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from :	Presidency
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Subject :	Contribution of research in helping EU agriculture adapt to climate change - background paper for lunch discussion 19 May 2008

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Delegations will find attached a background paper from the Presidency with a view to the Ministers' discussion during lunch on 19 May.

## **Contribution of research in helping EU agriculture adapt to climate change**

Background paper for lunch discussion Agriculture Council 19 May 2008

### Introduction

Climate change is one of the major challenges for EU agriculture in the coming years. The challenge is twofold: on the one hand, contributing to mitigation of global warming by cutting green house gas emissions; on the other hand, adapting to current and future impacts of climate change.

Finding adaptation solutions is critical for the years to come, particularly in agriculture. Efforts need to be stepped up at all levels and in all sectors, and such efforts need to be coordinated across the EU. Adequate knowledge, based on scientific analysis of the drivers and impacts of climate change, is the basis for deciding upon the necessary responses, whether they are technological, managerial (e.g. farming practices) or political (e.g. adaptation action plans) in nature. Knowledge is also crucial for identifying the most cost-effective options.

It seems therefore appropriate to discuss the role of research in adaptation of agriculture to climate change.

### The effects of climate change on agriculture and relevant research areas

**Climate change will affect crop yields, livestock management and the location of production and will also have important consequences for farm income and land use in certain parts of Europe.** Scientific evidence points towards consistently rising temperatures and changing precipitation patterns (significantly higher rainfall in northern Europe and somewhat lower rainfall in southern Europe). These changes are expected to affect all components of Europe's agricultural systems (e.g. crop suitability, yield and livestock management).

Agriculture in northern Europe may benefit from climate change because of lengthening of the growing season, allowing for example the cultivation of new crop species and varieties, productivity increases and northward expansion of cultivated areas. Adverse impacts could include an increased need for plant protection due to the effects of warming on pest patterns, risk of nutrient leaching and the depletion of soil organic matter.

In southern areas, adverse effects are likely to predominate. Due to increased water stress and extreme weather events, yields may fall, yield variability may increase and the areas suitable for cultivating traditional crops may diminish.

These effects would reinforce the current trend of intensification of agriculture in the northern and western areas of Europe and extensification in the Mediterranean and south-eastern areas.

**Differences in climate exposure, sensitivity and adaptive capacity may also lead to differing effects on agricultural systems across Europe.**

Dealing with these different impacts, both at the continental and regional level, requires significant research efforts. Much has already been done in recent years. **Nevertheless, further research is needed, *inter alia* with a view to developing adequate observation and monitoring tools, management methods and technologies, including cost quantification. In addition, more research is needed to improve understanding of the various effects, including effects on secondary factors of agricultural production (soil, weeds, pests and diseases), effects on crop quality and animal production, and effects resulting from changes in frequency of isolated and extreme weather events and from interaction with surrounding natural ecosystems.** In this context, biotechnology is also relevant, as it offers possibilities for developing crops that are more tolerant to heat and drought.

In addition, increased focus should be placed on regional impact studies. This would also include assessing current agricultural policy efforts aimed at making agriculture sustainable by taking account of environmental and social values. Improving projections of climate change on a regional and local scale, including potential impacts on agriculture, is needed, as Europe's agriculture will be affected by regional rather than global climate developments.

However, the knowledge gained needs to be translated into practical solutions for farmers and action on the ground by rural planners. Key measures at sectoral level should therefore include better transferring information on climate risks and adaptation options to the farming community and supporting advisory services and training. Research should take account of the complexity of decision-making at farm level, diversities at different scales and in different regions, time lags in responses, and biophysical, economic, institutional and cultural barriers to change.

### Policy responses

The Commission, in its green paper 'Adapting to climate change in Europe - options for EU action'<sup>1</sup>, has set out options for assisting the adaptation process and focuses on four priority areas, including early action to avoid damage and thus reduce overall costs.

As regards EU agriculture, the 2008 'Health Check' and future adjustments of the CAP provide opportunities to examine how better to integrate adaptation to climate change in agricultural support schemes.

The EU promotes research through its **Framework Programmes**, several of which support projects addressing climate change. Since these programmes only represent about 5% of the total European R&D effort, the contribution is limited. That is why the Commission has for several years now promoted the progressive establishment of a **European Research Area (ERA)**. In this context, the Commission has facilitated the establishment of a number of ERANETs - coordination mechanisms bringing together national programme managers and/or funders on specific topics, such as organic farming, plant health and animal health. The **Standing Committee on Agricultural Research (SCAR)** provides a very effective basis for enhanced cooperation to that end. With greater coordination, pooling of research efforts and joint programming, the available funds could be used more efficiently.

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<sup>1</sup> Doc. no. 11490/07.

From the above it appears that efficient agricultural research should play a major role in developing strategies for adaptation of EU agriculture to climate change. The **following questions** could then be taken as a starting point for ministers' discussions:

- **Is more research needed on adaptation of EU agriculture to climate change and, if so, are additional (EU) resources needed?**
  - **On which topics do Member States focus their research and in which areas would more cooperation between Member States be desirable? In this respect, how could cooperation and exchange of experiences between Member States be improved?**
  - **How can the transfer to farmers of knowledge gained be improved, with a view to its application in practical solutions?**
  - **Are existing CAP measures (rural development policy) sufficient to facilitate such knowledge transfer?**
  - **Does the "new challenges" part of the CAP Health Check adequately address this issue?**
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