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Starting date	1 January 2006	Completion date	31 December 2007

Context / Social problem

Agriculture in Europe is an economic activity providing incomes and jobs in the agribusiness complex. The sector responds strongly to market forces and changes in policy. This is clearly visible in the impact of the Common Agricultural Policy (CAP) on farming in the European Union (EU). Policy reforms leading towards the abolition of subsidies and tariffs - which currently protect farmers against internal and external competition - will change the options and opportunities available.

Currently, decisions are based mainly on market pressures and policy outlooks. Climate change, which imposes an additional stress on agriculture, is not usually included in decisions on whether or how to continue. This may lead to inappropriate or belated decisions and investments, which could prove very damaging, or even fatal, for the future of many farmers. This would also affect the industries involved in processing and delivery and also, eventually, regional economies.

What is being studied?

In this project changes in both market and climate are considered, in order to provide information for predicting which parts of Europe are most likely to remain agrarian, and for which regions non-agrarian land uses are likely to become more important. A selection of contrasting market and climate scenarios were therefore chosen for consideration, involving two time slices i.e. 2020 and 2050. The focus is on wheat and potatoes as arable crops and dairy farming is addressed via grassland.

What are the results, and who are they for?

The results are presented in a series of maps and provide information to both policy makers and farmers on prospects for agriculture in the near future.

In order to determine which regions are likely to remain agrarian in the future and what their associated production levels will be, the following steps were adopted:

1. Estimation of the achievable supply (in tons) of wheat, potatoes and milk in 2020 and 2050, based on the estimated productivity (tons/ha) in 2020 and 2050 and the agricultural production areas (ha) in Europe in 2005
2. Estimation of the production demand from Europe (in tons) for wheat, potatoes and milk in 2020 and 2050, based on global trade and production, population dynamics and economic growth
3. Adjustment of the achievable supply for wheat, potatoes and milk to the production demand, in 2020 and 2050, by adjusting the agricultural production areas in Europe; based only on competitiveness of regional agriculture in the global food market (2020, 2050), and on the competitiveness of regional agriculture within global food markets and regional land markets (2050)

These steps are executed for two scenarios (A1 and B2), each for EU27 and EU-Ural. In case of EU27, we calculate and present results at NUTS 11 level. In case of EU-Ural, we calculate and present results at NUTS0 level. Data on crops and farms at NUTS1 or NUTS0 level are obtained from Eurostat (2007).

The general picture that emerges is that gradual changes in climate are of minor importance for changes in productivity. Technological development is the key driver in productivity increase and given enough time will compensate for possible adverse effects of climate change or exploit opportunities. This is especially true for the A1 scenario. In this scenario all results indicate that agricultural land is abundant and actually land can be used for non-agricultural purposes. For the B2 scenario the picture is slightly different, because of a slower technological development the productivity increase is less than in A1 scenario. For B2 there is a need for additional arable land to fulfil the production demand. Whether agriculture can remain viable in the future when faced with changes in both climate and the market largely depends on the scale the answer is required. At the



European level food production is secure, even in the most extreme climate scenario and in a free market. However, at a lower scale, consequences could be serious for individual regions and farmers.

