

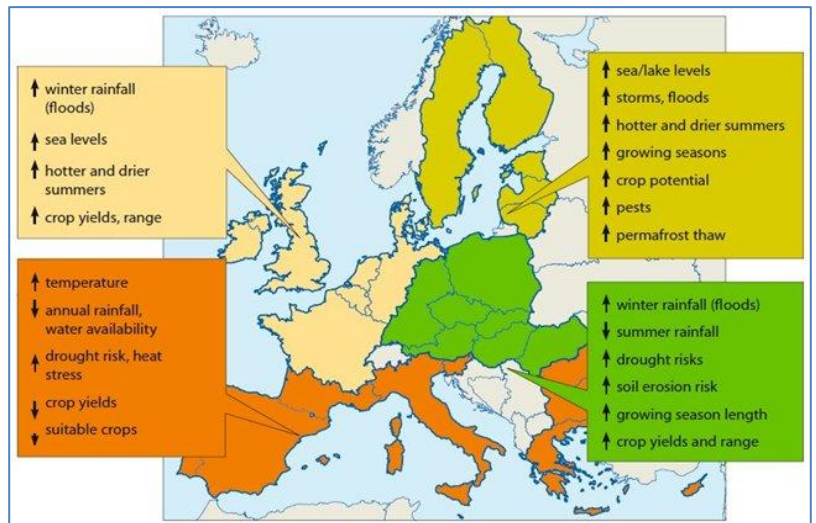


OSCAR

THE CASE STUDY AREAS

As part of the OSCAR project 3 regional case studies are being undertaken to test the approach adopted and pilot the draft manual and software. The 3 regions have been selected with care and chosen such that:

- Each contained "hotspots" where there are GHG emission issues with potential for mitigation or reduction and/or potential for climate change adaptation. Regions were chosen based initially on previous work undertaken¹ (see figure opposite) and confirmed by OSCAR project work.
- Previous related studies had been undertaken in the area that could be drawn upon.



The areas selected are Northumberland UK, Midi-Pyrénées, France and Lower Silesia Province, Poland.

1. Northumberland, UK

Located in the north-east of England, Northumberland is England's most northerly county with the Scottish border to the north. The county covers an area of approximately 501,300 ha and is the sixth largest of all English counties. Despite its size, Northumberland has one of the lowest population densities in England with around 311,000 inhabitants. 46% of these live in less than 3% of the land area giving an urban concentration in the south east corner of the county and a very low population density in the rural north and west. Outside of the south-east corner Northumberland's population lives mainly in small rural towns and villages.

The county is very diverse in both topography and land use. The principal land use in Northumberland is farmland with a good mix of farm types (see later). The area includes heritage coastline, uplands to the north (Northumberland National Park) and lowlands in the south. A large proportion of the county has been designated for its conservation or landscape value, with 13 Special Areas of Conservation (SACs) and 6 Special Protection Areas (SPAs), designated for water dependent features under the Habitats Directive. The county's National Nature Reserves account for around 20% of the national total. Tourism is strong in the area offering a diversity of activities. As well as its countryside and wildlife it is rich in history and culture with a wealth of local archaeological sites.



Key features:

- Wide range of soil types including mineral and organic soils.
- Rainfall is relatively high, although levels vary across the county. The county has an average annual temperature of between 7.1 and 9.3°C with the coldest areas inland.
- There is an extremely diverse mix of habitats across the region including native woodland, coastal habitats such as salt marsh, bogs, dune heath and species rich grassland.

Agriculture:

- Around 2,300 registered farms. Northumberland is one of the very few regions within England that offers a reasonable diversity of both cropping and livestock enterprises which includes lowland grazing and grazing in Less Favoured Areas.
- There are highly productive areas in the east and south that south include cereals, lowland beef cattle and sheep, and some dairy production.
- Less productive upland farming dominates northern and western areas.

Climate change and adaptation issues



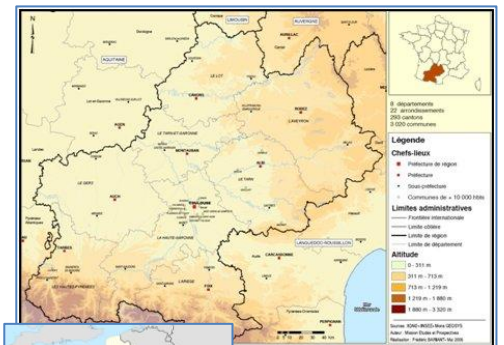
A recent study of the climate change risks for North East England has identified a number of potential key implications for rural communities, the most significant being the risk of more frequent of flood events. Several areas of the region have already experienced severe flooding in recent years. Agriculture and forestry in the County has also been identified as vulnerable to climate change. In particular increased risks of soil erosion and soil saturation has been highlighted and the possibility of crop damage from extreme rainfall events. However, there may also be positives. For example, the growing season is likely to start earlier which will make sowing in spring more viable and also offer the potential for new crops and improved ripening.

2. Midi-Pyrénées, France

The Midi-Pyrénées region is located in the south of France, along the border with Spain. It is the largest French metropolitan region with a total area of 45,348 km², representing 8.3% of the metropolitan France area. The regional population is around 2.7million. The region is divided into 8 departments. Toulouse is the largest city in the region and the administrative centre.

Midi-Pyrénées is relatively enclosed from the major European routes. It is organized around the plain of the middle Garonne, and covers the main part of the French side of the Pyrenees Mountains and also a large part of the Massif Central Mountains, offering a great diversity of landscapes and topography.

The region has recognized 1,450 areas as having an ecological, faunal and floral interest, the total of which covers 1.2 million of ha, about 25% of the territory area. The region also has important cultural heritage.



**Midi-Pyrénées,
France**

Key features:

- A variety of soil types but predominantly clay.
- Rainfall is variable ranging between 600-700mm in the centre of the region rising to more than 1,100mm in the mountains. The Mediterranean influence brings hot summer temperatures.
- There is large diversity of habitats and species across the region and the forests and rivers are important contributors to the regional ecological assets. The NATURA 2000 network includes 177 sites within the region.

Agriculture:

- The area is dominated by farming with around 48,000 registered farms. Main systems include crops, vineyards, sheep, beef and dairy. Orchards, vegetables and tobacco are also grown.
- The region includes a significant proportion of organic enterprises.
- Productivity is highly varied and the sector is stressed having lost ~42% of farms in the last 20years. Farm incomes are well below to the French national average.
- Irrigation is widespread.

Climate change and adaptation issues



Increased frequency of extreme rainfall events is likely to exacerbate soil erosion which is already a problem in the area. Significant soil degradation is a well reported issue and climate change effects such as wind and water erosion and drought may add to the problem. These issues may have longer term effects on farm productivity. Recent years have seen periods of extreme drought leading to restrictions in water use this situation is expected to get worse.

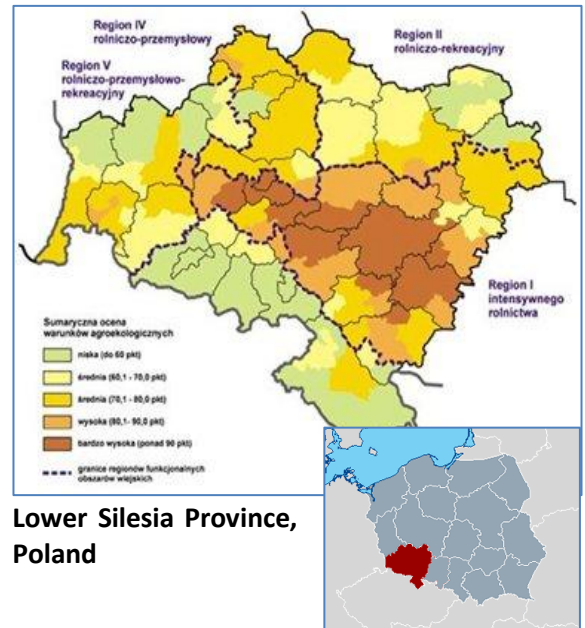
River water balance is fragile despite the efforts towards a better management of water bodies, due to scarcity of the resource in relation to the irrigation demand. Water quality regarding agricultural pollutants is also major issue but is improving due to measures implemented under the European Water Framework Directive.

3. Lower Silesia Province, Poland

Lower Silesia is situated in south-west Poland. It is a plain located along the upper and middle courses of the Odra river. It borders with Germany in the west and the Czech Republic in the. This part of the country is rich in environmental values, as well as highly urbanized. There are many industrial and cultural centres, the largest being the metropolis – Wrocław.

Lower Silesia covers an area of 19 947 km² which represents 6.4% of the country. A population of 2. 8 million inhabitants, of which the majority are in urban areas. Rural residents account for only about 29.9% of the total. 90% of the region is rural with a diversity of natural and economic conditions. The rural settlement pattern consisting of 2557 villages and is less dispersed in comparison with other regions of the country.

The region is predominately lowland with glacial elements and includes 2 national parks and 12 landscape parks. The region includes the Sudeten Mountains. Tourism is strong in the area offering a diversity of activities.



Lower Silesia Province, Poland

Key features:

- A variety of soil types of variable quality that reflect the geological and climatic diversity of the region.
- The climate of Lower Silesia is a temperate climate with the oceanic characteristics. Climate is highly variable across the region. Average annual temperature in the Wrocław area is 9.5°C. The average amount of rainfall is 500–620mm.
- There is a large diversity of habitats in the region, via the NATURA 2000 program many sensitive and threatened species have been identified.

Agriculture:

- There are around 107,000 farms in the region, the majority of which are in the private sector. 52,000 specialize in plant production, 1000 in animal production, 31,000 have both.
- The main systems are farming systems: cereals, potatoes, sugar beet.
- Livestock farming is less developed in the region but there are small pockets of intensive production.
- Forestry is strong in the area much of which is held by the public sector and managed by the State.

Climate change and adaptation issues



One of the key issues for the region is that of water retention, both in terms of water resources for agricultural development, but also for environmental impact such as soil erosion and flooding. Regional soils potentially affected by water erosion occupy 27.6% of the area, whilst wind erosion in Lower Silesia is mostly in the Sudetic Foreland where a medium to high intensity of erosion has already been observed. The water system infrastructure in Poland can best be described as patchy in terms of both supply and sewage systems.

In order to adapt to the pressures of climate change the agricultural sector is in need of significant modernisation of livestock housing, development of crops and cultivation techniques better suited to the new climate, farmer education, insurance systems for damage to crops, better land use planning to prevent natural disasters, such as flooding.

For more information please see the OSCAR website - <http://sitem.herts.ac.uk/aeru/oscar/index.htm>.

¹ European Union (2010) EU Rural Review: The Magazine from the European Network for Rural Development - N⁴, May 2010. European Union, Brussels.