Consolidated report on case studies

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Abstract
This consolidated report provides an overview of the ten individual reports that present the case studies. It does not give a comprehensive coverage of all materials but emphasises a series of issues of interest for the ITAES project. Although the information contained in the paper mostly comes from the individual reports, additional data from Eurostat are also given in order to compare the various case studies on a homogeneous ground.

The consolidated report is a companion of the flat cross country comparison (ITAES WP3 D3 P1-3) and is organised into four sections. The first section outlines background information on the case studies with insights on the general characteristics of agriculture. The second section addresses the supply of Agri Environmental Schemes (AESs), while the third one is concerned with farmers' uptake and scheme monitoring. Final section is devoted to the institutional perspective but with a specific interest to the attributes of AES transaction.

1 Case-study profiles

This consolidated report is a companion document of the 'Flat cross country comparison report' which is derived from the individual reports the Partners completed. In addition, consistent regional data processed by the EU statistical services are also used. They may marginally differ from figures given in individual reports. This is due from differences either in concepts or periods of reference. The so-called Eurostat source is:
http://europa.eu.int/comm/eurostat/newcronos/reference

1.1 Case study selection

Agri-environmental schemes (AESs) are part of a single policy package, but are applied in very different contexts all over the EU. The case study approach has been considered in order to illustrate the variety of situations with respect to the general economy, the environmental situation and the institutional setting, and therefore to identify the steering factors of scheme efficiency.

Case study areas were chosen at the regional level at which AESs are planned, provided with a budget, organised and controlled, leading to the selection of the whole country for the Czech Republic, Finland and Ireland, of regions who are empowered to scheme design in Belgium (Flanders), Germany (Brandenburg) and Italy (Emilia Romagna and Veneto). In the other countries, the policy framework for the elaboration and the administration of AESs is strongly controlled by the national level, therefore the selected regions, North East England in the UK, Basse Normandie in France and Friesland in the Netherlands, benefit a limited legal power. Additional reasons were also considered in the case study selection. They include the variety of landscapes, the richness of wildlife, the existence of specific habitats, and last but not least existing connections between partners and local stakeholders.

Each selected region shows diversity of environmental assets and of land uses. Otherwise it corresponds to an administrative level (National, NUTS 1 or NUTS 2) at which there is a good availability of statistical data. However case studies extend over quite large areas, then for practical reasons farm surveys will be conducted at a lower level e.g. Uusimaa (NUTS 3) in Finland, or Belluno (NUTS 3) in Italy.

1.2 General features

The sample of case studies shows a diversity of characteristics in terms of total area, population and GDP (Table 1). Total area ranges from one (Friesland) to hundred (Finland), while population ranges from one (Friesland) to sixteen (Czech Republic). This results into major differences in population density (Table 2).

The lowest densities of population are observed in Finland and Ireland where an increase in total population has to be mentioned. Brandenburg and Basse Normandie have similar densities but experienced contrasted recent evolution with respectively a diminution and a slight augmentation of total population. In contrast, all the other regions are over the EU-15 average density but exhibit different trends. Indeed, there is an increase in Emilia Romagna, Friesland as well as Flanders where the density is the highest, while there is a decrease in

North East England. It should be noted that two-third of population growth is due to non-western immigrants in Friesland.

Table 1: Total area and population in 2002

	Area (km^2)	Population (1000)
Flanders	13 512	5984
Czech Republic	78 866	10 203
Brandenburg	29 477	2586
Basse Normandie	17 589	1434
Ireland	70 273	3917
Veneto	18 391	4554
Emilia Romagna	22 123	4007
Friesland	3358	638
Finland	304 529	5201
North East England	8612	2538

Source: Eurostat.

The distribution of population within the different regions exhibits different patterns. In Finland more than 80% of the land area is very thinly populated with fewer than five inhabitants per km^2, while in Uusimaa there are 210 inhabitants per km^2. In North East England, 75% of the population is living in the major urban areas along the east cost, whereas in Brandenburg the density of population is decreasing from the central part around Berlin to the outer periphery. The distribution of population and its evolution are mainly influenced by the location of urban areas. Otherwise rural areas close to metropolitan centres are under the threat of an increasing demand for recreation facilities.

Table 2: Population density and average GDP

	Population density (#/km^2)			# Towns > 100 000	GDP per capita (ppp)	
	1990	2000	Trend (%)		1995	2000
Flanders	425.8	440.1	3.3	3	117.8	115.6
Czech republic	131.4	130.3	-0.9	5	70.0	67.6
Brandenburg	88.3	88.2	-0.2	2	78.1	73.4
Basse Normandie	79.2	81.3	2.0	1	98.5	94.0
Ireland	49.9	53.9	8.0	2	99.1	132.6
Veneto	237.2	246.1	3.7	4	135.9	123.3
Emilia Romagna	176.3	180.6	2.4	8	147.9	136.3
Friesland	178.6	186.9	4.6	0	100.3	100.1
Finland	16.4	17.0	3.6	6	105.9	113.3
North East England	300.0	292.9	-2.4	7	90.7	90.9
EU-15	116.1	119.3	2.7		110.7	109.4
EU-25					100.0	100.0

Source: Eurostat (1990, 1995, 2000. na: non-available. ppp: power purchase parity.

The three leading regions in the ranking of GDP per capita in 2000 were Emilia Romagna, Ireland and Veneto; among this group only Ireland experienced a relative increase during the period 1995-2000. Two other regions are over the average, Flanders and Finland. All regions in this topgroup had an increase in population during the 1990 decade.

The two lowest regions in the ranking were Brandenburg and Central Moravia, while the remaining three (Friesland, Basse Normandie and North East England) can be categorised in a central group, around or below the average.

It should be noted that in some region, the GDP per capita could be significantly influenced by commuter flows. GDP per capita can be underestimated in the regions where commuters live and overestimated where they are working. Such mechanisms are likely to apply in regions located near large cities. There is some evidence of commuter arrivals from Brandenburg to Berlin area, from Flanders to Brussels. Otherwise, within regional disparities should be noted, for example between Antwerpen province and the rest of Flanders, Southern and Eastern part of Ireland and the rest of the country, and between the Northern and Eastern parts of Finland and the rest of the country. This involves that the average GDP is likely to overestimate the income level of rural areas in these cases.

Although there is no simple relationship between population characteristics and economic welfare, some points can be made. Primarily, a high proportion of pensioners as well as a high rate of unemployment can lead to lower regional GDP per capita as shown by Brandenburg (Table 3). Secondarily, a high proportion of young people associated with a low unemployment rate favour an increase in GDP as illustrated by Ireland.

Table 3: Composition of total population (%)

	< 30 years	30-60 years	> 60 years	Unemployment rate	
				2000	2003
Flanders	35.5	42.3	22.2	4.3	5.7
Czech Republic	39.8	41.8	18.4	8.8	7.8
Brandenburg	32.4	44.9	22.7	15.8	18.0
Basse Normandie	38.6	39.2	22.2	8.2	7.8
Ireland	47.1	37.8	15.1	4.4	4.8
Veneto	31.9	44.2	23.9	3.7	3.4
Emilia Romagna	28.1	43.2	28.7	4.0	3.0
Friesland	38.1	42.7	19.2	4.0	4.2
Finland	36.8	43.3	19.9	9.8	9.0
North East England	37.4	40.9	21.7	8.7	6.4
EU-15					8.1
EU-25					9.1

Source: Eurostat (2000)

But obviously a number of other elements should be considered including the composition of active population. Other things being equal, a relatively large primary sector is likely to lower GDP per capita as illustrated by Basse Normandie where 7.5% of active population is employed in the farm sector. With respect to this criterion, a group of region including Flanders, Emilia Romagna, Veneto and Friesland are between 4.3% and 4.9%. So the relative modest performance of Friesland deserves some attention, because the GDP per capita remained stable around the average, despite a high proportion of young people and a low rate of unemployment. From this standpoint the change in the activity mix, with the growth of the high-tech industry, favoured an increase in Finland despite adverse impact of the labour market. A similar change in the composition of the labour force benefited Ireland where the share of agriculture still remains important with 6.1% of active population.

The picture is specific in Veneto and Emilia Romagna with an aged population and a low rate of unemployment. Both regions experienced a relative decrease in GDP per capita but maintained it at a high level. In Emilia Romagna, there is a strong agri-food system, which is concentrated in the so-called industrial districts. In Veneto, the high share of tourism must be emphasised, this sector amounts for about 16% of active population. With a similar trend in GDP per capita, Flanders is favoured by an increase in population. It is important to be aware that the Belgian countryside has an urban character in the European context and offers a combination of amenities for housing people.

Finally, the GDP per capita remained stable but under the average in North East England that suffers handicaps with respect to the age distribution and labour market. This region generally experiences a net outward migration of people, particularly younger age groups who seek education or employment outside the region. Over the last three decades, the region has been undergoing a transition from a production-dominated economy based on manufacturing, steel, coal and chemical production, to a consumer-oriented economy based on retail, services, culture and leisure.

1.3 Territorial importance of farming

Table 4: description of land use (%)

	Arable land	Grassland	UAA	Forest	UAA & forest
Flanders	32.3	13.3	47.1	8.0	55.1
Czech Republic	39.2	12.2	54.2	33.4	87.6
Brandenburg	35.4	10.1	45.7	34.9*	80.6
Basse Normandie	36.6	41.5	78.6	10.2	88.8
Ireland	12.2	47.4	63.2	na	na
Veneto	33.2	8.9	48.5	14.8	63.3
Emilia Romagna	44.4	6.0	57.4	18.3	75.7
Friesland	13.5	54.4	68.0	3.5	71.5
Finland	6.4	0.1	7.3	76.1	83.4
North East England	24.0	27.2	63.9	na	na
EU-15	23.6	14.2	42.0*	42.0**	84.0

Source: Eurostat (2000, * 2001, ** 1998).

With 84.0% of the area of the EU-15, agriculture and forestry are of major importance for the environment and landscapes (Table 4). The two lowest regions in the ranking are Flanders where urbanised areas extend over one-fourth of the total surface, and Veneto, which also includes major built areas. Land used by farming and forestry amounts to more than 80% in four cases (Central Moravia, Brandenburg, Basse Normandie and Finland).

The distribution between farming and forestry varies in the sample. The area devoted to farming ranges from 7.3% in Finland to 78.6% in Basse Normandie, while the extreme values for forestry are 3.5% in Friesland and 76.1% in Finland. Otherwise the distribution of farmland shows the leading share of arable land except in Ireland and Friesland where

grassland dominates, and in Basse Normandie and North East England where there is a balance between arable land and grassland. In the Czech Republic, the area of arable land declined slightly but the share of permanent grasslands is relatively low with respect to soil and climatic conditions.

The other agricultural uses are more or less marginal in terms of area. However family gardens are significant in Central Moravia with 2.4% of the total, vineyards in Veneto (4.2%) and Emilia Romagna (2.9%). However, data on fallow are questionable and not comparable.

1.4 Main features of agricultural holdings

Table 5: Agricultural holdings by surface

	Average (ha)	Distribution of holdings (%)		
		< 5 ha	5-50 ha	> 50 ha
Flanders	15.5	37.1	58.2	4.7
Czech Republic*	66.6	61.1	28.5	10.4
Brandenburg	192.2	24.8	38.2	37.0
Basse Normandie	35.3	33.1	38.8	28.1
Ireland	31.4	8.2	74.8	17.0
Veneto	4.8	80.2	18.8	1.0
Emilia Romagna	10.7	53.8	43.1	3.1
Friesland	31.9	14.5	71.0	14.5
Finland	27.3	10.5	76.0	13.5
North East England	104.3	21.2	30.1	48.7
EU-15	18.7	57.6	33.5	8.9

Source. Eurostat (2000), * WP3 P9 DR 01.

An analysis of the surface of holdings shows significant differences among regions (Table 5). With respect to the average, the two lowest regions are Veneto and Emilia Romagna where there are many small farms, while the leading regions are Brandenburg where holdings over 1000 ha cover 52.1% of farmland, and to a lesser extend North East England. Otherwise, the distribution in Brandenburg and the Czech Republic is a mixture of two distributions, those of individual farms and those of co-operative farms. Smallholdings characterise the former distribution, while very large holdings symbolise the latter one.

Among the other regions, the average size ranges from 15.5 ha in Flanders to 35.3 ha in Basse Normandie. However the distribution of farms differ since it exhibits a fat left tail (relative high proportion of small holdings) in Flanders, a fat right one (relative high proportion of large holdings) in Ireland, and is more or less symmetric in Basse Normandie, Friesland and Finland.

Table 6: Distribution of UAA by tenure type (%)

	Area owned	Area rented	Other
Flanders	33.2	65.7	1.1
Czech Republic*	10.7	89.3	0.0
Brandenburg	9.2	89.3	1.5
Basse Normandie	29.9	68.7	1.3
Ireland	81.4	18.6	0.0
Veneto	75.1	24.9	0.0
Emilia Romagna	68.3	31.5	0.1
Friesland	72.7	26.9	0.4
Finland	69.0	30.9	0.0
North East England	49.8	50.2	0.0
EU-15	57.4	40.6	1.9

Source. Eurostat (2000), *: Search zem 2003 (www.czso.cz)

The tenure regime should be explicitly considered as a possible limiting factor to enter an agreement which involves specific investment or change in farming practices.
Sharecropping operates marginally tenanted land being mostly rented land (Table 6). An analysis of tenure shows that the owners in Ireland, Veneto, Emilia Romagna, Friesland and Finland typically run holdings, while most land is rented in Flanders, Brandenburg and Basse Normandie. In North East England land is equally distributed between both categories.

Table 7: Agricultural holdings by economic size

	Average (ESU)	Distribution of holdings (%)			
		< 2 ESU	2-40 ESU	40-100 ESU	> 100 ESU
Flanders	53.3	10.2	45.3	27.9	16.6
Czech Republic*	30.2	63.4	30.2	2.2	4.1
Brandenburg	124.1	14.1	50.8	12.7	22.4
Basse Normandie	30.5	31.0	38.5	24.0	6.5
Ireland	20.7	12.9	72.6	12.6	1.9
Veneto	10.2	47.1	47.5	4.0	1.4
Emilia Romagna	21.8	28.1	59.1	8.8	4.0
Friesland	90.3	0.0	34.8	25.5	39.7
Finland	23.2	11.0	71.0	16.3	1.7
North East England	53.7	24.0	36.1	23.9	16.0
EU-15	18.7	33.5	54.8	8.0	3.7

Source. Eurostat (2000), *: FADN CZ (Agrocenzus, 2000/2003)

The distribution of holdings by economic size in ESU[1] leads to a contrasted statement (Table 7). Although Veneto is the lowest region and Brandenburg the highest, there are several

[1] The economic size of an agricultural holding is defined as its potential gross value added (total standard gross margin) which is established at the level of the different regions for the different lines of production. It is expressed in ESU (European Size Unit). Initially one ESU corresponded to 1000 ECU, for the 2000-data the ESU coefficient was 1200 €.

differences in the rest of the ranking. Friesland is the second highest region, while Flanders and North East England are the third highest with a similar distribution of farms by economic size. A similar distribution of farms with a fat left tail is observed in Ireland and Finland. With a comparable distribution of holdings by surface, Basse Normandie and Friesland obtain a very different economic outcome, respectively 30.5 ESU and 90.3 ESU. This is partially due to the difference in labour input, respectively 1.2 and 2.3 units per farm, and likely to livestock density also.

Table 8: Agricultural holdings by farm type (% of the total number)

	Arable	Horticulture	Permanent cropping	Herbivore	Intensive breeding	Mixed cropping	Mixed breeding	Mixed
Flanders	13.4	10.9	5.9	37.5	9.8	3.6	7.6	11.3
Czech Republic*	23.5	1.4	9.4	19.5	8.3	9.7	9.6	18.6
Brandenburg	33.0	4.7	3.4	26.8	1.4	6.0	3.4	21.3
Basse Normandie	7.5	1.1	1.1	77.2	0.9	0.9	5.1	6.2
Ireland	3.7	0.3	0.1	92.3	0.4	0.1	0.3	2.8
Veneto	46.7	1.5	18.9	16.2	0.8	9.6	1.4	4.9
Emilia Romagna	37.2	1.2	29.1	15.2	1.0	11.7	0.9	3.7
Friesland	6.9	1.8	0.5	85.2	2.6	0.8	0.7	1.5
Finland	47.5	4.7	0.6	36.1	1.9	1.9	0.5	6.8
N. East England	53.3	3.1	0.4	13.6	5.8	1.8	2.2	19.8
EU-15	21.0	2.8	35.8	21.7	1.5	8.0	2.7	6.5

Source. Eurostat (2000), *: FADN CZ (Agrocenzus 2000/2003)

The predominance of cattle and sheep farming in Basse Normandie, Ireland and Friesland is illustrated by the proportion of herbivore farms (Table 8), which reflects land use (Table 4). There is similar distribution between arable, herbivore and mixed farms in Brandenburg and North East England, while there is more or less a balance between arable and herbivore farms in Finland. The distribution by farm types in Veneto and Emilia Romagna is dependent on their location, with a predominance of cattle and sheep farming in hilly part, and mainly arable and permanent crops on lowlands. The diversity of Flanders is illustrated by the distribution of holdings by farm type. Nevertheless there is a predominance of livestock farms (pigs, milk, cattle and poultry) as shown by the total of herbivore, intensive breeding, mixed breeding and mixed farms (66.2% of holdings). Otherwise, the proportion of horticultural farms (10.9%) partially reflects the crucial role of horticulture in Flanders.

Table 9: Main trend in farming

Flanders	Conversion from arable farming into intensive horticulture
Czech Republic	Shift from commodities to non-market goods (multifunctionality)
Brandenburg	Shift from grain to forage and oilseed production
Basse Normandie	Intensification and consolidation of farms towards arable crops
Ireland	Specialisation towards beef production
Veneto	Quality products (wine, fruit, vegetable, cheese…)
Emilia Romagna	Quality products (wine, fruit, ham…)
Friesland	Dairy and cattle farming on grassland
Finland	Shift from livestock farming to crop farming
North East England	Swing towards arable systems

Does foreseen trend in farming should strengthen current orientation (Table 9)? Given a limited availability of land, Flanders, Veneto and Emilia Romagna are likely to value their know how and good integration in the agri-food complex, and therefore to favour horticulture crops and the production of quality products. According to natural conditions, farm support and the structure of holdings the shift towards arable systems should continue in Basse Normandie and North East England, while the output mix should favour forage and oilseed production in Brandenburg. Nevertheless past trend could be dampened by the recent reform of the Common Agricultural Policy which did not favour grain production. Current specialisation towards beef production in Ireland and dairy farming in Friesland is likely to be reinforced. There is evidence of a new trade-off between the various agricultural outputs with a shift favouring amenities and green tourism in The Czech Republic. Finally, the trend in Finland should strengthen the current state with very large regional differences. The specialisation towards crop farming should continue in the most suitable areas of the country.

1.5 Overview of the selection

Sustainable development requires a firm economic and demographic basis. From this viewpoint, rural policy addresses a series of challenges including lower than average incomes, ageing population with risk of depopulation and great dependency on the primary sector. But there is evidence that these problems are not met throughout the selected case studies. Ireland is on the path of prosperity, while the group of prosperous regions including Veneto, Emilia Romagna and Finland, suffer either the detrimental effect of an ageing population or disequilibrium in the labour market (Table 10). In contrast Brandenburg concentrates a number of handicaps with a decreasing and ageing population, a low-income level, and a shortage of jobs. The other regions can be ranked along this scale; Flanders is close to the leading group, while Basse Normandie, Friesland and North East England define an average group. The Czech Republic is in between Brandenburg and this average group.

Table 10: Main economic and social indicators

	GDP per capita		Population		Relative unemployment
	Level	Trend	Total	Density	
Flanders	High	Stable	Increase	Very high	Low
Czech Republic	Low	Stable	Decrease	Average	Average
Brandenburg	Low	Negative	Decrease	Low	High
Basse Normandie	Average	Negative	Increase	Low	Average
Ireland	Very high	Positive	Increase	Very low	Low
Veneto	Very high	Negative	Decrease	High	Low
Emilia Romagna	Very high	Negative	Increase	High	Low
Friesland	Average	Stable	Increase	High	Low
Finland	High	Positive	Increase	Very low	Average
North East England	Average	Stable	Decrease	Very high	Low

Note. Table 10 is based on Tables 2 and 3. GDP per capita categories are defined as follows: low is under 90, average is 90-110, high is 110-120 and very high is over 120 in 2000. Population density categories are as follows: very low is under 70, low is 70-100, average is 100-150, high is 150-250 and very high is over 250 in 2000. Relative unemployment categories are as follows: low is under 6.5, average is 6.5-10 and high is over 10 in 2003.

The appeal of rural areas for recreation and tourism is directly linked to the increase in income and the urbanisation process. Higher incomes encourage the demand for environmental quality, since they are accompanied by higher education, increasing the awareness of pollution and its harmful effects. For urban dwellers, a rural environment appears to support various opportunities to experience compensatory alternative surroundings and cultural or recreational activities. However, there is often tension between on the one hand rural and farming interests, and on the other hand tourists and visitors concerns. This is likely to result into conflicts between local stakeholders who benefit presumptive rights on the countryside and urban people who claim their own rights for recreational uses.

Table 11: Main agricultural indicators

	Land use	Holding size		Trend in farming
		Surface	Economic	
Flanders	Arable, urban	Small	Medium	Horticulture
Czech Republic	Arable, forest	Medium/large	Small	Non-market goods
Brandenburg	Arable, forest	Large	Large	Forage & oil seeds
Basse Normandie	Grassland, arable	Medium	Small	Arable
Ireland	Grassland	Medium	Small	Beef
Veneto	Arable, forest	Very small	Very small	Quality products
Emilia Romagna	Arable, forest	Small	Small	Quality products
Friesland	Grassland	Medium	Large	Dairy
Finland	Forest	Medium	Small	Arable
North East England	Grassland, arable	Large	Medium	Arable

Note. Table 11 is based on Tables 4, 5, 7 and 9. Holding surface categories are defined as follows: very small is under 10 ha, small is 10-25 ha, medium is 25-75 ha and large is over 75. Holding economic size categories are as follows: very small under 10 ESU, small is 10-30 ESU, medium is 30-75 ESU and large is over.

The diversity of land use, farm structure and economic size between regions must be emphasised (Table 11), while five main combinations of land use categories can been defined:

- mainly grassland (Ireland, Friesland),
- grassland and arable (Basse Normandie, North East England),
- mainly forest (Finland),
- arable and forest (Czech Republic, Brandenburg, Veneto, Emilia Romagna),
- arable and urban (Flanders),

there is evidence that within diversity is also significant, as shown by the following cases.

Finland is the most forested country in Europe. In the whole country the arable areas are very scattered, and there are large uniform arable areas only in southern Finland as well as along certain rivers. Originally the Finnish farming land was cleared from forest, and almost all forest areas suited for farming have been turned into arable land. However, farming areas are very small and often located far away from each other, and thus it has been very difficult to establish efficient conditions for farming activities.

Most of Ireland is covered by agricultural land and pasture is the dominant agricultural land use. Livestock rearing for meat production and dairying are the predominant agricultural

activities. Agriculture in the western and northern parts of the country is generally less productive than in the eastern and southern parts.

In North East England, the proportion of land in arable cropping or set-aside has increased over the last ten years with a corresponding reduction in the area of temporary grassland and rough grazing reflecting a swing towards arable systems in lowland areas. However, there are significant intra-regional variations in dominant land cover. For example, the western areas of the region are dominated by poorer quality soils supporting upland and hill grassland, moorland and coniferous forestry. In some parts of the region, forestry is a particularly significant land use, for example approximately 20% of Tynedale district is afforested. The south, the eastern coastal plain and the far north of the region are mainly arable areas.

There are also important intra-regional differences in Emilia Romagna. Most of the plain along the Po River benefits a very good soil suitable for arable farming. Lowland was dried through long land reclamation and is likely to being converted back to wetlands. The hilly and mountain area provides outdoor recreational opportunities, while the coastal zone is oriented towards summer tourism. A similar diversity characterises Veneto, which extends from a coastal zone with very large wetlands up to high alpine range.

As summarised in Table 11, the trend towards a more specialised farming should continue in the next future. This should favour livestock farming in Ireland and Friesland, arable crops in Brandenburg, Basse Normandie, North East England, and horticultural crops in Flanders where the availability of land is lower. Established experience by selling traditional quality products is likely to influence the future evolution of farming in Veneto and Emilia Romagna, while there is evidence of a trend towards a more multifunctional agriculture in the Czech republic. However, the conversion of grassland into arable land should continue at a lower speed than in the past, and in addition could be stopped if strict requirements on the maintenance of grassland would be introduced in the next future.

2 Supply of AESs

2.1 Historical perspective

EU agri-environmental policy results from ideas and practices taken from different countries and has gradually expanded to an extent that is unique. Although, European legislation provides a precise and comprehensive framework, past experience with agriculture and the environment, environmental concerns, institutional arrangements and lobby strategies are very different over Europe.

In 1974 the Dutch Government made a significant entry into the field when it was decided to develop a regulation whose overall purpose was to improve the interface between agriculture and wildlife, and landscape. Reserve areas and management areas, in which agri-environmental schemes were proposed, have been designated. The policy instrument that emerged was the management agreement in which farmers make a six-year contract with the Government for maintaining and improving wildlife and landscape in designated areas.

The British Government promoted the concept of Environmentally Sensitive Areas (ESA). ESAs are areas of landscape, conservation or archaeological interest where farmers are offered financial incentives to comply with a set of management practices designed to secure conservation objectives. In contrast to Belgium, France or Italy, the implementation in the UK has been very fast and farmers, which may be partly explained by the comparatively slight constraint they impose on the practices of many participants, have taken up agreements enthusiastically. Founder EU-members, such as Belgium, France, Italy, were not instrumental in securing the inclusion of agri-environmental provisions within EU legislation up to the 1992-CAP reform. Nevertheless, transposing European agri-environmental policy into national law and nominating national competent authorities was relatively straightforward. However, a number of differences emerged between countries resulting from significant differences related to the role of agriculture and concerns about the environment. Compared to some länder of the former West Germany, France was a late participant in agri-environmental programmes.

When new Members joined the EU in 1995, they had to put the *acquis communautaire* into effect at the national level. This has created a shift in agri-environmental policy as illustrated by the Finnish case. Indeed, Finland experienced an original way to deal with the interface between farming and the environment. Before entering the EU, agricultural administration and farmers' union jointly designed agricultural policy, farmers being acknowledged as the best guardians of the countryside, the philosophy was to entrust them with the protection of the environment.

Despite the implementation of pre-accession schemes, a dramatic change in public policy should result from the last enlargement of the EU to Central and Eastern European countries. Related to agri-environmental programmes, this point is illustrated with the Czech Republic case. In 1994, the first agri-environmental programme offered subsidies for applying a series of specific measures, but unfortunately, this programme suffered a number of drawbacks. The installation of the Czech Republic agrarian policy for the 1999-2003 pre-accession period put emphasis on agri-environmental issues. It defined the first fully compatible measures with EU legislation.

2.2 Environmental assets

Because farming and forestry occupy so much of the rural territory, their role in managing rural space and shaping the rural landscape is fundamental. The potential contribution of tourism to rural economics development is acknowledged and encouraged by the AESs. But such tourism needs a provision of environmental goods, which are supported by the maintenance of environmental assets including water body networks, a mosaic of landscapes and habitats.

Land use patterns have gradually settled into a few major categories: urbanised areas, farmland where areas of intensive farming are juxtaposed with marginal areas and forests. Farming is important for the upkeep of land in a number of areas with natural and physical handicaps such as less favoured areas and mountain areas, as well as areas of particular environmental relevance such as Natura 2000 sites. Indeed, agriculture maintains a significant share of the diversity of plant and animal species. It has created diversified environments, which provide suitable habitats for a wide range of species. Plants and animals that favour these semi-natural habitats constitute a considerable share of species in most rural areas.

Mountain areas are objectively defined by altitude or steep slopes, and extend over an important portion of Veneto, Emilia Romagna and Finland (Table 12). Otherwise, mountain areas are also under the less favoured area heading. Less favoured areas are designated by a mix of economic, social and environmental conditions, among which a poor economic situation and a danger of depopulation are required to define a large zone. Small areas affected by specific handicaps can be also designated. However, there has been some uncertainty about the precise nature of specific handicaps. All regions, except Flanders and Friesland, include less favoured areas.

As expected, regarding the general context, less favoured areas extend over a large part of Brandenburg (Table 12). They sum to more than half of agricultural land in Ireland and North East England, one-fourth in Basse Normandie, and one-fifth of non-mountainous agricultural land in Finland. This is a clear indication of the persistence of internal disparities that are only partly due to adverse natural conditions.

Table 12: Areas under specific designations

	Mountain areas % of UAA	LFA % of UAA	Natura 2000 on farmland	
			% of all sites	% of UAA
Flanders	0.0	0.0	2.4	0.1
Czech Republic*	12.5	59.4	na	2.6
Brandenburg	0.0	74.8	29.0	6.5
Basse Normandie	0.0	23.6	22.5	1.0
Ireland	0.0	52.4	27.9	3.2
Veneto	15.5	31.1	28.2	11.3
Emilia Romagna	22.1	26.7	4.4	0.7
Friesland	0.0	0.0	9.4	1.2
Finland	51.9	72.6	15.2	29.9
North East England	0.0	56.9	51.4	7.2
EU-15	17.9	54.8	na	na

Sources. Eurostat (2000), European Environment agency, June 2003
*: Green report of the state of Czech agriculture 2000, MoA

Most Natura 2000 sites require active management to maintain their conservation value, especially on farmland. The proportion of sites located on agricultural land ranges from 2.4% in Flanders to 51.4% in North East England (Table 12). These areas still account for a significant proportion of agricultural land in Brandenburg (6.5%) and North East England (7.2%), and are about 30% in Finland. Despite a series of delays in the designation of Natura 2000 sites in many places, the network is likely to grow in the next future. The location of sites on farmland will give farmers an opportunity to attract an additional financial support whose total amount could be significant. Up to now, this strategy has been successfully applied in several case studies.

For many rural communities new employment opportunities in recreation and tourism are offsetting the loss of employment in agriculture and forestry. Finland provides a relevant case of rural development based on the environment considered as a rural resource. Rural tourism started in Finland in the beginning of the 20th century, when boarding houses were established in connection with farms. Farm holidays were rediscovered a little more than thirty years ago, when efforts started to be made to obtain additional income to farms from farm holidays and renting of cottages. At present there are about 2100 enterprises offering rural holiday services and the number of bed places totals 45,000. Most of the rural tourism enterprises are relatively young, and the average age of the enterprises is only twelve years. In general forecasts indicate that the demand for rural and wildlife tourism services produced in small family companies should grow in the future.

The fact that the countryside is more and more popular is observable all over the EU. This evolution favours a diversification of rural economies and should provide new job opportunities to rural people. The existence of outstanding environmental assets such as wetlands, landscapes, shorelines offer good prospects for tourism (Table 13). Indeed, traditional countryside has been moulded by farmers' activities over the years and is considered to be beautiful and attractive. Otherwise, the duty of sustainability is to bequeath to posterity unique assets such as the Wadden zee in Friesland, the Spreewald region in Brandenburg, Ramsar sites in Basse Normandie or forest and water resources in Finland. However, the combination of more common natural assets having substitutes, with the

proximity of urban areas is also a positive factor for both marketing regional products and expanding tourism. Each case study provides such examples of success stories based on one-day visits or short stays, during which visitors may experience outdoor activities (hiking, hunting, angling) the local food or enjoy a quiet environment.

Table 13: Outstanding environmental assets

Flanders	• Bocage • Wetlands • Coastal zone (66 km)
Czech Republic	• Wetlands • Meadows with a diversity of species • Valuable landscape in mountainous areas • Wildlife & habitats
Brandenburg	• Moors (36 000 ha) • Wetlands (12 300 ha) • Beautiful & attractive landscape
Basse Normandie	• Bocage (95 000 ha) • Wetlands (25 000 ha) • Coastal zone (470 km)
Ireland	• High water quality • Countryside of high biodiversity • Beautiful & attractive landscape
Veneto	• Wetlands (25 850 ha) • Forestland (211 603-351 000 ha) • Coastal zone (170 km)
Emilia Romagna	• Bocage • Wetlands • Coastal zone (120 km)
Friesland	• Wetlands • Wildlife & agricultural landscape • Network of canals, small rivers & lakes • Wadden zee
Finland	• Very large water resource • Forestland
North East England	• Two National Parks • Two areas of Outstanding National Beauty • Two heritage coastlines • Two UNESCO World Heritage Sites

2.3 Pressure on the environment

2.3.1 Overview

Regarding cropping patterns, the most significant aspect for the environment is the shift from permanent grassland to arable land associated with the development of monoculture. This has created a monotonous landscape which most people do not find attractive, and high land-use intensity with its consequences: threat of erosion, water damage, destruction of biotopes and loss of biodiversity. Intensification and specialisation have come about through major structural changes involving a rapid increase in the average holding and the substitution of machines for labour. The ever-increasing size and power of machines used on arable land led

to soil compaction and erosion. It called for wider plots, which were obtained through land amalgamation or plot consolidation.

Comparable developments have taken place in the livestock sector characterised by a dramatic increase in intensive animal husbandry, notably pigs and poultry. Local effects of this intensive farming concern visual amenity since high-quality rural landscapes are damaged by the erection of grain silos and modern agricultural buildings for animals. Moreover the quantity of manure, combined with the other sources of nutrients, caused large quantities of nitrates and phosphorous to run off into rivers or aquifers.

Some available indicators give an overview of farming pressure on the environment. They estimate intensification either through total output per hectare[2] or through the quantity of nitrogen applied per hectare (Table 14). The surplus of nitrogen, because it takes into account the crop mix, is a better indicator of pollution than the application.

Table 14 :Agricultural intensification

	ESU/ha	Nitrogen (kg/ha)			Green forage on arable land (%)
		Mineral	Organic	Surplus	
Flanders	3.4	108	322	233	40.4
Czech Republic	na	59*	na	na	23.4
Brandenburg	0.6	91	37	85	14.6
Basse Normandie	0.9	76	78	33	43.1
Ireland	0.7	81	99	16	1.6
Veneto	0.7	57	60	15	13.0
Emilia Romagna	2.0	201	180	195	36.6
Friesland	2.8	81	39	56	45.9
Finland	0.8	77	82	24	32.1
North East England	0.5	91	37	85	16.3
EU-15	1.0	na	na	na	19.5

Source. Eurostat, * WP3 P9 DR 01

2.3.2 Main pressures

Regarding these simplified indicators, regions have contrasted average profiles. The most serious environmental stress should concern Flanders that faces a critical soil and water pollution, which are exacerbated by a big manure problem and urbanisation. There is a similar picture in lowlands of Veneto and Emilia Romagna, while highlands are threatened by land abandonment. It is interesting to compare these two regions with Friesland where output per hectare is similar but average nitrogen surplus is significantly lower.

Intensification is relatively moderate in the other areas. Nevertheless, Ireland, Finland and Basse Normandie should be distinguished from Brandenburg and North East England with respect to fertiliser use. Despite significant differences in average levels of intensification, there are high spots of water pollution everywhere. Thus the overload of nutrients is the most reported threat to water resources (Table 15).

[2] It is expressed in ESU (European Size Unit). See note 1 for a precise definition.

The agricultural landscape has a high degree of variety, even if the trend is towards more grain production on bigger fields with fewer interruptions. Otherwise, the development of consolidation of holdings has changed the character of grassland and led to a reduction in the area suitable for breeding birds. This trend affects both scenic and biological variety and is ranked as the second major threat.

Table 15: Most significant pressures
(ranked by decreasing order)

Flanders	1. Water pollution (nitrates & pesticides) 2. Intensive energy use (horticulture) 3. Acidification 4. Air pollution (greenhouse gasses)
Czech Republic	1. Biodiversity & landscape loss (land abandonment in mountainous areas with a valuable environment) 1. Water pollution 1. Soil erosion (mountainous areas) 1. Flood (mountainous areas)
Brandenburg	1. Biodiversity loss 2. Water pollution 3. Soil erosion
Basse Normandie	1. Biodiversity & landscape loss (conversion of grassland, drainage & abandonment of wetlands, destruction of hedgerows) 2. Water pollution (nitrates) 3. Soil erosion 4. Flood (sea tides, urbanisation)
Ireland	1. Water pollution (nitrates & sediments) 2. Biodiversity loss 3. Air pollution (greenhouse gasses & ammonia concentration) 4. Soil erosion (overgrazing on hillsides)
Veneto	1. Water pollution (nitrates in lowlands) 2. Biodiversity & landscape loss (conversion of grassland, drainage of wetlands, destruction of hedgerows) 3. Soil erosion (mountainous areas) 4. Flood (mountainous areas)
Emilia Romagna	1. Water pollution (nitrates) 2. Food & environmental contamination (pesticides) 3. Biodiversity & landscape loss (destruction of hedgerows & tree rows) 4. Flood 5. Soil erosion (uplands and hills) 6. Air pollution (greenhouse gasses)
Friesland	1. Water pollution (nitrates) 1. Biodiversity & landscape loss
Finland	1. Water pollution (nitrates & phosphorus) 1. Biodiversity & landscape loss (land abandonment in the north & intensification in the east & south)
North East England	1. Water pollution 1. Biodiversity & landscape loss 1 Threat to historic features 1. Soil erosion

The destruction of hedgerows, the conversion of grassland to arable land combined with the drainage of wetlands led to adverse effects on the landscape and biodiversity loss in several case studies, among which Basse Normandie, Veneto and Emilia Romagna. Cultural

landscapes are the result of centuries-old human use and are very much appreciated by tourists and countryside lovers because of diversity of the habitats and scenery. They are associated with traditional agriculture based on pastures and low-input farming. Land abandonment in mountainous areas (e.g. in the Czech Republic) or in remote areas (e.g. in Finland) results into the conversion of low productivity land into forest leading to habitat destruction. There is also some concern about the cultural and historical inheritance attached to traditional countryside (e.g. North East England and Basse Normandie).

Land degradation may result from several sources including soil compaction, wind and water erosion. Due to the sandy composition of soils, all arable land in Brandenburg is potentially prone to wind erosion. There is evidence of erosion of arable land due to unsuitable practices in the Czech Republic and Basse Normandie, while erosion is associated with overgrazing on hillsides in Ireland. Erosion creates a number of offside detrimental effects including a load of sediments in rivers, canals and water pipes. Otherwise, the risk of flood is reported in mountainous areas in the Czech Republic, Veneto and Emilia Romagna. It may result either from land abandonment or from a poor maintenance of farmland and forestland as well as urbanisation. It is also mentioned in Basse Normandie where it is due either to urbanisation or to the combination of high tides and wind. However in Basse Normandie, this latter source of risk is under control for decades thanks to civil engineering.

Air pollution from the emission of greenhouse gases especially ammonia, is only mentioned in Flanders, Ireland and Emilia Romagna. It leads to negative externalities through acid deposition but off-farm sites. Finally pesticide contamination (Emilia Romagna) and intensive use of energy (Flanders) are also reported.

The ranking of environmental priorities may vary according to the evaluator as shown by the Basse Normandie case. According to the agricultural administration, water quality is the most challenging issue, whereas scientific experts, who rely on a comparison with other French regions, consider that the protection of biodiversity should have the highest rank.

2.3.3 Environmental pressures and policy objectives

Policies target environmental objectives, which are consistent with the most significant pressures. However landscape and biodiversity protection are often viewed as a secondary objective, which should be achieved either through the maintenance of farming or the protection of water resources.

In the Czech Republic the 1990’s transition has been associated with a diminution of the environmental pressure because of an extensification process, and problems occurring because of land abandonment. In Central Moravia land abandonment is a crucial issue to deal with in mountainous areas, which benefit a valuable environment whose richness is, threaten by a risk of loss in biodiversity and landscapes. A global deterioration of soils also occurred from water and wind erosion, thanks to the destruction of hedgerows and small woodlands, as well as soil compaction because of improper mechanisation. Northern and Eastern Finland face a similar challenge, a dramatic land abandonment increase leading to a degradation of biodiversity and landscape. In other places, located in the south and west of the country water eutrophication because of an increasing use of nitrogen and phosphorus is the most challenging objective. Policies applied in Emilia Romagna primarily address water pollution due to an over-use of nitrates and pesticides, and land abandonment.

Otherwise the protection of water resources is the leading policy objective. For instance, the Irish Environmental Protection Agency held agriculture responsible for the majority of fresh water eutrophication. However, in addition the decline of the species and habitat diversity has also been attributed to agriculture. In Veneto, the water issue is particularly challenging because of pollution of highly valuable tourist spots such as the Venice Lagoon where there are catchment basin specific problems. Being a rather close lagoon with a limited water recharge, pollutants (nitrates, phosphates, heavy metals) accumulate on the sea bottom. This leads to very severe pollution and eutrophication problems. Hence this area is specifically monitored. Water pollution is also a main priority for Brandenburg, North East England and Flanders.

The protection of historical landscapes such as hedgerows in Basse Normandie, Emilia Romagna and Veneto, and walls in North East England is also targeted. The protection of meadow birds may be also a first policy objective as illustrated by Friesland.

2.4 Menu of AESs

2.4.1 Hierarchical systems

Ireland and Finland combine a compulsory menu of prescriptions and voluntary schemes. Obligatory measures are a means to give farmers an additional income support and are close to a cross compliance approach.

In Ireland, basic measures have to be applied by farmers in order to be eligible to supplementary measures. The menu of measures proposed to farmers was initiated in 1994 with the Rural Environment Protection Scheme (REPS). In 2000, modifications were proposed to shift from REPS1-contracts to REPS2-contracts. In 2004, REPS3 was implemented in order to enhance measure uptake. This scheme is proposed to all farmers whose holding is over three hectares. REPS-prescriptions apply to the whole farm. It includes twelve basic measures, which are compulsory and supplementary measures, which are optional. Most measures were already proposed in previous REPS. Some basic measures target specific national issues such as water pollution, or species and habitat maintenance. Some specific measures are restricted to particular areas.

There is a similar situation in Finland where the agri-environmental programme combines a General Protection Scheme targeting all farmers and a Supplementary Protection Scheme, which includes more specialised and effective measures targeting voluntary farmers. The former scheme proposes basic and additional measures. Basic measures are designed to secure the implementation of AESs in the whole country (as basic fertilisation levels of arable crops or maintaining biodiversity and landscape), while additional measures take into account special conditions of different types of farms. Farmers have to apply basic measures but select additional ones according to farm types. Thus accurate fertilisation measure is offered to crop farms whereas promoting animal welfare is for livestock farms. Once the General Protection Scheme is implemented, farmers can also choose measures in the Supplementary Protection Scheme. Basic measures are applied on the whole farm, whereas additional and special measures are applied only on specific parcels.

2.4.2 Environmental and topographical targeting

Zoning is used in most other regions. According to holding location, farmers can apply to one or several schemes or measures. This situation concerns all schemes in the region or a mix is available with measures proposed to all farmers and specific one reserved to farmers in specific areas. For example, environmental characteristics are used to target sensitive areas where farmers are eligible to specific schemes, other schemes being proposed to farmers who have no parcel in these areas.

In North East England, as in the whole England, the Countryside Stewardship Scheme and the Environmental Sensitive Area Scheme are offered. In North East England the Pennine Dales is the only Environmental Sensitive Area. Contracts are related to the management of a variety of landscape (including reversion to grassland, managing meadows and pastures, managing all other grasslands, managing moorland and around, establishing and maintaining grass margins) in specific areas. All farmers who are not eligible to the Environmental Sensitive Area scheme can benefit the Countryside Stewardship Scheme, which concerns similar practices regarding the management of a variety of landscape types. This scheme also includes measure dealing with planting and restoring hedgerows, fencing, restoring dry stones walls. The evaluation of these schemes in 2002 led England to propose an unified national scheme 'Environmental Stewardship Scheme' combining existing schemes. According to farmer choice and motivation, different levels are available. This scheme will be available from 2005.

In Friesland, many different types of wildlife and landscape management are available to farmers. The province of Friesland has developed ten regional plans. These plans deal with sub-plans among which there are: landscape area, management area and problem area. Each area is meant for AES focusing respectively on landscape, wildlife management, and less favoured areas. Schemes are offered to farmers who wish to contract according to the belonging of his land and to the regional plan. In total about thirty AESs are available. Protection of meadow birds has an important place in AES design, because interest for these birds has been part of the Frisian culture for a long time. In 1993 a new policy instrument was proposed. Contracts not attached to a specific designated area were available to farmers. Initially, the objective of combination of agriculture and protection of birds, botanical objectives and landscape elements was formulated. After different steps, free contracts were accepted and can be used for about 8000 ha all over the province. Free contracts are not free in their design but with respect to their location. A better term would be location free contracts. Compared to the traditional policy in the Netherlands, these contracts aim at increasing the number of farmers seeing results of meadow bird's protection in Friesland.

In Emilia-Romagna, there is a strong commitment to environmental issues and environmental norms were implemented very fast. The Rural Development Programme comprises eleven measures which have been designed to fulfil with the objectives of the European RDP. They especially focus the abatement of polluting substances and the provision of positive environmental services (landscape, biodiversity..). Eligibility rules are based on a topographical zoning that distinguishes land in plains, hills or mountains. In addition, there are 'agri-environmental agreements' targeting areas where relevant environmental problems exist. In selection of applicants, priorities are given to such farmers whose parcels belong to areas involved in agri-environmental agreements.

In the Czech Republic, the SAPARD environmental schemes were based on a zoning approach. Indeed, five pilot areas with specific priorities were selected to implement agri-environmental measures. Proposed measures had quantified objectives adapted to the environmental priorities of each pilot area. In the HRDP, three main measures have been maintained: organic farming, grassland maintenance, and conversion of arable land to grassland. In 2004 new measures were introduced.

In Veneto the RDP was implemented through a series of calls in which agri-environmental measures were proposed to farmers. The first call, including all measures, was launched in 2000, while the two followings were restricted to a limited number of measures because of budget cut. The likely positive landscape and environmental impact has been considered to select the two following measures: 'Conservation and restoration of meadows and pastures in hills and mountains' and 'Buffer strips'. The 2003 call was reduced to a single measure: 'Conservation of threatened vegetal breeds', while the 2004-call is based on a new measure: 'Animal welfare and energy from renewable sources'. Designation of the targeted areas is the most important point related to eligibility. For example, measures favouring wildlife and the conservation of permanent meadows are allowed only in flatland, while those for establishing buffer strips and hedgerows are allowed in hilly or flat area. Regarding applicants, preference is given to farmers belonging for some actions to groups of farmers having contiguous land and applying for the same action together in aggregated participation. This interesting point is specific to the Veneto region. Preferences also favour farmers who combine several actions. The idea here is to enhance effects of the single action to obtain positive synergies.

2.4.3 Towards more complexity

The combination of measures offered to most farmers with different types of zoning can lead to more complex situation as illustrated by Flanders and Brandenburg. The attempt to integrate a number of different objectives may finally result into a disorderly implementation as shown by the French case.

In Flanders, there is a combination of measures offered to a large population of farmers with some measures targeting a geographical area. For instance, zoning is used for the management of meadow birds and the management of field edges. It is also considered in the context of water management to define vulnerable areas where specific measures for reducing fertiliser application are applied.

In Brandenburg, there are four schemes of interest. First of all, the Cultural Landscape Programme (KULAP) includes sixteen measures targeting grassland management, arable land with plant protection, preservation of genetic diversity and extensive pond management. This programme is rooted in a set of extensification measures applied since 1992. The KULAP programme originated in 1994 and has been slightly modified to shift to the current KULAP-2000, which will cover the period 2000-2006. While all farmers are eligible, the KULAP does not offer a free menu since some measure are not compatible. A second programme includes a set of seven measures related to restrictions on farming in designated area for flora, fauna and habitat protection. This programme, based on Article 16 of 1257/99, is applied since 2000. The third programme is run under Article 20 since 2000 in the Spreewald area. It continues previous measures aiming at maintaining cultivation on the small fields and pastures in order to support traditional agricultural practices and therefore to ensure the economic basis of the

Spreewald area which is tourism oriented. Since Brandenburg is an Objective 1 region, these three programmes are co-financed up to 75% by the EU, while the fourth programme is supported by Brandenburg only. This is the contractual nature conservation programme, which originated in 1991 under the Brandenburg nature protection law and is offered mainly in designated areas. It has been refocused to avoid overlapping with the KULAP and it now predominantly targets landscape maintenance.

In France the situation is much more complex under Regulation 1257/99. Specific agri-environmental actions could be included in the territorial and environmental part of the CTE (Farming Territorial Contract). In Basse Normandie, a hundred measures were initially proposed to farmers. To apply for CTE farmers had to draw up a farm diagnosis and to design a global farming project. According to the CTE approach, farmers could opt either for an individual strategy integrating the economic and environmental farming, or a territorial strategy aiming at common objectives. CTEs suffered a number of drawbacks including the complexity of procedures, the questionable environmental efficiency of many measures and the multiplicity of eligibility conditions. In addition, uptake remained lower than expected by the Government, while public administrative costs were uncontrolled. Despite the introduction of CTEs, some former agri-environmental actions were still offered to farmers, but with compensation down compared to the CTE scheme. Practical difficulties, as well as political change led to a shift towards the CAD (Sustainable Farm Contract) in 2003. This new contract is based on a more territorially focused approach and proposed a limited number of measures. Otherwise, the grassland premium scheme was renewed into the grazing agro-environmental scheme in 2003, which benefited a 70% increase of the premium. Eligibility rules and premiums vary across NUTS3 levels in Basse Normandie.

2.5 Organisational specificities

2.5.1 Involvement of local actors

A first element of organisational specificities is related to the involvement of regional and local people. Their active participation in AESs design and implementation may lead to a better fit to local conditions. While in Ireland REPS have been defined by the Ministry of Agriculture, REPS1 was designed after consultation with stakeholders interested in environmental protection and with farming organisations. In Finland, the involvement of lots of actors at the design step must be emphasised. Nearly one hundred actors from regional to local level administrations, interest groups, and professional organisation commented the draft version of the agri-environmental programme.

In Italy, rural development programmes have been set up at the regional level. Regarding Emilia Romagna, several aspects have to be specified. Farmers' organisations are strongly connected to the territory and deeply influence the policy process. Different organisations, including associations and particularly numerous cooperatives play a significant role in agricultural policy and programming. Formal and informal links were important in the design of AESs in Emilia Romagna. But, provinces are free to organise the implementation and selection for payments. Payments are attributed to measures per province authorities. In the whole region, regional guidelines apply to identify priorities in order to allocate economic support. Until 2003 priorities were ranked as following: participation to 'agri-environmental agreement' (i.e. agreement with the objective of targeting applications in the areas where relevant environmental problems exist), localisation of the surface interested in the scheme,

typology of action subscribed, age of farmer applying, continuity with previous contracts. This classification leads to a score system. The territorial level can establish additional scores (based on range of coefficients established by regional authorities) in order to guarantee that AES have the highest expected environmental effectiveness through radical change in farm management practices. For instance priorities can be: crop change, destination of farmland, localisation of the surface in more areas with higher potential environmental impact. Since 2003, two actions, 'conservation of set-aside' and 'recreation and maintenance of natural and semi-natural spaces and landscapes' are now on the top of the agenda. AESs favouring 'agri-environmental agreements' and giving an additional support to farm priority areas integrate territorial and environmental specificities.

Veneto region has a good and efficient administrative structure in the agriculture and forestry sector and benefits since the early 1970s a specific structure in its mountainous part. There are mountain communities in charge of physical planning, including land use. They are therefore the main actors of the conservation of landscape patterns of those areas. Farmer communities and environmental organisations are the second major players in the agricultural, forestry and environmental policy game.

The new established regional development agency in North East England thanks to the process of decentralisation of administrative structures has to be mentioned. But various environmental NGOs are among the most important lobby group shaping rural policy and therefore are involved the AESs process. As in whole England, there are steering and working groups for the implementation, evaluation and review of AESs. All these groups help to ensure some strategic overview of the AESs included in the England Rural Development Programme (ERDP) at national and regional levels. Especially, regional programming groups brought a new approach and provided a useful forum, giving organisations a chance to meet and network with other agencies. However, many stakeholders were not convinced by the real power of this group to influence strategy. Another group called regional consultation group was implemented. For the Department for Environment Food and Rural Affairs, this group was a way to enable networking and to test out ideas. For stakeholders, this group was greatly criticised because it was seen more as a 'talking shop', less practical than a real workshop. In North East England the regional branch of the rural development service worked on the ERDP, with the help of the Regional Programming Group.

The complex institutional setting of Flanders results from the long transformation of Belgium into a federal state. Regarding AES responsibilities, the initial national Belgian plan contained two measures: organic farming and integrated fruit production, which were divided between the Walloon region and Flanders in 2003. Regional administrations have a key role in the initiation and implementation of AESs. The Flemish RDP was initiated through an agricultural conference. Pressure groups such as farmer organisations, local policy makers, and environmental groups were invited and could make suggestions on the plan priorities. AESs were initially presented by administrations and then proposals of the pressure groups were integrated. Study groups were initiated in order to work out prescriptions for new AESs. EU funding is allocated by the Belgium state to the Walloon and Flemish regions through a political decision-making.

In Friesland, most local actors take part to the implementation of AESs, however the leading role of environmental co-operatives in tailoring measures to the local context has to be emphasised. Many groups of volunteers are also active in protecting wildlife and landscapes influencing agricultural wildlife and landscape management. For instance they take care of

birds, they count birds for research aims. Before 2004, environmental cooperatives could receive the financial compensation directly. Farmers were paid by co-operatives on the base of their wildlife and landscape management and results of the management. Since 2004, in order to comply with EU legislation, farmers receive compensation directly. But as a contracting partner in a collective contract, farmers pay a part of their subsidies to co-operatives and they can get their money back depending on their management and results. The role of the EU as restrictive factors in AES implementation possibilities is to notice. The change occurred in the role of environmental cooperative is a good example of this point. However, the Dutch ministry launched experiments on wildlife and landscape management in order to gain experience with the design of AESs. These experiments were used within the policy design. Environmental co-operatives made the same initiatives, as the geese protection in Friesland.

2.5.2 Institution and implementation

In Germany, the rural development plan is proposed at the land level (NUTS1). Brandenburg is one of the new German länder and has therefore a particular situation since it was submitted to frequent and substantial reforms in its administrative structures. In 2004, a reform of the agricultural and environmental administration took place.

The Czech Republic has only recently implemented agri-environmental measures. However it gained some experience with schemes designed and implemented in rather centralised way under the Government Decree 505 issued in 2000. The process differed with the agri-environmental component of SAPARD that was applied to five pilot areas. Meanwhile there was non-governmental initiative with international support involving several environmental NGOs in a consortium, to prepare schemes. Quite pragmatically, the SAPARD Agency adopted the proposal of schemes in the full extent as prepared by the non-governmental initiative. Some experts from the consortium were asked to participate during official negotiations with the EU and defend the proposal. The consultation process of SAPARD was delayed, and particularly the approval of AESs came quite late, thus there was not sufficient time to undertake a massive information campaign among farmers. But short time available to the implementation led to failures explaining a low uptake in several pilot areas. But SAPARD introduced a specific cooperation of the Ministry of Agriculture with other authorities. The process of decentralisation of the state administration started in 2001, when regions (NUTS3) and regional self-governments were introduced. However, the rural development programme for the period 2004-2006 (HRDP) including all previous schemes, has been developed, designed and implemented at the national level. The convincing success of SAPARD, led the Ministry of Agriculture and the Ministry of the Environment to have cooperative meetings to elaborate AESs of HRDP even if they had different aims. The Ministry of Agriculture wants less targeted measures with significant income effect, while the Ministry of the Environment wants to maximise environmental benefits. But they globally understand the potential importance of these measures regarding environmental impacts and European subventions possibilities. Farmers unions were involved in the consultations with the Ministry of Agriculture. But these associations, as other professional ones, did not recognise the same importance to AES than ministries.

In France the situation is rather complex and some specificities are important to note. The shift from Regulation 2078/92 to Regulation 1275/99 involved a stronger input of farmers' organisations. Otherwise, the participation of environmental and other non-agricultural

associations, such as the consumer ones, remained modest in the design and implementation process of AESs. In Basse-Normandie the active involvement of the Regional Natural Parks has to be mentioned. Forums were also organised to discuss budget and guidance aspects of AESs, or to advice about standard contracts and measures as well as to validate the CTE files farmers submitted. So-called ‘standard contracts’ comprise a relevant set of measures met to fit socio-economic and environmental stakes within an identified territory or a particular production sector. In Basse Normandie, an inventory of the agricultural situation leading to the official classification of environmental priorities was achieved at the NUTS3 level. This led to propose NUTS3-catalogues of measures. One NUTS3 (Manche) opted for a set of compulsory measures that all contracting farmers had to implement. This process of harmonisation relied on a compromise and therefore generated some disagreement of local actors whose initial proposals were not included in catalogues. As mentioned before, farmers did not benefit the 20% topup premium for farmland included in NATURA 2000 sites because of a lack of coordination between local stakeholders and administrative bodies. While regional objective documents were validated, no crosschecking was completed.

3 Assessment of AESs

3.1 Choice made

3.1.1 Up-take in case studies:

Partial information is given for case studies, except for Ireland where there is no available data on uptake under REPS2 and REPS3.

Table 16: Uptake in Basse Normandie

Measures	Area under contract		Part of budget /year	Budget/ha/year under contract
	ha	% UAA	%	€/ha
Introduction of non vegetable crops	3600	0.2	14.43	478
Extensive management of grasslands through cutting or grazing (option: Withdrawal of the organic fertilisation)	13802	1	13.02	112
Extensive management of grasslands through cutting or grazing (option: Mineral fertilisation limited to 30-20-30)	11593	0.9	9.6	99
Extensive management of grasslands through cutting or grazing	24961	2	9.5	45.3
Winter covering of arable land	40661	3.2	9.5	27.7
Reduction (-20%) of nitrogen fertilizer	18321	1.4	9.4	61.3

Farmers selected only fifty-seven sub-measures out of a much larger set. Eight measures amount to eighty percent of the whole contracted areas. The most selected measure was only offered to vegetable farms, while vegetable production is not a leading activity of Basse Normandie. This is due to a strong involvement of targeted farmers in the CTE process through contracts initiated by the processing industry. Moreover, this measure was favoured by a substantial compensation. Otherwise, measures dealing with extensive management of grassland gathered 32.1 % of the budget and extended over 4% of UAA. The abatement of water pollution through a reduction of mineral fertiliser application attracts a significant share of the budget.

Table 17: Uptake in Flanders

Measures	Area under contract		Part of budget/year	Budget/ha/year under contract
	ha	% UAA	%	€/ha
Reduced fertilisers compared to the standard "vulnerable area water"	32019	5	39	68.8
Organic farming	1839	0.3	14.5	445.8
Soil cover	34326	5.4	12.6	20.7
Botanical management	1726	0.3	11.2	366.1
Integrated fruit production	9408	1.5	9.7	58

Leading measures deal with the reduced use of fertiliser for improving water quality.

Table 18: Uptake in Friesland

Measures	Area under contract		Part of budget/year	Budget/ha/year under contract
	ha	% UAA	%	€/ha
Species rich grassland margins	608	0.3	20.6	1052
Meadow birds grassland delay of first cut of grass till 15 June	760	0.3	14.7	600
Agriculture with natural handicap	4042	1.7	12.2	94
Meadow bird grassland delay of first cut of grass till 22 June	404	0.2	8.5	650

The share of measures dealing with grassland management has to be emphasised. They target the protection of meadow birds.

Table 19: Uptake in North East England

Measures	Area under contract		Part of budget/year	Budget/ha/year under contract
	ha	% UAA	%	€/ha
Pennine Dales ESA		(%of eligible UAA)	Na	Na
Tier 1-pasture Tier 1-rough grazing Tier 1-meadows Tier 2	19561 - 5455 1237	65 - 55 12	Na	Na
Countryside Stewardship Scheme Arable margins (km) Length of capital linear features (km)	91821 3606 1980	15.8	Na	Na

Tier 1: maintaining landscape and grassland. Tier 2: increasing and improving the nature conservation quality of hay meadows

Table 20: Uptake in Brandenburg

Measures	Area under contract		Part of budget/year	Budget/ha/year under contract
	ha	% UAA	%	€/ha/year
Extensive management of grassland	114229	8.8	40	130.7
Organic farming	83848	6.3	34	153.6

The numbers for area under contract are for 2003, while budget data refer to the whole of the KULAP budget and to the year 2002.

Table 21: Uptake in Emilia-Romagna

Measures	Area under contract		Part of budget/year	Budget/ha/year under contract
	ha	% UAA	%	€/ha/year
Organic farming	26459	2.4	35	1022
Integrated production	32600	3	30.9	191
Recreation and maintenance of natural and semi-natural spaces and landscapes	1987	0.2	16.4	1668

A large part of the budget is allocated to measures dealing with integrated fruit protection, which is an Italian specificity. Otherwise, measures dealing with grassland management are related to the fight against land abandonment.

Table 22: Uptake in Veneto

Measures	Area under contract		Part of budget/year	Budget/ha/year under contract
	ha	% UAA	%	€/ha/year
Conservation and restoration of meadows and pastures in hills and mountains	36809	4.3	Na	Na
Integrated production	35321	4.1	Na	Na

Measures are presented according to their importance in area under contract. The global budget for AESs is 190.06 Million €, of which 95 are financed by the EU funds; 58.72 are allocated to 2078/92 measures. Budget per measure in not available. Measures are classified according to three categories of land (plain, hill or mountain). Each year, only selected measures are proposed, because of budget constraints, according to environmental priorities.
'Conservation and restoration of meadows and pastures in hills and mountains' has been proposed in the three annual calls, explaining the great area under contract, while 'Integrated production' was only presented in the first annual call. Land under contract amounts to 8.8% of the Po Plain, 9% of hilly areas and 40% of mountainous areas. A large part of the budget is allocated to measures dealing with integrated fruit protection, which is an Italian specificity.

Table 23: Uptake in Finland

Measures	Area under contract		Part of budget/year	Budget/ha/year under contract
	ha	% UAA	%	€/ha/year
The five basic measures of the General Protection scheme	2100000	95.5	68.9	100.5
Additional measure: plant cover in winter and reduced tillage	904000	41.1	6.9	23.5
Supplementary Protection scheme: organic production	149721	6.8	5.7	117.6
Additional measure: measures on livestock farms	657000	29.9	4.7	22.1

Farmers have to comply with the requirements of the basic measures to be eligible to the other measures. This prerequisite involves the very high up taking of basic measures.

Table 24: Uptake in Central Moravia

Measures	Area under contract		Part of budget/year	Budget/ha/year under contract
	ha	% UAA	%	Euro/ha/year
Grassland maintenance with grazing	119069	25.1	75.3	33
Organic farming	35048	7.4	23.8	35.5

Due to administrative barriers (lack of organisation), the uptake was rather low in some pilot areas. Measures dealing with grassland management are related to the fight against land abandonment.

3.1.2 Technical support and training

The case studies illustrate a variety of situations with respect to technical support and training While, in some cases most measures do not require a specific technical support or training, in some others specific commitments are defined. In Ireland, each REPS participant is paid to undergo a twenty hour training course. This course makes farmers aware of the environmental benefits of REPS, their responsibilities under the scheme. The course also provides farmers with the knowledge and skill necessary to implement the scheme on their farm. Each farmer has to contract an agricultural planner who has been approved by the Department of Agriculture. The planner draws up the REPS plan, keeps it updated if necessary and certifies the participant's compliance with REPS. Teagasc and some of the private agricultural planners promote REPS. Teagasc also set up a number of REPS demonstration farms. In contrast, there is a very poor technical support and training offered to farmers in Flanders. For technical questions farmers can contact the administration for information and the staff of the Ministry of Agriculture go visit farmers once and a while to explain technical aspects of AES. For new measures sometimes information session are organised including field practice.

In the Czech Republic, the former SAPARD AESs required a specific training and seminars were organised. The HRDP AESs were designed in order to be straightforwardly

implemented without any further training. Only in some cases a close consultation with conservation bodies was considered for the protection of birds (corncrakes and waders).

In Emilia Romagna, no training is usually required to be eligible and get payments. However, the application of several measures such as integrated production and organic farming may involve serious technical difficulties at least when there is a technological shift, then some kind of training and technical support are essential. However, a specific expertise may be needed to apply for some measures such as the maintenance of landscape elements and the 10-20 year set aside. For example, a project involving a tree distribution may rely on a non-farm expertise.

In North East England, the new entry level environmental stewardship scheme and organic entry level scheme do not require special technical training. However, applicants to the higher level stewardship need to complete a farm environmental plan, the completion of which needs technical expertise. Farmers are asked to employ an adviser, surveyor or agent with the necessary expertise to complete their farm environmental plan and then claim the cost (paid at a standard rate) from the Department of Environment, Food and Rural Affairs.

3.1.3 Controls and compliance rate:

Basse Normandie and Friesland illustrate two contrasted cases with respect to control and non-compliance rates. In Basse Normandie, 5% of applicants were controlled and 80% did not comply in 2003, while in Friesland figures were respectively 45% and 1% according to 2078/92 data. Let us focus on measures easy to control such as contracts for meadow birds with a critical date of cutting grass in Friesland. In this case, the control rate increases to 70% leading to 4% of offences. So there is some evidence of a positive relationship between control and non-compliance rates, at least for easy to control measures.

Simplicity of contract and involvement of farmers in measure objective play a significant role regarding respect of farmer commitments. In Friesland the objectives of measures, especially meadow birds protection, have an historic weight. Hence farmers may be more concerned by such measures. Free contracts have been implemented in order to increase their uptake in bird protection. There is a similar situation in Central Moravia with respect to pilot areas in 2004. A 100% control rate resulted into a full compliance rate. The particularity of SAPARD pilot Areas where controls were imposed to all applicants led to a good respect of contract prescriptions. This also corroborates that adaptation to local conditions lead to well managed measures and high compliance rates.

The positive relationship between control and non-compliance rates can also be illustrated with Flanders where the control rate ranged from 1% to 53% across measures, according to risk analysis, in 2002. A 1% control rate is associated with a 0-2% non-compliance rate, while an increase in the control rate results into an increase of non-compliance. For instance for the measure ‘restoring, planting and maintaining small landscape elements’, the control rate is 27% and the non-compliance rate is 27%. But the measure ‘management of meadow birds’ is controlled at 53% and obtains a non-compliance rate of 10%; therefore the relationship is not a simple one since the easiness of measure application has to be considered.

In Finland 6.7% of farmers are controlled based on risk analysis or based on satellite views. Controls based on risk analysis lead to 24% non compliance rate, among which 55% had their

support cut. Satellite controls led to 7% of non-compliance, among which 13% had their support cut.

In Brandenburg, 6.9% of KULAP applicants were controlled on site in 2001, leading to 20% on non-compliance, while 8% of Article 16 programme applicants were controlled and 26% did not comply in 2001. In both cases, non-compliance was always due to differences between areas declared in the applications and actual areas under the programme.

Of course, differences in compliance rates have to be carefully taken into account because they only give a crude approach of a crucial issue. For instance, in France non-compliance have been categorised from low non-compliance to strict non-compliance. Evidence from Italian case studies show that a significant number of controlled applicants cannot be easily categorised into two groups only. Indeed, 4% of applicants were controlled in 2003 in Veneto, and 9% in 2002 in Emilia Romagna. Respectively 60% and 57% perfectly complied with the contract of interest, 7% and 10% did not, while 31% and 25% partially did, data being not already available for the others.

3.2 Environmental Monitoring

Some regions carry out large scale project, mainly on behalf the government. In other case studies scattered research are conducted on specific topics, according to the interest of researchers.

3.2.1 Large scale environmental monitoring

In Ireland, large scale assessment studies have been carried out by the Ministry of Agriculture with experts. The measures implemented had a measured impact on the environment (water quality in some areas, soil quality, reduced use of chemical fertilisers). Regarding the different programmes, REPS1 and REPS2 led to the same environmental impacts (REPS3 was implemented in 2004: environmental evaluation have not been done yet). The priorities of REPS are environmental protection, and particularly protection of species and habitats. Water protection has also a large place in REPS design. Hence priorities fit well with Ireland environmental problems arising for recent years. Regarding the fulfilment of the objectives, only the uptake of measures can be seen as a global indicator. Basic measures aims mainly at improving environment, biodiversity and landscape. Regarding REPS1 optional measures, measures 'Management of protected areas' and 'Rejuvenation of degraded areas' gather most of the uptake. Hence, environmental protection is the main outcomes of REPS1 contracts.

In Finland, the Ministry of Agriculture and Forestry launched a large scale research projects on AES environmental impact measurement called MYTVAS (1 and 2). Positive aspects were noticed in both projects: reduction of nutrients runoffs in order to protect waters, decrease in fertilisers use (especially phosphorus) but also negative points: increase in herbicides use and no contract where it was needed the greatest.

In North-East England, the mid term evaluation led to interesting points. Specific monitoring were also led to value achievement of objectives. In 2002, Evaluators judged that existing AES was not the best way to address environment and proposed a unified national scheme 'Environmental Stewardship Scheme' combining existing schemes. According to farmer choice and motivation, different levels are available. Regarding Environmental Sensitive Area and Countryside Stewardship schemes, specific monitoring programmes have been implemented to especially measure performance of the schemes with respect to biodiversity, landscape and historic value at a national level. Biodiversity priorities established by the UK government can be met in part through AESs. The Department of the Environment Food and Rural Affairs has noted that the impact of AESs is difficult to assess with regard to their landscape aims and objectives: landscapes value and quality are subjective properties and based on individual's perception, background and experience. However it can be noted that Environmental Sensitive Area schemes successfully maintain typical characteristic of landscape features, especially comparing agreement and non-agreement land. Environmental Sensitive Area and Countryside Stewardship schemes contribute to the maintenance of the historic environment in the English countryside when compared to non-agreement land. This point was noticed in the Pennine Dales (North East England). Regarding water quality, thought specific practices, Environmental Sensitive Area schemes could have improved water quality (reducing fertiliser and pesticide inputs, creating buffer strips alongside water courses…), but this objective was not a currently explicit objective of these schemes. Hence little information is available on their impacts. For Environmental Sensitive Area schemes, a systematic assessment of performance is based on objectives specific to each Environmental

Sensitive Area and on a number of performance indicators. For Countryside Stewardship Scheme, the monitoring was done in a different manner. Objectives are set up at individual level. Hence evaluation are based on links between scheme objectives, management prescriptions and participation, rather than on performance indicators as in Environmental Sensitive Area monitoring.

3.2.2 Targeted environmental monitoring

In Friesland, as in whole Netherlands, non-governmental agencies or active volunteers groups lead studies counting birds, monitoring of breeding, migratory and wintering birds and atlas work to assess abundance of bird population at a national level. At the local level, scattered research on AES impacts have been done: mainly ecological oriented research. These studies stated the maintenance role of contracted area regarding meadow birds. No creation of new suitable areas noticed. Regarding the environmental impact of AES at Friesland scale, only few scientific results have been published. Since 1981, several initiatives were taken to monitor meadow birds, by looking for nests and estimates of number of breeding pairs. Local monitoring also exist regarding protection of geese. Regarding AESs available in Friesland, 12 000 ha have been placed in reserve area with several grassland objectives in order to protect meadow birds. Specific species only breed in reserve areas. Hence, wildlife management is in these areas fully adjusted to meadow birds.

In Flanders as in the Netherlands, high environmental national problems as pollution by nitrates are managed through national legislation. As Flanders failed to reach the nitrate regulation, successive plans have been developed resulting in progress not sufficient to reach European standards. Regarding environmental impacts of AESs, both National Environmental Observatories and scattered research on AES impacts: official reports each year, by the Ministry of the Environment and specific studies concerning: erosion, mechanical weeding… Initially the Flemish government stressed the importance of environmental issues in the agricultural policy for 1999-2004. Especially organic farming was promoted and a reduced use of plant protection product was targeted. The appropriateness of AE measures is not so evident to judge. Some Measures were criticised. For instance the measure ‘soil cover’ was questioned because this practice was ever mentioned in the good farming practices, and already applied by many farmers before AES implementation. Regarding Flemish environmental problem, RDP evaluation noticed several points (only few ones are presented here). First the major problem of energy use was not enough targeted. The support of organic production was a good way to deal with pollution problems. Measures anticipating the acidification problems are not enough integrated.

3.2.3 Limited environmental monitoring

In Italian case studies, environmental objectives and AESs seems to be adequately linked. In Emilia-Romagna, this is mainly due to a good cooperation between interested actors in the implementation step. Moreover the allocation of economic support gives good place to environmental relevance of adopted measures. The evaluation report of the Emilia-Romagna RDP, stated that all measures impacted farming practices, and that a few ones avoided a shift toward bad practices. These conclusions do not seem reliable in reality.

In Basse Normandie, while a national observatory on CTEs was launched little attention was given to environmental aspects. Several scattered projects on agronomic or environmental impacts of regional or local AESs have been conducted. According to the concerned level (NUTS2, NUTS3 or territories), definition of the stakes to be taken in consideration has not always been clearly and precisely done. Moreover, farmers had to choose in a large menu of AESs without great connection with the territories priorities but with their specific individual situation. According to mid term evaluation report, Farming territorial contract sounds irrelevant. No environmental effectiveness was noticed because policy had initially two objectives (improvement of environment by targeting areas with strong stakes, and making aware as many farmers as possible of environmental and territorial issues). The environment improvement has been obviously less favoured.

In the Czech Republic, according to experts' opinion, SAPARD agri-environmental scheme priorities fitted well with the actual conservation priorities (landscape and natural resources management needs) in the selected pilot areas. However, since uptake remained low, expected objectives have not been achieved. Nevertheless there is some evidence of a positive environmental effect of the conversion of arable land into grassland measure. The impact of the other measures has not been really assessed, especially through a comparison with areas without measures. Under HRDP, launched in may 2004, there is a shift toward more effective conservation practices, but objectives of proposed measured are not quantified. Hence only uptake rate could provide information on objectives fulfilments. Threshold effect was also taken into account but more on local knowledge than on firm research results.

In Brandenburg, environmental priorities and motivations are fitted to the environmental weakness of the region: soil, water, biodiversity, habitat protection and landscape. It is important to note that a special support introduced in areas with NATURA 2000 sites is adapted to their share in the region. The same remark holds for the support introduced in the Spreewald region. Local conditions and actors are also taken into account with a flexible instrument such as contractual nature conservation. Regarding the mid term evaluation of Brandenburg schemes, the originality and innovative support introduced with Spreewald typical cultivation scheme was noticed. It was especially asked to develop and improve such a scheme. The same remark holds for the contractual nature conservation programme, even if this scheme was not evaluated in detail in the mid term evaluation. No more precise results on environmental impacts were given.

3.2.4 Main common characteristics

In most of the individual reports, there is a lack of information on the exact degree of changes in farming practices resulting from AES adoption. Especially there is no clear discrimination between schemes resulting into the adoption of new farming practices and schemes involving the continuation of already applied practices. Regarding environmental impact, threshold and scale effects as well as delayed environmental responses have not been taken into account in the design and implementation of most AESs. These points were only considered in Veneto and in the Czech Republic.

4 Institutional perspective

This section is an introductory reading to WP4 P5 DR 01. It provides an overview of the institutional setting with an emphasis on the nature of the transaction between the two parties AESs involve. Its main objective is to set up a theoretical framework to assess their environmental effectiveness and economic efficiency. Transaction characteristics are primarily considered, and then parties and the type of environmental good to be delivered (non-commodity output) are defined. There is some evidence of high transaction costs because of to transaction attributes. Secondarily, several factors that may affect the level of transaction costs are identified. As expected, the cost of implementing AESs crucially depends on the organisational and institutional setting.

4.1 Transaction characteristics

Given that transaction costs depend on transaction attributes, transactions have to be primarily characterised before analysing the role of organisations and institutions in AESs environmental effectiveness. According to the transaction cost economics perspective, the transaction is the unitary element of analysis. First of all parties and the nature of the good which is exchanged are considered before turning to transaction attributes.

4.1.1 Who are the parties and what is exchanged?

Case studies show that most AESs involve two parties: a farmer applying for a contract offered by a governmental organisation operating at one territorial level or another (NUTS 1, 2 and 3). Some contracts are more complex and look like a kind of collective agreement with several parties contracting more or less directly. Let us focus on a stylised model of AESs in order to simplify the analysis. Collective organisation will be related to organisational factors.

Note that the two involved parties contract for the exchange of environmental goods. Indeed, the European viewpoint based on the provider-gets principle reckons farmers a property right on land use. They benefit a compensatory payment for using land so as to provide non-commodity output (Hodge, 2000). According to case studies, there is evidence that all AESs involve compensatory payments for undertaking environmental friendly practices.

Whereas most AESs are contracted for five years, several regions consider organic farming and conversion to grassland worth compensating only for a more limited period of time. Indeed, Flanders attributes a higher payment to organic farming during the two-year conversion period than during the three following years. In England, the Organic Aid Scheme is a two-year conversion programme. In France, organic farming gives right to compensation during a five-year period, which is explicitly considered as a conversion period. In Germany per contra, organic farming as a part of the KULAP programme gives right to payments as long as agreed upon measures are undertaken. Central Moravia displays the same features in GD 505 and the HRDP. In Ireland, organic farming is part of supplementary measures which may be voluntarily added to basic measures in Rural Environment Protection Scheme (REPS) and give right to a continuous flow of payments although differentiated depending on the conversion period or not. Emilia Romagna (Veneto) also allows continuous payments for

Action 2 (respectively action 3AB) – organic farming – and modulates the level of payments according to the period (introduction or maintenance of organic practices).

Measures aiming at providing environmental goods may be classified into three types:

- Maintenance measures encompass the promotion of existing practices that are not harmful for the environment. They could also be named ‘status quo’ measures. Almost all AESs include such measures. For example in England, both the Environmental Sensitive Areas and Countryside Stewardship schemes propose measures to maintain grass margins and keep access routes (footpath, bridleways, cycle paths). In Germany, maintenance of extensive grassland was given the priority in AESs.

- Externality reduction measures include measures aiming at improving the environment through a reduction of adverse effects of farming. For example in France, AESs include measures targeting a reduction in fertiliser application. In England, a similar measure was embedded in a specific programme targeting Nitrate Sensitive Areas (NSA) and is now part of the strategy dealing with Nitrate Vulnerable Zones (NVZ). In Brandenburg, the menu of measures operating in Areas with Environmental Restriction includes payments for no application of synthetic nitrogen fertilisers and plant protectors. Note that in the Netherlands, the implementation of the Manure Policy may explain why such measure is out of scope of most AESs.

- Public good provision measures addressed the promotion of positive externalities of agricultural practices. The enhancement of landscapes in the ESA and CS programmes in England are typical examples of how AESs aim at providing biodiversity, amenities and beautiful landscapes. Permanent set-aside on ecologically sensitive areas in Germany is another relevant example.

Table 25: Examples of measures offered to farmers in AESs according to their type

	Maintenance	**Externality reduction**	**Public good provision**
Flanders	• Conservation of genetic diversity of local species under extinction • Maintenance of small landscape elements	• Reduced fertilisers compared to the standard 'Vulnerable Area Water'	• Management of field edges for increasing biodiversity
Czech Republic Central Moravia (HRDP)	• Grassland maintenance	• Establishment of grass belts on sloping grounds	• Conversion of arable land to grassland
Brandenburg (KULAP and Spreewald typical conservation)	• Maintenance of extensive grassland through grazing • Maintaining traditional methods of agricultural production	• Integrated farming • Organic farming	• Conversion of arable land into grassland • Permanent set-aside on ecologically sensitive areas • Late mowing
Basse Normandie	• Genetic diversity of local endangered breeds and species	• Winter covering of arable land	• Extensive grassland management through cutting (or grazing)
Ireland (Basic measures of Rural Environment Protection Scheme)	• Retention of wildlife habitats (M3) • Protection of features of historical and archaeological interest (M7)	• Use of herbicides, pesticides, and fertilisers near hedgerows, ponds and streams (M6)	• Improvement of the visual appearance of farm and farmyard (M8)
Emilia Romagna	• Preserve the genetic biodiversity of endangered species (Action 11)	• Integrated production (Action 1) • Practice of cover crops for soil protection (Action 3)	• Adoption of no tillage and extensive grass growing (Action 8)
Veneto	• Threatened animal breeds (Action 7RE)	• Buffer stripes planted on meadows (Action 4FT)	• Measures to favour wildlife (Action 10FS)
Friesland	• Maintenance herb rich grassland	• No chemicals and fertiliser	• Meadow bird grassland delay of first cut of grass
North East England (ESA, CS, NSA)	• Grass margin • Access routes	• Nitrogen reduction • Buffer zones	• Landscape enhancement

An alternative classification focusing on the technology is helpful to understand what is required to farmers entering AES. Indeed, the concept of jointness is instrumental since it matters whether an environmental good is a complement or not of commodities. From this standpoint a twenty per cent reduction in the use of nitrogen fertiliser (Basse Normandie) or the maintenance of organic farming (Action 2 in Emilia Romagna) are closely linked to the production process, while the restoration of ponds and the creation of hedgerows (Action 9 in Emilia Romagna) are not.

Although AESs target a shift from existing practices there is evidence that farmers may get money for already operating practices. When farmers have the power to influence the design of AESs, they may twist scheme requirements towards what they already do, so that compliance costs are nil. Flanders' report claims that measures under the 'soil cover' AES were of no environmental effectiveness since farmers were now receiving payments for practices they already committed to. French CTEs are said to have strengthened the application of already applied practices. Emilia Romagna report is interesting in that it mentions a study comparing practices between AES entering and non-entering farms. Although information is lacking on the latter, it is stressed that AESs' payments may compensate farmers for practices they would have undertaken without adopting AESs. The problem remains to distinguish among environmental practices those that would have been undertaken should the AES not have been signed.

The way measures are selected to be part of AESs at the design phase also impacts on the level of transaction costs. The French CTE-procedure is inherently costly with a design step involving proposals by NUTS 3-actors and a harmonisation one at the NUTS 2 level. However, in Basse Normandie, some NUTS 3 areas were more in favour of AESs and influenced the design of NUTS 2 level contracts. Those contracts then applied to all NUTS 3 areas. Manche (NUTS 3) influenced AESs design and obtained some benefits compared to other NUTS 3 areas in Basse Normandie.

4.1.2 Asset specificity

Asset specificity refers to the relative lack of transferability of assets intended for use in a given transaction to other uses. Highly specific assets lead to sunk costs, which have relatively little value beyond their use in the context of a specific transaction. The higher the asset specificity is the greater the interdependence of parties is. If asset specificity is low, firms can easily change their partnership and modify their output mix in order to comply with market opportunities. The demanding partner will choose to obtain inputs in the market place. However, if asset specificity is high, potential suppliers may find it too risky to make the necessary investments without the guarantee of adequate outlets.

Is there such specificity in the agri-environmental contracts described in case studies? Yes, although it ranges on a continuum from weak to high specificity. At least three types of asset specificity must be considered (Hagedorn, 2002): site, physical and human asset specificity.

- Site asset specificity: the asset looses value if invested in another location. Measures for protecting a specific ecosystem are not effective if undertaken elsewhere since ecosystems of specific interest are attached to a given area. Most AESs display such specificity especially when eligible areas rules are set. In Brandenburg, Natura 2000 sites benefit from specific schemes like Areas with Environmental Restriction Programme.

- Physical asset specificity: One party invests in specific equipments that loose value if used in an other transaction. For example, hedgerow maintenance requires specific machines.

- Human asset specificity: refers to the accumulation of specific knowledge to a trading partner or to a transaction, which looses value for another transaction. For example, farmers may invest in knowledge about specific measures to enhance the environment or about the way to monitor the contracts they sign (paperwork). Conversion to organic farming also required a precise training and learning. Otherwise, there are several cases involving specific production methods such as the Spreewald Typical Cultivation programme.

Farm surveys should give a comprehensive overview of asset specificity; reports on case studies only approach this important issue.

Table 26: Example of measures according to the type of asset specificity

Type of asset specificity	**Site**	**Physical**	**Human/ Cultural capital**
Flanders	• Management of meadow birds • Reduced fertilisers compared to the standard 'Vulnerable Area Water'	• Mechanical weeding for the reduction of pest management products	
Czech Republic Central Moravia	• SAPARD measures in Bile Karpaty • Crop rotation in cave protection zones (HRDP)		
Brandenburg	• Measures in areas with environmental restrictions		• Spreewald typical cultivation methods
Basse Normandie	• Local programmes (2078/92) • Maintenance of ponds (CTE)	• Hedgerow maintenance	
Ireland	• Management of protected areas (SM1)		
Emilia Romagna	• Environmental re-equilibrium of dairy and beef cattle (Action 6) • Conservation set-aside (Action 10)	• Creation and maintenance of hedgerows, trees, woods, small lakes (Action 9)	
Veneto	• Conservation and restoration of meadows and pastures in hills and mountains (Action 12PP)	• Hedgerows, small woods (Action 13SB)	
Friesland	• All measures in AESs		
North East England	• Sensitive supply areas (NSA) for reduction of nitrate contamination of ground water source		

The agent who invests in a highly specific asset requires the other party that the contract will last. Several factors may affect asset specificity. Under joint production, the provision of environmental good depends on the provision of market commodities. Therefore, efforts to deliver environmental goods are still more or less valued through the market. Joint production is likely to lower asset specificity. When alternative channels such as green tourism exist to monetise environmental friendly effort, farmers are fewer dependants on AESs. Asset specificity may then also be lowered. One must however be careful with respect to agro-tourism as a means to value farmers' efforts since tourists generally enjoy more the existing environmental and rural assets than the efforts of farmers.

As developed in the next sub-section, environmental outcomes are strongly linked to knowledge about the agro-environmental technology. It follows that measures in AESs should reflect this need to invest in specific human capital. However, the analysis of case-study reports weakly reveal organised education and training of farmers before undertaking AESs.

4.1.3 Uncertainty

Uncertainty is pervasive in agri-environmental contracts. It potentially concerns parties' behaviour and the environmental context of the transaction.

(i) Each party in the contract benefits from a power to influence the output of the contract, the environmental effectiveness.

On the one hand, there is an informational asymmetry between farmers and the State about measures effectively undertaken and the value of the land they contract on. Farmers may benefit from an informational rent since their efforts are costly to monitor and information costly to collect for the State. For example, non-point pollution prevents the State from determining which farmer has not lived up to his contract.

On the other hand, the State also benefits from an 'institutional rent'. Indeed, the State has the power to influence the rules of the game. Farmers then face a risk of contract breaching from the State after having invested according to the former contract. This happened to some French farmers. In 2002, CADs replace CTEs as a new tool for agri-environmental contracts. Only the CTEs that were already in the pipeline were signed at that time, while the ones that were about to be submitted were cancelled, although farmers had already spend some money on it. In front of some uncertainty on the stability of rules for applying for AESs, farmers may lack motivations to commit.

(ii) Uncertainty arises also because unequivocal causality between farming practices and environmental impact is infrequent.

Natural processes suffer from threshold effects for example. Farmers may live up to their commitment but may not be numerous enough to reach a threshold enabling the environmental improvement to happen.

Uncertainty also comes from natural processes like the weather. The Dutch case study reveals that breaching of contracts happened sometimes because bad weather conditions provided incentives for cutting the grass earlier.

Other sources of uncertainty cover the delay between the application of a measure and its effect, the difficulty of assessing the specific effect of AESs independently of other measures, the uncertainty about the future value of environmental benefits (option value).

4.1.4 Frequency of transactions and duration of agreement

Frequency of transactions between two partners is important since it enables costs incurred in establishing the contract to be distributed over many transactions. The higher the frequency of transactions, the easier it is to invest in specific assets. For example, investments in machines for hedgerows maintenance may be recovered if transactions are repeated over a certain period of time. Thus, another parameter to be considered is the duration of the contract.

Case studies show that AESs are usually five-year contracts without re-negotiation of the contract. Some contracts however are long-term like the long-term set aside which lasts 20 years. As noted in the French case studies, the uptake for this kind of contract remained low since it was impossible for municipalities (main actors of this scheme) to set up a 20-year budget.

However, it is often stated that five-year contracts are too short to observe any environmental improvement. According to the Dutch report, even ten-year AESs would be difficult to assess as for their environmental impact. The mid term evaluation of the Rural Development Programme of Flanders notes the need for more flexibility in the duration of contracts. Economic reasons may require alternation of production systems whereas current law requires one production system to be under contract for five years. Some countries offer ten-year contracts like the ESA and CS schemes in England but also Finland's Supplementary Protection Scheme which goes beyond basic measures. On the other hand, some regions reveal to offer four-year contracts like the Czech Republic or even one-year contracts like the Brandenburg Contractual Nature Conservation scheme mainly implemented by authorities in charge of environmental protection.

Table 27: Classification of AESs according to contract length

Length (years)	1	4	5	6	10	20
Flanders			All AESs			
Czech Republic Central Moravia		SAPARD				
Brandenburg	Contractual Nature Conservation (no EU co-funding)		KULAP 2000 (sometimes longer)			KULAP 2000 (Long term set-aside)
Basse Normandie			Grassland premium (2078/92) Regional schemes (2078/92) Local programmes (2078/92) CTE/CAD			Long term set-aside
Ireland			Rural Environment Protection Scheme (REPS)			Long term set-aside (REPS supplementary measure – SM4)
Emilia Romagna			Actions 1 to 8 and 11		Re-creation and maintenance of natural and semi-natural spaces and landscapes (Action 9)	Conservation set-aside (Action 10)
Veneto			Most actions		Incentives to cultivation of energy crops (multiannual crops – Action 6CE) Restoration and conservation biotopes (Action 8BZU) Set-aside (Action 9MR)	Incentives to cultivation of energy crops (trees – Action 6CE)
Friesland				RBON (2078/92) SAN (1257/99)		
Finland			General Protection Scheme		Supplementary Protection Scheme	
England			Nitrate Sensitive Areas (NSA) Organic aid scheme		Environmental Sensitive Areas (ESA) Countryside Stewardship Scheme (CSS)	

Longer agreements may not only favour specific investments but also reduce the frequency of contract re-negotiation which generally incurs high costs. For instance, in England, the ESA scheme (Environmental Sensitive Areas) is a 10-year agreement with an option to withdraw after five years. It certainly helps save re-negotiation transaction costs.

4.1.5 Output measurability

This attribute of transactions appeared through the development of the former attributes we characterised. It is however relevant to stress the measurability output issue for agri-environmental schemes. Output measurability critically increases the complexity of implementing AESs. Environmental conservation or improvement is usually a hard and overall costly task because of non-point source pollution or because environmental impacts of practices appear after a more or less important delay. So most measures are defined either in terms of techniques to be used or in terms of expected change in environmental pressures. Only in few cases, output measurement is straightforward. The example of Netherlands where counting birds is a joint product of birds watching is seldom met. But connecting supply and demand reveals also a challenge. That is why case studies show that AESs usually rely on proxies like specific farming practices that are expected to lead to environmental good conservation or provision. Thus, although contracts ought to be objective oriented, they are usually practice oriented. Although it spares from measuring the level of environmental output, costs of measuring whether the farmer undertook the required practices remain high. Practice-oriented contracts at least enable to reduce uncertainty on the farmer side.

Table 28: Practice-oriented and objective-oriented AESs

	Objective-oriented	Practice-oriented
Flanders	Reduced fertilisers compared to the standard "Vulnerable Area Water"	Most AESs
	Reduction of fertilisers and pesticides in ornamental plant production Organic farming Integrated fruit production	
Czech Republic Central Moravia		GD 505 SAPARD HRDP
Brandenburg		KULAP 2000 Spreewald Typical Conservation Areas with Environmental Restriction
	Contractual Nature Conservation (No EU co-funding)	
Basse Normandie		Grassland premium (2078/92) Regional schemes (2078/92) CAD/CTE (1257/99)
	Local programmes (2078/92)	
Ireland		Rural Environment Protection Scheme (REPS)
Emilia Romagna		All actions
		All actions
Friesland	RBON (2078/92) SAN (1257/99)	
Finland		General Protection Scheme Supplementary Protection Scheme
North East England	Environmental Sensitive Areas	Countryside Stewardship Scheme (CSS)

One must be careful when considering the existence of performance indicators. Sometimes, a proxy is used to define objectives but is closer to practice requirements than performance requirement. In England, the performance indicator for landscape enhancement is a threshold of agreements with a conservation plan which gives little information if not on actual improvements. It is especially difficult to set performance objectives for measures that are to some extent subjective, like aesthetic value of a landscape. The measurability of proxies is dependent on the way measures are defined. For instance, payments for stone walls maintenance are rather easy to enforce since measurement costs are low. Otherwise, it must be mentioned that in Brandenburg, contractual nature conservation can be objective oriented. Since this programme is very flexible and individual, however, there is no general explicit outcome stated.

As a conclusion to the analysis on transaction attributes, we may say that AESs in Europe cover a wide diversity. As suggested above, the higher asset specificity, the higher uncertainty, the lower the frequency of transactions, and the higher output measurement costs

then the higher transaction costs. Several suggestions follow from our discussion to enhance economic efficiency and environmental effectiveness: longer contracts, investments in human capital and a form of coordination of farmers in undertaking measures. Indeed, the costs of transacting will more or less affect contract efficiency depending on the way transactions are governed. The several actors in AESs are expected to adopt governance structures minimising transaction costs. Several organisational and institutional parameters may affect the level of these costs and what is also important, the distribution of transaction costs among parties in the transaction.

4.2 Organisational factors affecting transaction costs

Up to now, AESs have been showed to involve high transaction costs because of attributes of transaction. We focus in this sub-section on how organisational arrangements may help save transaction costs. Organisational factors reflect two aspects of AES implementation:

- *integration of the social demand for environmental benefits nested in the agricultural area:*
Social demand is primarily expressed by the EU which selected eligible measures for co-financing. However, the subsidiarity principle holds for AESs, therefore AES objectives depend on the social demand expressed at different decentralised territorial levels. When several territorial levels are involved, organisational factors are likely to be more complex.

- *AES cost-effectiveness:*
Cost-effectiveness depends on targeting with a trade-off between precision of policies and transaction costs and depends on reaching a critical mass of uptake in a relevant area when threshold effects hold. The production and use of agro-environmental technology must also be considered.

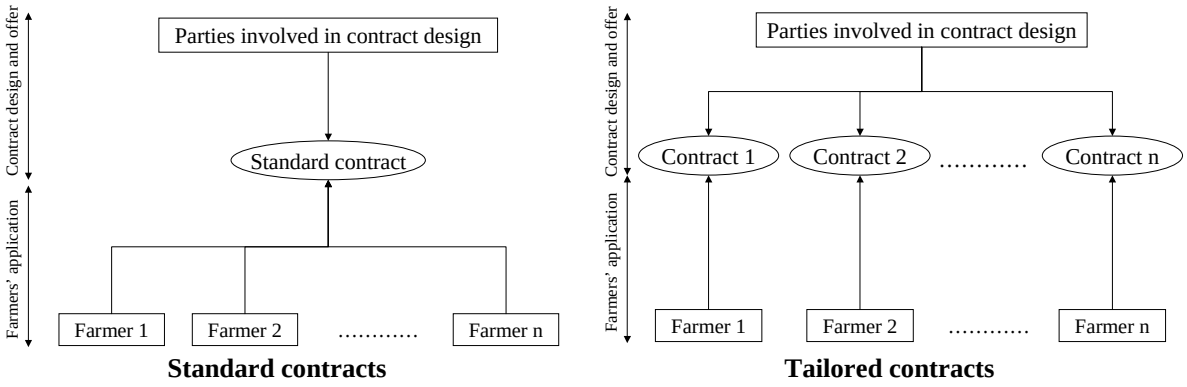
4.2.1 Collective organisation

There is a trade-off between the level of transaction costs and the precision of policy goals[3]. Policy makers may aim at designing precise contracts to reach the maximum level of environmental output. Achieving contract design fit with each particular environmental output provision may encompass high level of transaction costs. As a result, there is an optimal level of precision of policy goals.

This optimal level lies in-between two situations, either a standard contract applicable to each farmer, or series of tailored contracts taking into account individual characteristics. Two case studies report high levels of transaction costs when contract are tailored – CTE (1257/99) in Basse Normandie and Rural Environment Protection Scheme (REPS1) in Ireland.

[3] Vatn A., 2001, Multifunctionality: Applying the OECD Analytical Framework, Guiding Policy Design, Paris, 2 - 3 July 2001, 23p.

Figure 1: Comparison between standard and tailored contracts on the level of transaction costs entailed at the design phase

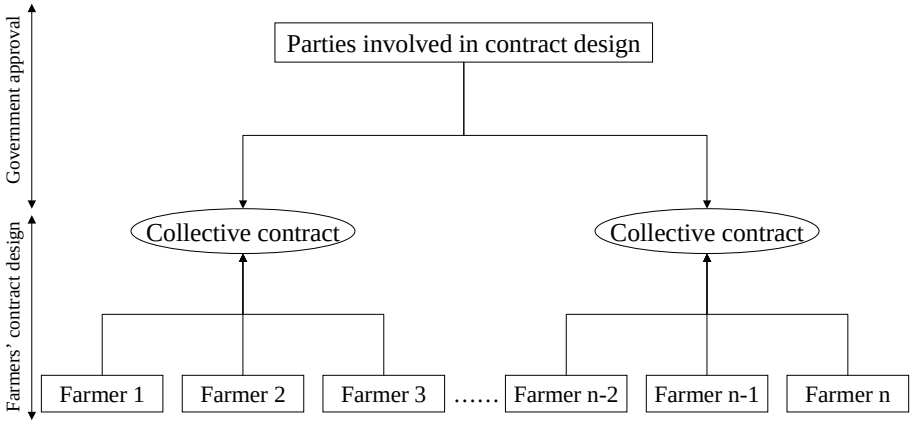


However, reaching an optimal level of precision of contracts goals is not the only way of reducing transaction costs. Transaction costs that can be reduced if contracts are collective. Indeed, costs may be born by a group of farmers having higher access to information and more influence on contract design than a single farmer.

Although AESs are exclusively based on individual contracts (between a single farmer and public authorities) for EU funding, a number of examples show that collective organisations are also met. They are likely to save money at one phase or another of the implementation of AESs.

In France, the so called CTE 'collectif' gave the opportunity to a group of farmers to participate to the design of a contractual framework on behalf its members. Ireland displays another example of individual contracts resulting from a collective design but with adjustments to each enrolled farm (Rural Environment Protection Scheme - REPS1 scheme).

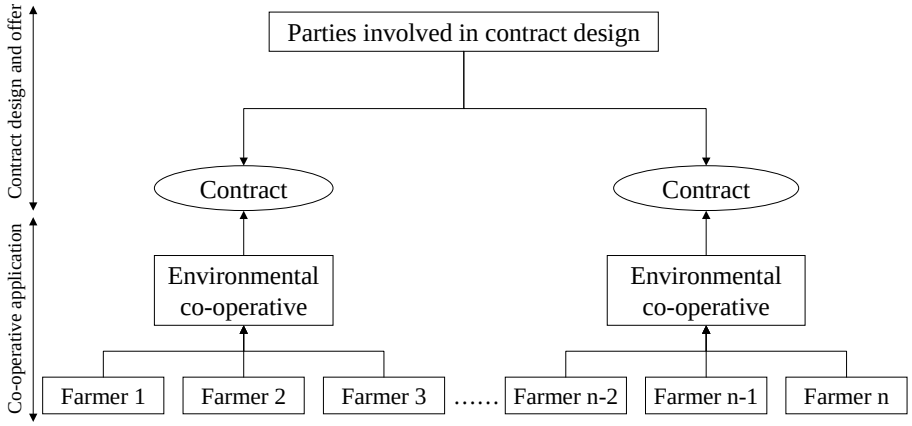
Figure 2: Collective organisation of contract design in French AESs (collective CTEs)



Collective organisation is also met in Friesland. Before 2004, farmers could apply collectively for AESs under both Regulation 2078/92 and Regulation 1257/99. Environmental co-operatives were contracting partners in AESs. They would then pay farmers according to their environmental performances. Since 2004, according to EU rules, farmers apply individually. They now receive a payment, a part of which is transferred to co-operatives. Finally they get all the money back if they comply with AESs requirements. Environmental co-operatives act

as consulting and pressure groups. They initiate environmental schemes and provide their members with information. They enable to save transaction costs at the AES design and implementation level.

Figure 3: Collective organisation of AESs in Friesland



Let us however note that although saving costs, collective organisation implies other costs. It may turn to a redistribution of costs from governmental-born costs to farmers-born. Increased bureaucracy for farmers emanating from collective organisation might be recognised as Friesland government does by offering co-operatives a public contribution for a four-year period.

4.2.2 Involvement of all relevant parties

Environmental protection is challenged by the need to define the demand side. Its public good characteristics makes it difficult to define a level and a type of environmental protection that all actors would agree upon. The involvement of all parties in the process of AES implementation would then guarantee that at least all parties reach a compromise. The levels and the types of environmental output to be provided would be mutually beneficial to all parties. Obviously, agricultural actors are always involved in the implementation of AESs. But do non-agricultural interests express their preferences all along the process of AES implementation?

Case study reports give a simple and direct answer: rural actors as such are seldom involved in AES implementation. For example, in Flanders, the mid-term evaluation of the RDP points to the need of involving rural actors others than farmers in the uptake of environmental-friendly measures.

Some regions weakly involve non agricultural interests (rural and environmental interests) but mostly through public authorities channels like the Flemish Land Agency (VLM) in Flanders, the upper land authority responsible of rural development and land consolidation (Landesamt für Verbraucherschutz, Landwirtschaft und Flurneuordnung) in Brandenburg, the Department of Environment, Food and Rural Affairs (DEFRA) in England.

In the Czech Republic, with respect to SAPARD, the situation differed from area to area. In some ones all stakeholders were involved from the beginning of the process, while in others NGOs were not involved. Although the Ministry of the Environment was weakly involved in

previous programmes (GD 505 and SAPARD) since it came to the process quite late by participating to implementation, farmers' training and monitoring, but its role is increasing. With the HRDP all major stakeholders were involved in the consultation process but only some actively participated.

Two regions involve *non agricultural interests of the private sector*. Emilia Romagna actors of the rural sector participate to the regional agricultural committee (*Consulta Agricola Regionale*) which includes representatives of the non-farm sector, such as manufacturing industries, small businesses and rural development organisations. In Finland, rural interests are represented in the design and implementation of AESs through a common governmental organisation (Rural Departments of the Regional Employment and Economic Development Centres) and the involvement of civil organisations like ProAgria and its Rural Advisory Centres.

4.2.3 Involved parties at the different stages of AESs implementation

The characteristics of the agents who participate in the different stages of implementation is crucial for the efficiency of AESs. Table 29 gives a picture of the several interests involved according to the following levels:

- Definition level (design/diagnostic of measures to be offered)
- Contracting level (applications administration and decision making[4])
- Enforcement level (control).

In some countries, the representation of interest is explicitly claimed through the designation of forums or groups where confrontation of viewpoints is theoretically possible. In Flanders, the Monitoring Committee involves governmental representatives empowered with a voting power, and several advising representatives of other interests through the Environment and Nature Council and the Flemish Agrarian Council for example. In France, a specific committee was created for AESs under Regulation 2078/92: the CRAE (Comité Régional Agri-Environnemental) in charge of defining NUTS 2 level AES budget and guidance. In addition the CDOA (Commission Départementale d'Orientation Agricole), the regular advising agricultural committee at the NUTS 3 level was consulted by State regional representative regarding agricultural guidance and the means to be employed to reach the goals. The CDOA and CRAE included representatives of the farmers' associations and the Ministry of Agriculture, while the CRAE includes in addition representatives of environmental associations and experts from the Ministry of the Environment. In 1999, the CRAE was suppressed while the CDOA was enlarged with representatives of environment and consumer associations and became the key committee for AES implementation. A Monitoring Committee is also in place in Ireland where the Department of Agriculture seeks advice among representatives of several interests. In England, the National Strategy Group and Regional Programming Groups are to meet these goals. Decisions are arrived at through a consultation and consensus building process with no vote. In Italy, all significant actors (Regions, Provinces, Comunità Montane, farmers' associations, private consultants and individual farmers) have a consulting role but do not formerly vote and make decision. A similar consultation procedure is used in the Czech Republic.

[4] We do not consider here scheme promotion, information and technical support.

Table 29: Involved parties in AESs implementation (Regulation 1257/99)

	Stage of AES implementation	Governmental representatives	Farmers' representatives	Environmental representatives	Consumers' representatives
Flanders	Definition	X	X[a]	X[a]	
	Contracting	X			
	Enforcement	X			
Czech Republic Central Moravia	Definition	X	X	X	
	Contracting	X			
	Enforcement	X			
Brandenburg	Definition	X	X[a]	X[a]	
	Contracting	X			
	Enforcement	X[b]			
Basse Normandie	Definition	X	X	X	X
	Contracting	X	X		
	Enforcement	X			
Ireland	Definition	X	X[a]	X[a]	
	Contracting	X[b]			
	Enforcement	X			
Emilia Romagna	Definition	X	X	X	X
	Contracting	X	X	X	X
	Enforcement	X[b]	X	X	X
Veneto	Definition	X	X[a]	X[a]	
	Contracting	X			
	Enforcement	X			
Friesland	Definition	X		X	
	Contracting	X			
	Enforcement	X[b]			
Finland	Definition	X	X	X	
	Contracting	X	X[a]		
	Enforcement	X			
North East England	Definition	X	X	X	
	Contracting	X			
	Enforcement	X			

X[a]: consultation, X[b]: with the involvement of an independent party. However in Brandenburg independent parties are involved in enforcement only of contractual nature conservation, which is a rather small programme. There is no independent party in the co-financed programmes of the RDP.

Although some region appear to involve large categories of actors, Table 29 must be moderated. Report on Basse Normandie relates the poor participation of environmental actors in AES implementation. In England, consultation groups (Regional England Rural Development Programme) are criticised as being more a talking shop than a real workshop. Environmental pressure groups are said to be over-represented in the forums and the Department of Environment, Food and Rural Affairs (DEFRA) is accused of using these

forums more as a means to give information to actors than groups influencing policies. Some other interests may not be represented. In England, archaeology and historic features are said to have been misrepresented during the negotiation/design phase. It lead to missed opportunities for maintenance. The English report also notes that some stakeholders do not contribute to all forums and working groups because of resource constraints.

In Italy, missing actors may somehow be identified in civil society's organisations, mostly reflecting their limited influence. In Brandenburg, the design procedure involves farmers and environmentalists, researchers being consulted. Missing people are for example consumer protection groups and members of tourism associations.

In Ireland, the Department of Agriculture implements REPS. The participants and their planners implement the scheme on the farm. The National Parks and Wildlife Service of the Department of the Environment, Heritage and Local Governments are marginally involved in the implementation in very specific cases. Missing people around the table are the environmental NGOs and government bodies with responsibilities in the area of environmental protection. The Department of Agriculture pays participants and enforces the scheme.

Note that the representation of interests is also a concern at the EU level. In England, the Environmental Agency that is responsible for implementing EU environmental directives is seen as weakly involved in CAP reforms.

4.2.4 Territorial level of payments and enforcement

The territorial level of payments and enforcement are also important. When both payments and enforcement are carried out by the same organisation (e.g. in the Czech republic), the same NUTS level may reduce coordination problems and guaranty that payments are given to complying farmers. However, when payments and enforcement are carried out by two different organisations, their link in terms of independence should clearly be established. Unfortunately, case study reports do not enable to determine such crucial link. According to Table 30, seven regions carry out payments and enforcement at the same NUTS level. We consider NUTS levels of organisations responsible for payments and enforcement although practical tasks may be organised at several other NUTS levels.

Table 30: NUTS level for payments to farmers and enforcement

	NUTS level	
	Payments to farmers	**Enforcement**
Regions with the same NUTS level for payments and enforcement		
Flanders (1)*	1	
Ireland (1)	1	
North East England (1)	1	
Emilia Romagna (2)	2	
Veneto (2)	2	
Friesland (2)	1	
Czech Republic Central Moravia (2)	1	
Regions with different NUTS level for payments and enforcement		
Basse Normandie (2)	2	2 & 3
Brandenburg (2)	1	1 & 3
Finland (1)	3	1

Note. NUTS level of case studies are given in parentheses.

4.2.5 Organisation of controls

The way controls are organised may impact on the incentives for farmers to live up to their commitment. EU regulation makes control procedures converge in case studies. Administrative controls are carried on a 100% farms basis whereas 5% of farms undergo on-site controls plus controls following a risk analysis (e.g. in Brandenburg, Finland).

Controls require human and financial means that are often lacking. The French case study notes the lack of permanent inspectors. As Basse Normandie, Emilia Romagna states a lack of rules on the fines to be applied in case of non compliance, a lack of time to carry out controls and the difficulties to apply new, inexperienced and/or normative rules. In Emilia Romagna, controls concern all RDP measures and are mainly carried out by the forest police on behalf the region. The forest police has no direct connection with the region, but suffers a lack of specific expertise, which results in a number of complaints.

Besides, some regions may benefit from economies of scale in controls. On-farm controls are already organised for other policies in case study regions. Co-ordination between policies on that ground may save costs. In Brandenburg, monitoring involves the help of expert authorities like plant protection, veterinary authorities and the authorities responsible for supervising the regulation on fertilisers, but on-site controls are directed to AESs only. A similar situation prevails in Ireland where REPS controls are dedicated to the scheme, although other schemes are also controlled but according to a separate procedure. In Flanders and in the Czech Republic, controls are directed to AES only. For the Czech Republic there was a change since controls concerned both AESs and other policies under the former HRDP.

In England, the paying agency is Rural Payment Agency a separate government entity which does land registrations and administer AES payments on behalf of the Rural Development

Service (RDS). The RDS is an arm of DEFRA in charge of the England Rural Development Programme (ERDP) which includes AES; so the RDS processes all AES applications. The RDS is also in charge of the control and enforcement of a wide range of policies under the ERDP; a significant elements of these policies is AES.

A lot of parameters have not been considered in this section because of a lack of homogenous information for the moment, for example, the involvement of organisations providing assistance to actors. A plethora of private or public bodies provide assistance to farmers thus acting on the level of transaction costs due to paperwork, knowledge acquisition and uncertainty.

4.3 Institutional parameters

Institutional parameters define the rules of the game. In the last sub-section, organisational parameters showed how agents organise in a given institutional framework and may thus lower or increase transaction costs. Besides, the environment in which decisions are made is also a concern. Given organisation more or less perform as a function of the rules governing contracts. Institutional parameters obviously impact both on AESs environmental effectiveness and on their economic efficiency. Case studies underline several of these parameters which are summed up into three categories: eligibility rules, the existing policy context in each region and the freedom of choice in the uptake of AES measures. Some rules are specific to a region, others are imposed by EU regulation. They may act either as constraints or as catalysts on contract efficiency.

4.3.1 Eligibility rules

Eligibility rules enable to focus on farms that will end up leading to the highest environmental effectiveness and economic efficiency.

(1) Higher environmental effectiveness may be achieved by taking account of the agro-environmental technology. In the first section, we characterised transactions as especially relying on the knowledge about the agro-environmental technology. Uncertainty and the difficulty of measuring environmental outputs lead to high levels of transactions costs. Eligibility rules allows to implicitly introduce a sort of "coordination" among agents.

(i) Environmental issues are usually site-specific. Targeting elects farmers that are located in specific zones. As for AESs targeting specific areas, table 26 on site asset specificity presents examples of measures on specific areas per region.

Friesland is the only region to propose to farmers highly targeted contracts (except free contracts also called provincial programmes). All regions display a mixture of both non-targeted and targeted AESs. For example, in Flanders, 3 programmes target specific areas: management of meadow birds, botanical management and reduced fertilisers compared to the standard "Vulnerable Area Water". In Brandenburg, KULAP programme does not display any targeted areas whereas Spreewald Typical Cultivation, Areas with Environmental Restriction and Contractual Nature Conservation concern specific areas respectively in geographic zones, in protected areas (Natura 2000) and with typical biotopes. In England, Environmental Sensitive Areas and Nitrate Sensitive Areas are vertical but Countryside Stewardship and Organic aid scheme are horizontal.

Some regions show an evolution in targeting. Central Moravia moved from non targeted measures to the introduction of targeted measures in the menu. Three horizontal schemes were implemented under the government decree in 2000 (GD 505). Critics on their lack of targeting lead to the design of vertical programmes in 5 specific areas under SAPARD. Afterwards, learning from previous experience, Central Moravia adopted both vertical (2 measures) and horizontal (6 measures) schemes under HRDP. Per contra, Basse Normandie displayed a move from highly to less targeted measures. In France, local programmes 2078/92 targeted specific areas while CTEs under 1257/99 do not.

Two region set eligibility rules only if basic measures are undertaken. Ireland's Rural Environment Protection Scheme basic measures are accessible to all farmers whereas farmers in specific areas may contract additional measures (SMA: conservation and regeneration of target areas, SM1: management of protected areas, SM4: long-term set-aside along designated rivers). In Finland, the General Protection Scheme has no eligibility rules except for additional measures whereas the Supplementary Protection Scheme targets a limited number of farms in specific areas.

Eligibility rules may also be ranged according to the NUTS level. Emilia Romagna uses a scoring system where rules of scoring enable to give priority to one applicant or another. Basic scores are given at a regional level (NUTS 2) and additional points are given at a NUTS 3 level.

(ii) Environmental issues are also sensitive to threshold and scale effects. Bounds on the number of contractors or on the surface of the contracted area may mitigate these effects.

In most regions, it is pointed out that knowledge about the agro-environmental technology was poorly taken into account. Central Moravia for instance designed AESs according to "the more the better" principle. Measures may however include lower or upper bound of contracted surface or edge length. As an example, Emilia Romagna considers threshold and scale effects through incentives to facilitate uptake like bonuses recognised to farmers located in priority areas and upper-bound thresholds for hedgerows maintenance for example. In France scale effects are taken into account at the farm level for certain measures with bonuses when more than 40% of the farm eligible area is contracted. In Friesland, packages of SAN (1257/99) require a minimum number of species on farm land.

(2) Eligibility rules can also entail higher economic efficiency. Targeting specific productions not only helps focus on specific environmental issues but also to "pick up low hanging fruits" by focusing on the productions with the lowest pollution abatement costs or provision cost.

Specific production farms may thus be targeted. It is straightforward when measures aim at breeding endangered species where livestock farmers are the eligible farmers. The results of Emilia Romagna AESs evaluation show the relevance of targeting specific types of crops where payments through AESs have the greatest impact in the uptake of environmental-friendly practices. According to this case study, strong economic incentives are needed in some crop productions to protect the environment whereas, in other productions, farms are still economically viable without AESs when managed in an environmental-friendly way (for example, because environmental investments may provide benefits through other channels). For some measures, eligibility rules are also directed towards specific productions in North East England.

4.3.2 Effect of other policies

AESs are not implemented in a policy-empty world. Countries have designed their own policies to deal with harmful and/or desirable effects of farming activities on the environment. When possible, national policies entered in AESs. However, existing national schemes may not always be eligible for EU funding through AESs. In Brandenburg, most Contractual

Nature Conservation measures were susceptible of being transferred in KULAP or Areas with Environmental Restriction programmes to be co-financed. However, these measures did not always fit with the 5-year duration of contracts recommendation in AESs.

Convergence between national or regional policies is crucial for the environmental effectiveness and economic efficiency of AESs. It affects opportunity costs for farmers and overall transaction costs. AESs may target environmental fields not covered by existing regulation or target the same environmental fields and go further.

National regulation and good farming practices: Compliance with national regulation often constitutes the baseline situation as in Friesland. AESs as voluntary tools should go beyond regulation. EU regulation 1257/1999 explicitly requires to go beyond good farming practices. Good agricultural practices guidelines were often established as a result of this requirement. When those guidelines existed, they were barely required before. In Basse Normandie and Emilia Romagna, no connection was made before EU regulation 1257/99 between AESs design and Good Agricultural Practices guidelines.

National environmental regulation: Other policies intervening on some environmental field may influence the kind of measures offered in AESs. That is probably why Dutch AESs do not consider input reduction, because of the national Manure Policy. But policies may even compete since Manure Policy is said to be detrimental to AESs efficiency. The moment and the method of the manure application in the breeding season is said to be negative for meadow birds.

Zoning policies for areas of specific interest: Several regions offer additional payments in targeted areas with a specific environmental interest acknowledged through a designation such as RAMSAR, Natura 2000 and Natural Regional Park conventions. For example, in France, most of the Regulation 1257/99 measures were eligible for a 20% additional payment whenever contracted within a NATURA 2000 area. However, it never applied in Basse Normandie since there was no cross-checking between CTE contracted areas and Natura 2000 areas. This situation prevailed in most French regions also because the implementation procedures of the Natura 2000 area administration were not ready soon enough to be coordinated with CTE implementation.

The same measure offered through several mechanisms: Sometimes the same measure may be offered by different AESs. Then, the level of uptake within a given AES does not reveal much about the overall impact of the measure. In Basse Normandie, a considerable fall in the total engaged area in PHAE (Grassland Premium 1257/99) has been noticed in 2003 and early 2004 although the incentive has been increased of 70%. One source of explanation of this fall is the complexity of the new mechanism and inappropriate prescriptions, but not only. Indeed, the first year of PHAE implementation, coincided with the end of the second round of PMSEE (predecessor of PHAE) as well as the enforcement of new AESs regulation 1257/99 (CADs replacing CTEs). Therefore, farmers willing to subscribe to PHAE were also given the opportunity to undertake such a commitment within a new AESs regulation 1257/99.

Additional objectives given to AESs: Adding socio-economic objectives to AES impacts on the level of uptake. Requiring farmers to adopt socio-economic measures as well as environmental measures increases the complexity of the mechanism. French CTEs (part of AES Regulation 1257/99) were composed of two parts: (1) economic and employment aspects and (2) territorial and environmental aspects. CTE uptakers had to choose at least one

measure in each axe. The mechanism was then quite heavy to manage. At the beginning of the process and at a national level, it was considered the possibility to contract AESs 1257/99 without necessarily contracting a farming territorial contract. But incentive were higher with CTE than with AES. So, no AES was contracted without CTE. Sometimes, it was even impossible like in Basse Normandie.

4.3.3 Rules for the choice of measures

The rules for the choice of measures may enable farmers to save transaction and production costs through economies of scope. This may be relevant for all AESs which propose to choose measures in a menu. In Flanders, all AESs consist in unitary measures. The combination of measures in an AES is quasi-irrelevant whereas the combination of AESs in themselves may save costs. Indeed, in Flanders, farmers can subscribe two or more AESs. Emilia Romagna also displays AESs as composed of nearly unitary measures. Each action is to be undertaken as a whole but actions may be combined more or less freely.

Table 31: AESs classification according to farmers' freedom of choice of measures in a menu

	Choice of measures in a menu	**No choice in a menu of measures**
Czech Republic Central Moravia	Government Decree (GD 505/2000) HRDP	SAPARD
Brandenburg	KULAP Spreewald Typical Cultivation	Areas with Environmental Restriction
Basse Normandie	CTE/CAD (1257/99)	
Ireland	Rural Environment Protection Scheme (supplementary measures other than measure A – conservation and regeneration of target areas)	Rural Environment Protection Scheme (basic measures plus supplementary measure A – conservation and regeneration of target areas – when the farmer is on the targeted area)
Emilia Romagna		All actions (1 to 11)
Friesland		RBON (2078/92) SAN (1257/99)
Finland	General Protection Scheme: choice possible for additional measures Supplementary Protection Scheme: Combination of environmentally unitary measures and investment measures	General Protection Scheme: package of measures for basic requirements
North East England	Countryside Stewardship Scheme: farmers select options from a menu on an individual basis	Organic aid scheme

In France, the number of possible measures per parcel was reduced in 2003 in CADs (regulation 1257/99). In CTEs (predecessor of CADs), a list of more than one hundred measures was proposed to farmers. CADs require at most two compatible and complementary measures per parcel. In Finland and Germany, every farmer at the NUTS 1 level faces nearly the same menu of measures. The evaluation of AESs in Brandenburg notes that the complexity of support measures makes synergies between measures difficult for farmers.

To sum up, leaving to farmers the opportunity to combine measures to their advantage may save on some costs but may increase others. Several organisations may assist farmers like Dutch environmental cooperatives. Farmers may also receive assistance through other policies. The province of Friesland offers subsidies for education on wildlife and landscape management and maintenance of landscape elements.

The review of institutional parameters was not meant to be exhaustive. It rather focused on the parameters underlined in the case study reports. Other institutional factors have been stressed in the first section like contract length for example or relying excessively on objective rather than environmental results in designing AESs.