 The Agricultural, Forestry and Food sectors

481. The analysis of the strengths and weaknesses set out in Section 3.1 identified a range of issues facing the agricultural, forestry and food sectors in England.

482. While productivity in England's agricultural sector has increased in recent years, evidence shows that England has gradually fallen further behind some of its key competitors. The challenge therefore is for the industry to increase its productivity and improve its competitive position.

483. In addition, while the frontier of productive efficiency in farming is being pushed out by technical change, there is considerable variation between the performance of individual farms across all agricultural sectors, and evidence suggests that the average farm is falling behind the level of the most efficient.

484. Levels of productivity feed through to farm income levels. In England, farm incomes are continuing to recover from an extremely low point in 2000, though remain vulnerable to external factors such as climate change, exchange rate fluctuations, commodity and input price volatility, and animal disease outbreaks. However, total farm household incomes are significantly higher and more stable, and can help mitigate any volatility caused by external factors.

485. As direct subsidy payments are decoupled from production and there is pressure for further trade liberalisation, it is crucial that farmers have the ability to adapt to a market-driven operating environment.

486. Evidence suggests that skill levels in the agriculture and forestry sectors are low relative to the rest of the economy, and there are significant barriers to the take up of mainstream training and advice packages, coupled with a lack of awareness of the benefits they bring to small businesses. This reduces the industries' capacity to respond and adapt to a more market-oriented sector and meet future challenges, notably in respect of engaging in innovative value-added activities or in seeking out new markets.

487. Knowledge transfer has an important role to play in enabling farming and other small rural businesses to make the most of new technologies, whilst at the same time ensuring compliance with regulatory requirements.

488. There is a need to target investment to improve the overall performance of the sector in response to all these factors and thus increase the sector's competitiveness. This can be achieved through encouraging a move away from dependence on subsidy, and towards a more professional business-focussed approach, based on greater awareness of market opportunities, including for diversified enterprises, the benefits of collaboration and co-operation, and the acquisition of skills needed to exploit new opportunities.

489. Specifically, this involves:

- improving both technical and business skill levels through specialist advice and training, and helping farmers adapt to shifts in the policy framework e.g. responding to CAP reform, or changes to EU animal health and welfare legislation;
- encouraging greater collaboration and co-operation both between farmers themselves and between farmers and the rest of the food chain;
- promoting benchmarking activity; and
- assisting farmers to diversify into new markets (such as renewable energy), and improving their ability to respond to consumer demands.

490. The share that farmers receive of total retail spending on food has been declining over recent years. Increased processing of food between farm and fork, and a consequent decline in the farm gate's share of the retail price are a normal an expected part of the process of economic development. Nevertheless, adding value to their produce is one way farmers can compete in a more liberalised, market oriented environment. In doing so they will increase their share of food market and thus economically viable and sustainable businesses in the long term.

491. There has also been a decline in England's food exports, while at the same time imports have risen. Levels of overseas trade and self-sufficiency are a broad indicator, not drivers, of the economic position of the farming and food industry, and its ability to supply the produce that consumers demand.

492. There is a clear need for land managers to add more value to their produce, develop their capacity and skills to meet market demands and secure a viable future for their business, specifically through:

- innovation and the use of knowledge transfer mechanisms;
- adding value to products before they leave the farm gate;
- direct retailing activities;
- the establishment of diversified enterprises;
- collaboration and co-operation to drive down costs and improve marketing of products,
- the exploitation of new food and non-food market opportunities to meet the expanding domestic market for quality, regional, organic, and seasonal food, and for products produced to higher environmental and animal welfare standards, and for energy crops;
- making better use of existing skills and acquiring new skills to improve efficiency and competitiveness.

493. Within the forestry sector there is a need to focus on increasing active forest management through:

- exploiting demand for woodfuel;
- adding value to forestry products;
- supporting an improvement in the practical and management skills of the forestry workforce; and
- ensuring that there is an appropriate balance between economic and environmental management of this important resource.

Efficient use of natural resources

494. Environmental impacts occur throughout the food chain, but there is now an increasing emphasis on breaking the link between economic growth and negative environmental impacts. The need to address environmental issues, including climate change, will require a major shift towards cleaner more resource-efficient production processes which reduce environmental impacts and at the same time strengthen competitiveness. Training and knowledge transfer in environmentally sustainable production are likely to be important in this respect. Farmers will need to have access to advice to help them make the decisions that maximise both environmental benefit, and profitability, for example more re-cycling of organic manures, less use of artificial fertilisers, and bio-pesticide control. For the food chain more widely, this will include impacts in food manufacture and distribution.

495. The challenge is to encourage production and consumption patterns of food with lower environmental impacts, which creates opportunities for less resource use, pollution and waste throughout the entire food chain, and consequently increased competitiveness for farming and food businesses. This can be achieved through:

- raising awareness of the economic and environmental opportunities and benefits of resource efficient techniques;
- making use of innovative technology (e.g. anaerobic digestion);
- access to advice on resource efficiency;

- helping farmers and land managers understand the increasing need to protect water and other natural resources, and how they can adapt to and help mitigate climate change.

496. In the forestry sector there is considerable scope for bringing more woodland into active management, both to encourage the production of renewable raw materials, including energy from wood fuel, and deliver valuable environmental benefits.

Summary of the mechanisms available to address the needs

497. There are a number of funding sources available at the local level for rural businesses and communities, including those in the agricultural, food and forestry sectors as described in the section on the rural economy and quality of life below.

498. In addition, there are numerous publicly funded activities aimed specifically at meeting the development needs of the agricultural, food and forestry sectors, as identified above. The key interventions are made under the Government's Strategy for Sustainable Farming and Food and include:

- **Restructuring the five statutory horticulture and agriculture levy boards** into one overarching levy board with subsidiary, sectoral companies, thus allowing for efficiencies and commonalities to be identified, in order to help the sectors involved. For example, the new structure will facilitate exchange of information across the sectors on issues of common interest such as water and waste.

- In addition to that available under the Agriculture Development Scheme, the Government has provided a significant amount of dedicated funding to the **Food Chain Centre** and the **Red Meat and Cereals Industry Forums, and English Farming and Food Partnerships,** as a transitional measure to help the industry adapt to a more market-orientated future.

- Implementation of the updated **Non- Food Crops Strategy Action Plan**[283], which aims to drive forward the bio-based economy through research, dissemination of technology and knowledge, and building supply chains from agriculture to industry.

- Establishment of the **Biomass Strategy**[284] with the objective of addressing barriers to the production of biomass energy, and stimulating the development of the sector**.**

- Supporting the **quality regional food** sector through a five year £5 million programme (which began in 2003/04) with the specific objective of creating a flourishing high quality regional food sector.

- Working with stakeholders to progress the **Action Plan to develop organic food and farming in England,** this aims to create a sustainable and competitive organic farming and food sector.

- Support for farmers to take advantage of **financial risk management products** to enable them to be more resilient to increased price volatility, and to increase uptake of the business **benchmarking** software that is available through the Whole Farm Approach**.**

[283] www.defra.gov.uk/farm/acu/nonfood/nonfood.htm
[284] http://www.defra.gov.uk/environment/climatechange/index.htm

- Helping farmers and growers under the **Public Sector Food Procurement Initiative (PSFPI)** to develop the capabilities and capacity necessary to meet the public sector's requirements for food.

- **Improving the regulation of farming**, by making it more effective and efficient for farmers, thus helping them to reduce costs and increase competitiveness.

- **The Whole Farm Approach (WFA)** is a web-based tool, which helps farmers to identify where there is a regulatory requirement and the actions necessary to fulfil that requirement, supported by targeted help and guidance.

- Developing a **business competence framework** for the environmental and land-based sectors to provide a clear understanding of what skills an individual will require to work in particular industries and in particular jobs within those industries.

- Supporting the **Fresh Start** initiative, this aims to encourage new people into the farming industry with the appropriate skills to succeed in a market-driven environment.

The role the Programme can play in meeting the needs of the Agricultural, Forestry and Food sectors

499. Important aims for the Programming period will be to help farmers adapt to the demands of the market as direct subsidy payments are decoupled from production, to address climate change, and to yield benefits to society through, for example, higher animal health and welfare standards, an increasing emphasis on resource protection, and the development of new markets and products. The priorities for action will include knowledge transfer, modernisation, innovation and quality in the food chain.

500. Within the forestry sector, there will be a focus on increasing active forest management through exploiting demand for woodfuel, supporting an improvement in the practical and management skills of the forestry workforce, and ensuring that there is an appropriate balance between economic and environmental management of this important resource.

Rural Development Programme measures

501. Under Axis 1, the Rural Development Programme for England will focus on helping to build profitable, innovative and competitive farming, food and forestry sectors that meet the needs of consumers and make a net positive contribution to the environment. The analysis in Section 3.1.2 concluded that in each of the areas identified as essential to restructuring and modernisation of the agricultural, food and forestry sectors, training and knowledge transfer can play a significant role. Support for training and knowledge transfer and increased innovation, value-add, collaboration and entrepreneurship will therefore form a substantial part of the budget for expenditure under Axis 1 of the programme. This will complement existing activities under the Sustainable Farming and Food Strategy.

502. The English livestock industry is going through a difficult period, with much of the difficulty due to the effects of animal disease outbreaks and the cost and competitiveness effects of measures to address those outbreaks, and prevent their recurrence. In addition, many of the environmental challenges already described will bite particularly hard on the livestock sector. There will therefore be a particular focus in Axis 1 on effective support for the sectors concerned, consistent with the wider goals of this programme.

503. Given the important contribution agriculture can play in tackling climate change, Axis 1 funding will also support establishment grants for energy crops, under the Energy Crops Scheme. This Scheme will contribute to both the EU Biomass Action Plan and the Government's Biomass Strategy[285]. We expect the most commonly used Axis 1 measures across all regions in England to be as follows, though the balance of measures is likely to vary between the English regions to reflect different needs and priorities:

- 121 – 20.b.i (modernisation of agricultural holdings)

504. This will be used to improve the economic performance of holdings through better use of production factors, as well as improving the environmental, energy efficiency, hygiene and animal welfare status of the holding. It will also be used to support establishment grants for energy crops, under the national Energy Crops Scheme.

- 123 - 20.b.iii (adding value to products);

505. This will be used to support farmers and rural businesses respond to consumer demand and exploit new market opportunities using innovative techniques and processes.

- 111 - 20.a.i (vocational training);

506. This will support the transition to a more professional, market oriented industry, which, at the same time, understands the need to protect the natural resources which underpin it, and which uses resource efficiency to further drive forward increases in competitiveness.

- 124 - 20.b.iv (cooperation)

507. The farming industry is made up of many small individual businesses, which means that to reap the benefits of efficiencies of scale and collective marketing, they must co-operate and collaborate. This measure will build on the work already established under the previous Programme in this area. It will ensure that the industry benefits from established tools and techniques to encourage cooperative and collaborative behaviour.

508. Apart from the exceptions identified below, the remaining measures under Axis 1 will be available to regions to use if appropriate. For example, a region such as the North West may want to make greater use of 20.b.ii - economic value of forests, because forestry is a relatively strong component of their regional economy. A region such as the South East of England may want to make greater use of 20.b.v - infrastructure, to address particular issues related to management of water. Whilst not excluded, we expect these remaining measures to be lower in the overall hierarchy.

Measures to be excluded

509. However, there are some measures, which the evidence base suggests are not appropriate for use in the England context: 20.a.ii, 20.a.iii, 20.c.i, 20.c.ii and 20.c.iii. Regions will not be using these measures. The rationale for these exclusions is set out in Chapter 5.

3.2.1.2 Environment and Land Management

510. The analysis of the evidence base in Section 3.1.3 illustrates specific problems in relation to biodiversity, resource protection, landscape, and smaller scale, but still significant problems, in relation to land marginalisation and provision of access. Agriculture covers over 70% of England's land area and is therefore a major influence

[285] http://www.defra.gov.uk/environment/climatechange/index.htm

on the environment – it covers many important habitats while its contribution to diffuse pollution and greenhouse gas emissions is significant. While forestry only covers a small proportion of land in England, it is an important influence on various environmental factors including biodiversity, landscape, climate change, water and soil quality.

511. It has been demonstrated that expenditure under the previous Programme has helped to slow, and in some cases reverse, environmental decline. Overall trends in the decline in farmland habitats and farmland species have tended to slow since the introduction of agri-environment schemes, and other changes in agriculture policy, since the early 1990s. Carefully targeted action under this axis can be very effective. For example, there has, been an 83% increase in cirl bunting abundance in areas targeted by agri-environment schemes for creation of cereal field margins and retention of stubble, compared to a population increase of just 2% elsewhere. However, significant expenditure is required in the future to safeguard investments already made and to continue to protect and enhance the environment; as well as address new environmental issues.

512. The main rationale for government intervention in this area is market failure in the provision of public goods. Many features of agricultural activity entail external costs and benefits that are not reflected in either farmers' costs or revenues or in the farmers' own non-market utility. It has been estimated[286] that the environmental services provided by agriculture are worth £0.9billion annually. However, the market fails to deliver the socially desirable level of those goods. A lack of information, particularly concerning complex environmental components such as biodiversity and landscape quality, makes it still less likely, that private market decisions will result in socially optimal actions. Government intervention to increase the provision of these external benefits and decrease the external costs is therefore justified. Generally, the requirements of cross-compliance ensure that negative environmental effects are reduced; however, government expenditure is necessary to ensure that the provision of public goods is rewarded.

Environmental Benefits

513. The natural and cultural environment has an inherent intrinsic value, which is difficult to monetarise. There are however both direct and indirect benefits that result from its conservation. Although most of the direct benefits, such as improved biodiversity and protected and improved landscape do not have a monetary value, they may support economic activity (see below). Contingent valuation studies show that many such environmental assets are highly valued by the public[287]. Evaluations of previous expenditure on the environmental impacts of land management[288],[289],[290] have concluded that such expenditure generated significant environmental benefits and were good value for money.

[286] Environment Agency (2002), Agriculture and Natural Resources: Benefits, Costs and Potential Solutions

[287] Economic Valuation of Environmental Impacts in the Severely Disadvantaged Areas –report for Defra by the Economics for the Environment Consultancy Ltd. (eftec). (2005)

[288] Defra (2002) Economic evaluation of agri-environment schemes Centre for Rural Economics Research, Department of Land Economy, University of Cambridge and CJC Consulting. Defra (2002) Economic Evaluation of the Organic Farming Scheme Centre for Rural Economics Research Department of Land Economy University of Cambridge

[289] Defra (2003) Review of agri-environment schemes – monitoring information and R&D results Ecoscope Applied Ecologists report, Ref RMP/1596.

[290] Boatman, N, Deppe, C, Garthwaite, D, Gregory, S and Jones, N E (2004) Evaluation of the pilot entry level scheme, final report Central Science Laboratory, Sand Hutton, York.

Secondary Benefits

514. In addition, there are secondary and indirect benefits from the conservation of the natural and cultural environment. These include increased employment - a survey carried out for the National Trust in the North East estimated that agri-environment schemes supported 100 jobs and helped to sustain a further 1,800 other farming jobs in the region. Research[291] also suggests that tourism and recreation directly support 320,000 FTE jobs in England, 192,000 of which are dependent on a high quality natural environment. In addition, a well-managed landscape provides an attractive environment for rural investment and is a source of wider economic opportunity in rural areas. It is logical that expenditure to maintain and improve that environment should result in maintained and improved economic returns; however, data are not available directly relating improvement in the rural environment with increased economic activity.

515. Investments in land management also contribute to supporting ecosystem services - environmental goods and services that are provided "for free" by properly functioning eco-systems. These include a stable climate, natural resources such as water, air and soil, etc. The economy is hugely dependent on such services but they are often taken for granted.

Summary of the mechanisms available to address the needs

516. It has already been concluded that market mechanisms alone are not effective in meeting the environmental needs identified in the analysis of the strengths and weaknesses. In addition, there are few alternative sources of funding in England for aspects of this activity:

- the Heritage Lottery Fund (HLF) and Aggregates Levy Sustainability Fund (ALSF) provide opportunities for limited capital funding. They are typically small scale (e.g. the ALSF for this sphere of activity totals about £5m per year), highly targeted and do not provide funding for ongoing management;
- the Voluntary and Community Sector (VCS) and Non-Governmental Organisations (NGOs) typically provide capital funding for land purchase/restoration but are then dependent on support from agri-environment schemes for ongoing management of these sites;
- EU LIFE funding provides a source for innovative pilot and developmental work, but again is limited in the scope for ongoing management activities;
- there is a limited amount of state aid through the Wildlife Enhancement Scheme (WES); however, this is restricted to sites that are not eligible for co-financing under the RDPE.

The role the Programme can play in meeting the needs of the environment and land management

517. The Rural Development Programme is the only source of funding for addressing and enhancing the environmental impacts of land management that is of sufficient scale to begin to address the level of need identified. This is why Axis 2 measures, and agri-environment schemes in particular, are fundamental to the strategy chosen and why England has chosen to allocate the maximum amount of funding under the regulation to this axis.

Rural Development Programme measures

[291] GFA-Race/GHK (2004) "Revealing the value of the natural environment in England" GFA-Race, GHK, Cirencester and Plymouth.

518. The focus of the Rural Development Programme in England will be on improving the environment and countryside. Over 70% of the land in England is in agricultural use and that there is a relatively low proportion of woodland. The agri-environment measure is therefore the one that is able to make the biggest difference to the way land in England is managed to produce environmental benefits. This measure will therefore receive the majority of expenditure under Axis 2 of the England Programme, and other measures will complement this, as follows:

- 214 – 36.a.iv (agri-environment payments)

519. The agri-environment measure is delivered in England through the Environmental Stewardship scheme, which opened in 2005. Environmental Stewardship is a multiple objective scheme that addresses a range of environmental issues in an integrated way, across whole farms.

- 216 – 36.a.vi (non-productive investments)

520. Environmental Stewardship uses the non-productive investment measure to finance the capital expenditure required to complement the annual management payments. This is, however, a relatively small proportion of total scheme expenditure.

- 212 - 36.a.ii (natural handicaps other than mountain areas)

521. Given the importance of the uplands environment, use will also be made of the Natural Handicap measure, though the financial weight given to this measure will be significantly lower than that allocated to the agri-environment measure.

- 221, 223, 225, 227 (36.b.i, 36.b.iii, 36.b.v, 36.b.vii)

522. Targeting the sustainable use of forestry land is another important objective of the Programme, but given the relatively small size of the woodland and forestry areas in England, these measures will be lower in the hierarchy of measures selected for the Programme relative to measures targeting the sustainable use of agricultural land.

Measures to be excluded

523. There are some Axis 2 measures that the evidence base suggests are not appropriate for use in the England context: 36a.i, 36.a.iii, 36.b.iv and 36.a.v, 36b.ii, and 36b.vi. The rationale for these exclusions is set out in Chapter 5.

3.2.1.3 Rural Economy and Quality of Life

524. The analysis of strengths and weaknesses in Section 3.1 confirmed that the quality of life in rural areas in England is generally high when compared with most urban areas. Rural infrastructure and the provision of services also perform better against key benchmarks of success. The performance of the economy in rural areas is generally comparable to performance in urban areas. However, there are rural areas where economic performance is well below average and prospects for growth are more limited, owing to inherent characteristics. These lagging areas tend to be more distant from economic mass, with sparse populations and associated low densities of businesses and thin labour markets, and with a comparative advantage in low productivity activities. Here, market failures related to sparsity exist and there is a particular case for specific interventions.

525. There is evidence that an employment market dominated by low skill, low wage jobs perpetuates low levels of educational attainment in the surrounding area. This affects those rural areas that are characterised by a comparative advantage in sectors such as agriculture and tourism. This needs to be addressed by widening the range of employment opportunities and improving skills.

526. Evidence suggests that most businesses in rural areas are likely to have stayed the same size, so there is an ongoing need to support the development of small rural businesses, including social enterprises, to help them maximise their potential. Evidence shows that farm diversification can help to broaden the business base of farmers and reduce their reliance on mainstream agricultural production and will continue to be important in the context of continuing CAP reforms and world trade liberalisation. Opportunities to diversify vary, depending in particular on the entrepreneurial skills of farmers, access to capital, and a farm's location and its leisure potential. There are significant regional variations.

527. Tourism is an important sector in the economy in rural areas. Opportunities to develop sustainable tourism vary across England, according to the differing natural and cultural heritage of the different localities. The regional context and priorities are important for identifying key activities.

528. The infrastructure of rural England is typically robust and well able to meet the needs of most rural residents. The majority of rural areas are relatively prosperous. However, that prosperity is not shared by all people living in rural areas and the most disadvantaged residents generally experience the most difficulty in accessing the services available to them. Furthermore, in terms of absolute numbers, there are a significant number of disadvantaged individuals living in rural areas. It is, however, key to the Government's approach that, generally, mainstream policy and delivery should, and do, effectively meet the needs of the most vulnerable rural residents.

Summary of the mechanisms available to address the needs

529. There are a number of funding sources at the regional and local level available to rural[292] businesses and communities, including those in the agricultural, food and forestry sectors. The predominant ones are:

- EU structural and cohesion funds (European Regional Development Fund (ERDF), and European Social Fund (ESF)). These represent approximately £1.36 billion per year for England as a whole;
- The Skills Funding Agency which invests £4 billion per year in colleges and training organisations to fund training for adults in England;
- Local Government Revenue Support Grant, consisting of un-ringfenced funding for services including social services, education, fire and police, environment, protection and cultural services; also through Local Area Agreements.

530. As previous sections have shown, the economy in rural and urban areas in England operates in very similar ways, and therefore the Government does not have a large number of mechanisms designed exclusively for rural businesses. In general, effectively delivered mainstream policies and programmes in support of economic development will be more successful than stand-alone rural interventions. This is in line with the Government's place-based approach, which operates cross-sectorally and at local, regional and national levels, acknowledging that rural and urban areas face many of the same challenges but also that some rural areas have different characteristics, which present specific challenges.

531. The national policy framework is designed to give regional, sub-regional and local areas the flexibility to respond to local circumstances and needs. The nature and extent of the challenges vary considerably from one location to another, so a flexible approach driven by the local area delivers the most effective responses.

532. The Government aims to ensure that those support mechanisms and funding streams, which are available to all businesses and communities, rural and urban, are

[292] These mechanisms are not exclusive to rural areas, and are also available in urban areas.

deployed in such a way that rural businesses and communities are not hindered from accessing them.

The role the Programme can play in addressing issues related to the diversification of the rural economy and quality of life in rural areas

533. There is extensive mainstream provision available to address many of the issues identified in the analysis of strengths and weaknesses. Regional differences mean that identifying at a national level precisely what rural development programme funds and mainstream funding should cover can be difficult, so the regional and local levels are appropriate to ensure the best fit from the available mechanisms. Working at the regional level will help to make sure funding can be considered holistically and any duplication between the available mechanisms is minimised. The socio-economic resources available through the Rural Development Programme will focus heavily on specific policy areas. There is a specific role for the Rural Development Programme in the following areas:

- facilitating farm diversification as market distorting mechanisms, such as CAP, are changed/removed, particularly cooperative activity which benefits a number of businesses and other economic actors in rural areas;
- supporting the creation and, particularly, development of micro-enterprises, including social enterprises;
- developing sustainable rural tourism, according to regional and local priorities;
- supporting small-scale projects addressing local priorities for local services, renewal and development, and community capacity.

Rural Development Programme measures

534. The Rural Development Programme in England will be used to enhance opportunity in rural areas in a way that harnesses and builds upon environmental quality. The approach in England to Axis 3 is focused on the measures that will enhance economic development. Services in England are of a high standard. Issues related to services will therefore only be addressed where there are genuine service access challenges.

535. We expect the most commonly used measures across all regions in England to be as follows:

- 311 – 52.a.i (diversification into non-agricultural activities)

536. This will be used to assist diversified farm businesses to ensure they realise the full potential of their diversified activity, and to increase interest in diversification in other farm businesses.

- 312 – 52.a.ii (creation and development of micro-enterprises)

537. Support for the creation and development of micro-businesses will help enable rural entrepreneurs to maximise their potential. This measure will provide support for social and community owned rural enterprises and the provision of small-scale local services where there are genuine gaps in mainstream provision.

- 323 – 52.b.iii (conservation and upgrading of the rural heritage)

538. This will be used to enhance the landscape benefits delivered through Environmental Stewardship. The Higher Level of the scheme will support the renovation and maintenance of historic farm buildings that form an integral part of the

landscape and cultural heritage of farmed land, and thus of the wider rural landscape and rural cultural heritage.

- 313 – 52.a.iii (encouragement for tourism)

539. This measure will be used to develop the sustainability of rural tourism, with particular regard to managing the environmental impacts from visitors on the environment or built heritage, and to enhance the value of the business operation.

540. Whilst the strategic focus for the Programme is clearly on the rural economy, we will not exclude any of the measures aimed at enhancing the quality of life in rural areas. In some cases, these measures will contribute to our overall goal of enhancing opportunity. In addition, the objectives of the community-focused measures may be ones that LAGs want to focus on as part of their Local Development Strategies under the Leader delivery approach. Overall, however, the quality of life measures are lower in the hierarchy of those we expect to use.

3.2.1.4 Leader

541. The analysis at Sections 3.1.4.8 and 3.1.5.1 identified aspects of the Leader approach that could be seen to be part of mainstream rural policy in England. The evidence showed how LEADER+ LAGs delivered locally tailored approaches to rural delivery focused on local issues. Given the localised nature of the need and opportunity that Leader can address, decision making on the selection of LAGs will be carried out at the regional level.

542. As a result of their knowledge of local needs, strengths and weaknesses, and through the broad representation of environmental, social and economic interests on partnerships, Leader groups will be well placed to create synergies across the axes.

543. The Leader approach will be used in the Rural Development Programme for England to mobilise the development potential of rural areas by stimulating innovation (both in approaches to delivery and projects) allowing new solutions to be found to long-standing problems, including through the transfer and adaptation of innovations developed elsewhere.

544. Based on experience from the LEADER+ programme as set out in section 3.1.5.1 and recognising the impact of other interventions in section 3.1.4.8, it is expected that the bulk of the expenditure under Leader to be on implementing Local Development Strategies (Article 64). In terms of capacity building, evidence from the LEADER+ Programme as set out in section 3.1.5.1 suggests a need for greater focus for this activity. This will include building up the ability of the LAG to think strategically and develop more effective links with other sub-regional infrastructure. Given this better focus, and with evidence from the LEADER+ Programme where around 2% of budgets was spent on capacity building, we envisage a 20% allocation for running costs, skills acquisition and capacity building to be sufficient. This will allow a greater proportion of funding to be available for project activity delivering the objectives of the other axes. Of the remaining 80%, we expect that around 5% will be used on co-operation activity. The remaining 75%, or more, will therefore be available for implementing local development strategies.

3.2.1.5 The Delivery Strategy

545. The delivery mechanisms for the rural development measures to be used in England form a key element of strategy, and a means by which integration of the Programme's objectives will be achieved.

546. A report on the delivery of government policies in rural England was conducted in 2003. Over 350 organizations, authorities and groups, and over 300 customers of rural delivery, contributed to the review across England over 8 months.

547. The Government set out its response to the review, explaining how it would address the report's recommendations, in the Rural Strategy 2004.

548. The review recommended that delivery of economic and social policy should be brought closer to the customer by devolving greater power to regional and local organisations, and specifically that England's 8 RDAs should take on responsibility for the socio-economic elements of the Rural Development Programme. In the Rural Strategy 2004, the Government agreed that there was a strong logic behind integrating rural business support with the RDAs wider development responsibilities. This was to help ensure that EU funding was joined-up with other rural regeneration and sustainable farming and food programmes. Devolving regional decision-making on the delivery of social and economic regeneration to RDAs, working in close partnership with local authorities and others - and avoiding imposing the same arrangements on all regions – was designed to help address regional variations in a sophisticated way.

549. As part of its reform of the delivery of economic development in England UK Government has given a public commitment that the eight regional development agencies (excluding London which is being dealt with separately) will cease activities by March 2012, pending final abolition, which is subject to the passage of legislation through Parliament. As a consequence of these changes Defra Ministers announced that the responsibilities of Regional Development Agencies (RDAs) for the delivery of the majority of activity under Axis 1, 3 and 4 of the Rural Development Programme for England (RDPE) would transfer to Defra. This transfer will take effect on 1 July 2011 and this version of the Programme document was amended in June 2011 to reflect this change.

550. 2012. In light of the proposed change to regional architecture and to minimise disruption to the customer, delivery of RDPE Axes 1, 3 & 4 will be delivered by Defra from 1st July 2011. The Delivery Team, combining a strong national lead and locally accessible support, will be responsible for the delivery of the majority of the socio-economic measures until the closure of the Programme in 2013.

551. As part of its aim of ensuring more coherent and effective environmental outcomes, the review recommended setting up an 'Integrated Agency' with a remit across England's rural, urban and marine environment. The Government accepted the review's recommendation, and created Natural England from three existing delivery bodies. Natural England's aim is "to work for people, places and nature, to enhance biodiversity, landscapes and wildlife in rural, urban, coastal and marine areas; to promote access, recreation and public well-being, and contribute to the way natural resources are managed so that they can be enjoyed now and in the future". Natural England is delivering Environmental Stewardship and will continue to do so in the Programming period. In this, it works closely with the Forestry Commission, who deliver the woodland and forestry schemes available under the Rural Development Programme. Natural England will also deliver the national energy crops grant scheme.

552. The Government is clear that an integrated approach to rural development, enabling positive synergies between the axes and measures, is essential to maximise the added value of the rural development programme. Therefore, in addition to identifying the organisation best placed to deliver the measures, the strategy is being used to address the strengths and weaknesses recognising the importance of integrated delivery. The delivery partners for the Rural Development Programme (Defra, the Forestry Commission and Natural England) are working together at the regional level to ensure that measures implemented under all four axes complement each other, and are implemented in such a way that, wherever possible, they deliver win-win outcomes.

553. In March 2007 the Government published "Simplifying Business Support – An Introductory Document", which outlines the steps being taken to design and deliver a simpler system of business support through the Business Support Simplification Programme (BSSP).

554. The aim of the BSSP was to ensure that, wherever it is carried out, publicly funded business support is simple for business to access, has a real impact on economic or public policy goals and represents value for taxpayers.

555. BSSP looked to achieve this through:

- high quality joined up service for the customer;
- a portfolio of one hundred or fewer schemes that could be deployed at the local, regional or national level to meet business needs, achieve public policy aims and make a measurable impact;
- efficient delivery that puts the customer first and is value for money.

556. The Programme was delivered in accordance with these aims. In particular, delivery partners were encouraged to cooperate with each other at the national, regional and local level to ensure that the Programme was fully integrated with other publicly funded activities so that each funding stream complements the others, with transparent means of access.

557. The BSSP has now been transformed into Solutions for Business (SfB) based broadly on the same principles. The Solutions for Business portfolio provides 13 publicly funded products and services designed to help businesses to identify and overcome key challenges so they can grow. The Rural Development Programme for England (RDPE) is one of the products in the portfolio.

Conclusion

558. The analysis of strengths and weaknesses set out in Section 3.1 identified that the challenge for the agricultural, forestry and food sectors in England is to increase productivity to keep pace with competitors, whilst reducing their negative environmental impacts. A range of activities and initiatives are already looking to address these issues. The analysis also demonstrated that, although rural areas in England face a range of economic and social challenges, they are generally manageable with mainstream approaches. There are also a number of funding sources that cover most of the areas where intervention is needed.

559. To ensure that the England Programme adds value, and does not duplicate the existing funding sources and initiatives outlined above, the Programme will adopt a targeted, investment-led approach to implementing socio-economic measures under Axes 1 and 3, which means being more selective and less demand led. Expenditure will be focused on complementing and adding value to other sources of funding. Support will be fully integrated with other mechanisms for addressing market failure and promoting the public interest.

560. Support will be targeted towards projects that have a clear public benefit over and above the benefits to the individual business. The case for intervention will also require evidence of positive additionality, i.e. that the funding will deliver benefits that would not otherwise happen.

561. The picture in relation to the socio-economic needs of rural areas contrasts with the large-scale issues that need to be addressed to maintain the quality of the rural environment of England. The analysis of strengths and weaknesses highlighted the range and significance of environmental issues that need addressing, the importance of a high quality environment to achieving wider socio-economic objectives and the lack of alternative sources of funding for environmental interventions. There is also

clear market failure in addressing these needs and a paucity of alternative, large scale funding mechanisms.

562. The focus of the allocation of funds under the England Programme will therefore be on Axis 2 measures, aimed at improving the rural environment.

3.3 The ex ante evaluation and Strategic Environmental Assessment

563. The ex-ante evaluation of the Programme has been commissioned to meet the requirements of Article 85 of Regulation (EC) No 1698/2005: to identify and appraise the long-term needs, the goals to be achieved, the results expected, the quantified targets particularly in terms of impact in relation to the baseline situation, the Community added value, the extent to which the Community's priorities have been taken into account, the lessons drawn from previous programming and the quality of the procedures for implementation, monitoring, evaluation and financial management. The evaluation also addresses the requirements of the environmental assessment provided for by Directive 2001/42/EC of the European Parliament and of the Council, the 'Strategic Environmental Assessment Directive'. The evaluation was commissioned by Defra and carried out by Fraser Associates and the Rural Development Company.

564. The evaluation is summarised in Chapter 4.2 of this document and the full version is in the Annex 1 to Chapter 4.2. The non-technical summary of the Strategic Environmental Assessment (SEA) Environmental Report is in Annex 2 to Chapter 4.2. The SEA Statement and Defra's response to the issues raised are in Annexes 3 and 4 to Chapter 4.2.

3.4 Impact of the previous Programming period

3.4.1 Impact of EAGGF financial resources allocated to rural development

3.4.1.1 England Rural Development Programme Funding 2000-2006

565. In the programming period 2000 –2006, the Rural Development Regulation (1257/1999) was implemented in England through the England Rural Development Programme (ERDP).

566. Over the programming period, a total of £1.6 billion (€2.34billion) was allocated to the ERDP. Of this, £628m (€905million) was allocated from the EAGGF Guarantee Section. The rest of the programme was made up from Community and additional national modulation of Pillar 1 direct support payments and national exchequer funding.

567. There were 12 main schemes under the ERDP:

Scheme	Years when the scheme was open	Brief description of the scheme
Environmentally Sensitive Areas (ESA)	2000-2004	The Scheme offered incentives to encourage farmers to adopt agricultural practices that would safeguard and enhance parts of the country of particularly high landscape, wildlife or historic value. It was only available in 22 designated areas of the country. The Scheme has since been superseded by Environmental Stewardship, though existing agreements continue to be funded.
Countryside Stewardship Scheme (CSS)	2000-2004	CSS operates outside the ESAs. Payments are made to farmers and other land managers to enhance and conserve English landscapes, their wildlife and history and to help people to enjoy them. It closed to new applicants in 2004, but existing agreements continue to be funded. The Scheme has been superseded by Environmental Stewardship though existing agreements continue to be funded.
Processing and Marketing Grant (PMG)	2000-2006	The PMG was a capital grant scheme aimed at improving the processing and marketing of agricultural products, including projects on regional and speciality foods. The Scheme closed to new entrants in 2006.
Rural Enterprise Scheme (RES)	2000-2006	The RES provided assistance for projects that helped to develop more sustainable, diversified and enterprising rural economies and communities. The primary aim was to help farmers adapt to changing markets and develop new business opportunities. RES also had a broader role in supporting the adaptation and development of the rural economy, community, heritage and environment. The Scheme closed to new entrants in 2006.
Vocational Training Scheme (VTS)	2000-2006	The VTS provided part funding of eligible costs for vocational training activities that contributed to an improvement in the occupational skill and competence of farmers and other persons involved in forestry and farming activities, and their conversion (i.e. diversification into non farming or forestry activities, or a change from one type of agricultural activity to another). The Scheme closed to new entrants in 2006.
Organic Farming Scheme (OFS)	2000-2005	The OFS aimed to encourage the expansion of organic production in England in order to help supply the increasing demand for organically produced food. The Scheme closed to new entrants in 2005, and has

		been superseded by the organic element of ES.
Scheme	**Years when the scheme was open**	**Brief description of the scheme**
Hill Farm Allowance (HFA)	2001-present	The HFA aims to preserve the farmed upland environment by ensuring that land in the LFAs is managed in a sustainable way.
Farm Woodland Premium Scheme (FWPS)	2000-2005	FWPS encouraged farmers to convert productive agricultural land to woodland by providing annual incentives in the form of payments to compensate for lost farming income. The objective was to enhance the environment through the planting of farm woodlands, thereby improving the landscape, providing new habitats and increasing biodiversity. The scheme closed to new entrants in 2005, being superseded by the EWGS.
Woodland Grant Scheme (WGS)	2000-2005	The WGS sought to encourage good management of forests and woodland, especially ancient and semi natural woodlands, and to provide jobs and improve the economy of rural areas with few other sources of economic activity. It also aimed to sustain and increase the public benefits derived from existing woodlands in England and to invest in the creation of new woodland in England of a size, type and location that most effectively delivered public benefits. It also sought to provide a use for land instead of agriculture. The scheme closed to new entrants in 2005, being superseded by the EWGS.
English Woodland Grant Scheme (EWGS)	2005-present	The EWGS seeks to sustain and increase the public benefits given by existing woodlands and help create new woodlands to deliver additional public benefit. There are six subsidiary strands, five concerned with stewardship of existing woodlands, and one with the creation of new woodlands. EWGS has superseded the FWPS and WGS.
Energy Crops Scheme (ECS)	2005-2006	The ECS had two strands: • establishment grants for two energy crops (short-rotation coppice (SRC) and miscanthus) • aid to help SRC growers set up producer groups. Both Strands closed to new entrants in 2006
Environmental Stewardship (ES – comprising of ELS/OELS/HLS)	2005-present	ES is an agri-environment scheme with 3 elements: ● Entry Level Stewardship (ELS) is a whole farm scheme open to all farmers, which aims to deliver environmental benefits above and beyond regulatory requirements across a wide area of the country. ● Organic Entry Level Stewardship (OELS) is a whole farm scheme open to farmers who manage all or part of their land organically. ● Higher Level Stewardship (HLS), is combined with ELS or OELS options, and aims to deliver significant environmental benefits in high priority situations and areas.

568. The ERDP also incorporated a number of smaller schemes, many of which were already closed to new entrants before the start of the Programme. These included:

- the Moorland Scheme
- the Countryside Access Scheme
- the Habitat Scheme
- the Nitrates Sensitive Areas Scheme
- the Arable Stewardship Pilot Scheme

569. The majority of the EAGGF funding available under the ERDP, 63%, was reserved for agri-environment schemes to support beneficial land management. 10% was allocated for the establishment of new woodland and other activities to support woodland and forestry activities, and 9% to support Less Favoured Areas.

570. Other EAGGF allocations included 10% towards the Rural Enterprise Scheme, which supported projects that developed sustainable, diversified and enterprising rural economies and communities.

571. Other allocations supported the processing and marketing of primary agricultural products, through the Processing and Marketing Grant, (PMG) and training, through the Vocational Training Scheme (VTS).

572. The level of EAGGF and other resources committed under the ERDP in the 2000-2006 period to these activities is detailed at the Annex to Chapter 3.4.

3.4.1.2 ERDP Outputs and Impacts

573. The Annex to Chapter 3.4 (Tables 1,2 and 3) details the outputs that have been achieved from ERDP funding in terms of funding committed, land under agreement and number of agreements.

574. Currently only partial data are available of the environmental, economic and social results of ERDP funding, and the impacts do not lend themselves to capture through monitoring data. Further work was undertaken as part of the ex-post evaluation of the Programme, which was carried out in 2008.

3.4.1.3 ERDP Evaluation

575. Individual elements of the ERDP have been subject to a number of evaluations over the 2000-2006 period. In addition, the Programme as a whole was subject to a Mid Term Evaluation (MTE) carried out in 2003. Details of these evaluations and where they can be obtained are provided in Tables 4 and 5 of the Annex to Chapter 3.4

576. A summary of the evaluations of individual elements of the ERDP schemes is given in Table 3-40-below. More detailed information about the evaluations is included in the Annex to Chapter 3.4.

Table 3-40

Scheme	Summary of Evaluation
Agri-Environment Schemes, mainly Environmentally Sensitive Areas (ESA), Countryside Stewardship (CSS) and Environmental Stewardship (ES)	The agri-environment schemes, principally the ESAs and CSS, were subject to a series of evaluations in 2002 as part of a review of agri-environment schemes. Good data were available on the performance of the ESAs, and it was concluded that most had performed well in maintaining landscape value, and particularly well in maintaining the historic environment. Most had also succeeded in maintaining wildlife value, though there had been only partial success in enhancing wildlife value. There ware fewer hard data available on the performance of CSS agreements but it was concluded that the majority of CSS agreements across a range of landscape types were potentially effective in maintaining and enhancing wildlife and landscape value, with the exception of the uplands, where there was less evidence of potential to enhance. It was also found that CSS was less effective in conserving the historic environment. The 2002 evaluation of agri-environment schemes cited the relatively limited coverage as a reason that existing schemes had not yet been able to stabilise or reverse losses amongst many groups of taxa dependent on very widespread habitats, such as most farmland bird species. The 2002 evaluation also pointed out that across a range of habitats where the schemes used simple management prescriptions, these were not flexible enough to enhance or, in some cases, even maintain ecological quality. It was concluded that effective management of these habitats needed a less prescriptive approach that can be 'fine tuned' to achieve the desired environmental outcomes. The 2002 evaluation also showed that both schemes were cost effective and enjoyed a measure of public support. Interim results from the current evaluation of Environmental Stewardship suggest that the scheme is proving popular with applicants.
Hill Farm Allowance (HFA)	Evaluations concluded that through the maintenance of farming systems in the hills, HFA supports the environmental benefits those systems generate. However, the link between the HFA and the provision of specific environmental outputs, which would not otherwise occur is weak. If HFA is to continue to be an inclusive environmental management scheme, then better integration with agri-environmental schemes within the Programme is desirable.
Woodlands Grant Scheme (WGS) **Farm Woodland Premium Scheme (FWPS)**	Mid term evaluation of these schemes indicated that the planting targets were being exceeded in the early part ERDP.

	Overall it was found that there is a strong economic rationale for woodland support as markets are likely to fail in relation to a wide range of public benefits – recreation, carbon sequestration, watershed regulation, biodiversity conservation, economic security, landscape and amenity, air pollution reduction, employment creation, economic regeneration and the provision of social benefits to reduce or ameliorate these market failures.
Processing and Marketing Grant (PMG) **Rural Enterprise Scheme (RES)** **Vocational Training Scheme (VTS)**	These schemes made up the so-called ERDP project based schemes. These schemes were subject to the Mid-term evaluation (MTE), although the PMG also underwent an economic evaluation. The MTE found that the PMG was valued by the participants, but its economic rationales were only weakly supported by the evidence with additionality being low for larger projects. Amongst other recommendations evaluators suggested consideration be given to merging it with other ERDP project based schemes and elements of funding from other regional sources of funding. The aim would be to provide a single scheme for similar projects in line with experience from Objective 1 areas. The MTE came too early in the life of the RES to evaluate fully progress, as the ability for applicants to participate in this new scheme had been hampered by the 2001 Foot and Mouth outbreak. However, evaluators noted there was the potential for synergy in relation to regional and national providers' own programmes of activity. With respect to the VTS, evaluators found it demonstrated a high degree of coherence with a number of ERDP schemes, particularly the RES and PMG. Whilst evaluators found there was a sound economic rationale for the scheme, and that it was likely that the target outputs of the scheme would be achieved, it was suggested it might be better to incorporate a training element into the other schemes, rather than operate a stand-alone scheme. Evaluators also suggested there was little evidence to support the need for three separate project based schemes and that the objectives actually merged at the customer interface. In addition, the Rural Delivery Review, conducted in 2003, recommended that delivery of economic and social policy should be brought close to the customer by devolving greater power to regional and local organizations, and specifically that England's 8 Regional Development Agencies (RDAs) should take on responsibility for the socio-economic elements of the Rural Development Programme.
Energy Crops Scheme (ECS)	At the time of the MTE, the ECS was greatly under-subscribed, with only 2% of the SRC target and 3% of the miscanthus target. Although the scheme had clear economic rationales, the lack of uptake was due to market failures outside the control of Defra. However, since then, there have been an increasing number of applications each year, as new markets have come on stream. Applications approved in 2006 for planting in 2007 and 2008 should realise double the amount of perennial energy crops in the ground at the end of 2006.

	A business case for inclusion of energy crops in the 2007-13 programme recommended continued support, highlighting the advantage of perennial energy crops in terms of greenhouse gas abatement, which is not reflected in the market price.
Organic Farming Scheme (OFS)	The MTE points to a valid rationale for supporting organic land management practices as it delivers positive environmental benefit for the public at large as well as benefits for the environment. However, the MTE also pointed to the risk of a possible negative impact of the OFS. This was the potential for market distortion in oversupplied sectors where farmers are supported to convert to organic production and compete with existing scheme holders. The evaluation recommended that, in supporting the organic sector, the delivery of environmental goods should not be linked with organic food production. Instead, it was suggested it might be better to fund the delivery of organic land management, leaving the market to dictate whether produce complies with all the organic status requirements.

The implications of these evaluations for the 2007-2013 Programme

577. Overall, the evaluations carried out in 2002 found that agri-environment schemes provided environmental benefits and were valued by the public. However, these reviews highlighted two key weaknesses of the 'Classic Schemes' (ESA and CSS):

- coverage needed to be wider if the schemes were to benefit widespread species and to make a difference to the farmed environment as a whole;
- management of the more complex habitats and environmental features needed to be more flexible and outcome focused.

578. Environmental Stewardship (ES), introduced in 2005, was designed to address these two key weaknesses. Entry Level Stewardship is open to all farmers in England and is designed to achieve very widespread coverage. Higher Level Stewardship is focussed on more environmentally valuable features and offers a wide range of flexible, outcome focused management options that can be tailored to meet local needs.

579. The initial evaluations of ES have been positive, and along with the criteria on environmental needs set out in Chapter 3.1, provide a strong case for continuing support for agri-environment schemes in the 2007-2013 Programme.

580. When ES was introduced in 2005, towards the end of the previous programming period, it was with the specific intention that it should continue as the flagship scheme for the Programme, building on the considerable experience already gained of agri-environment schemes.

581. In line with the recommendations of the MTE the OFS closed to new applicants in 2005, and support for management of organic land is now provided under ES, through the Organic Entry Level Stewardship.

582. In line with the findings and recommendations of the evaluations of the HFA, support for hill farmers will continue in the Programme. However, it is proposed that, from 2010, LFA support under the Rural Development Programme for England is fully integrated into ES. This will move away from the compensatory nature of the HFA towards a scheme that rewards farmers for maintaining the upland landscape and environment. This will recognize the key role of upland farmers in delivering many environmental and landscape objectives, and the higher costs of farming in these areas of natural handicap, whilst also enabling better targeting of funding towards the delivery of public benefits and, in particular, environmental and landscape benefits.

583. In line with the positive findings relating to woodland and forestry schemes under the previous Programme, it is proposed to continue to support such schemes in the 2007-2013 Programme. The EWGS was introduced in 2005, to build on the previous schemes taking account of the findings of the evaluations and deliver support in a way that most effectively delivers public benefits. It is proposed that the EWGS will continue under the 2007-2013 Programme.

584. It is proposed that the establishment of perennial crops for biomass production will continue to be supported in the Programme, complemented by support for supply chain development and community initiatives. Together, these measures should facilitate the future growth of renewables markets, as encouraged by various EU roadmaps. The Woodfuel Strategy for England, which was published in March 2007, will help effectively join up the different parts of the supply chain.

585. In line with the findings of the evaluations of the Project Based Schemes under the 2000-2006 Programme, it is intended that support available in the 2007-2013 Programme will be more focused on achieving tangible outcomes and will be simpler

to access. The PMG, RES and VTS will not continue. Instead, delivery of the socio-economics elements of the Programme was initially the responsibility of the RDAs, as recommended in the Review of Rural Delivery but from 1st July 2011 will be the responsibility of Defra's RDPE Delivery Team. This will ensure that the EU funding is integrated with other public investment, and the assisted activity is more closely linked to regional priorities, within the framework of the Programme's national priorities, and targeted specifically at local market failure.

3.4.2. Supplementary measures in addition to Community Rural Development and accompanying measures

586. During the period 2000-2006, the EAGGF Guidance Section, European Regional Development Fund and the European Social Fund have contributed to funding for rural development. The EAGGF Guidance Section has financed the non-accompanying measures of rural development in Objective 1 regions. The funding was incorporated in Single Programming Documents for the three English Objective 1 regions. The EAGGF Guidance Section also financed the LEADER+ community initiative in areas across England.

587. Nationally funded interventions also had an impact in rural areas over the 2000-2006 period. These included programmes for agri-environment schemes, National Parks, land management and a variety of heritage schemes, which cut across both rural and agricultural areas. These complemented the ERDP and Structural Funds though generally deployed a lower level of funding.

588. Details of these funding initiatives can be found in the Annex to Chapter 3.4.