

Summary: This policy brief argues that European Agriculture will face significant challenges over the coming decades. Issues like the effects of climate change, the management of natural resources, and the constant battle to keep our food safe are altering the debate significantly. A broad vision will be needed to incorporate these different challenges into the Common Agricultural Policy and match them up with the most appropriate policies.

In January 2009, Sciences Po—with the support of the German Marshall Fund—held a conference on European Agriculture looking ahead to 2020. Experts from various fields contributed and discussed eight policy papers on the critical issues facing European and Global Agriculture.

Long-term challenges facing European Agriculture: The need for new public and private policies

by Pierre Boulanger and Patrick Messerlin¹

In 1957, the Treaty of Rome assigned five goals to the Common Agricultural Policy (CAP): (i) to increase productivity, (ii) to ensure a fair standard of living for farmers, (iii) to stabilize markets, (iv) to assure the availability of supplies, and (v) to ensure reasonable prices for consumers. These goals were relatively uncontentious at that time.

But issues surrounding CAP have become significantly more complex. Climate change, water, and energy have joined challenges that emerged during the 1990s, such as food safety and quality. Some of these are largely the effects of human activity, for example, adjustments to changes in previous policies. Others, such as natural resource management, are imposed and/or magnified by humans, like resource misallocation or waste.

Many challenges require the use of a much broader range of policies than in the past, and private as well as public sector involvement. This observation follows the lesson taken from enforcing the Treaty of Rome: the use of one policy, guaranteed production prices, to achieve the five goals of the Treaty largely explains

the total or partial failure to achieve the last four CAP objectives.

This brief discusses the eight papers presented at the Conference on 2020 European Agriculture, held at Sciences Po in January 2009. Two main conclusions emerge from these papers. First, one constant in all debates over long term challenges, including climate change, water, and energy is that more international trade is essential for an increase in the global resilience of agriculture. Second, better targeting of public and private policies is critical—including public policies with a budgetary dimension, such as much larger and better designed subsidies for agricultural-sector research and development.

Long-term challenges: Climate change, water, and energy

The time horizon of these three intertwined challenges is quite different. Problems related to climate change will develop over the coming century. Those related to water are increasingly pressing and energy issues already show how difficult the decision-making process is,

¹ Groupe d'Economie Mondiale (GEM). This note is the foreword of the Conference on "The 2020 European Agriculture: Long term challenges, new public and private policies" held at Sciences Po, Paris, January 29-30. The papers and a summary of the discussions are available on the GEM website: <http://gem.sciences-po.fr>. Support of this conference was provided by the German Marshall Fund of the United States (GMF). The views expressed in this document are those of the authors and do not necessarily represent the views of GMF.

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and in the case of biofuels, how costly incorrect decisions can be.

Nelson's paper, "Climate Change and Agriculture," presents the complex "machinery" of the models generated by the work of the Intergovernmental Panel on Climate Change (IPCC). These models try to simulate the interactions between the physics and chemistry of the atmosphere, oceans and land surface, and those between humans and their activities, of which agriculture is only one.

Nelson draws four common conclusions from the six models. First, the world appears to be able to continue to feed the increasing human population during the 21st century despite climate change. Second, it is very likely that there will be substantial differences between regions, with some benefitting and others adversely affected. Third, developing countries, especially the poorest ones, are the most likely to face negative effects. Last but not least, an important means of adapting to these challenges is to facilitate trade among countries and/or regions, a result that may surprise many decision-makers, but one that has been confirmed by a recent French report (INRA-CIRAD 2009).

These results have significant policy implications. First, they require to create a more open trade in agriculture: cuts in tariffs and subsidies gain a new "raison d'être" as a tool for combating climate-driven hunger. Second, freer trade must be combined with a wide range of pro-active policies, such as (i) taxes or cap-and-trade regimes that reveal the damaging effects of climate change-inducing emissions, (ii) pro-poor and pro-development policies capable of helping the world's poor who perhaps face the most severe impact of climate change, and (iii) a wide range of investment policies in agricultural and rural infrastructure and research-development in order to mitigate and adapt to the effects of climate change.

Schultz's paper, "Agriculture and Water," focuses on water availability, a problem expected to become increasingly critical in many countries. Water is a 'local' good, and the fact that water resources are unevenly distributed yet expected to be globally sufficient to support a population of nine billion people is only a part of the problem.

Agriculture is the primary consumer of water, with irrigated agriculture currently accounting for 70 percent of world water withdrawals. Any solution to the water problem requires thus serious improvements in agriculture water use, both in terms of irrigation efficiency and rainwater management. Roughly 45 per-

cent of today's world food production uses 1.1 billion hectares without any water management system (hence with low yields) in comparison with 40 percent on 0.3 billion hectares of irrigated land and up to 15 percent on 0.1 billion hectares equipped with a drainage system. All of these problems are complicated because they should also address water quality and sustainability. Schultz describes the many water management policies that are urgently needed, from increased storage to basin-wide planning, water system modernisation to stakeholder control, at local or national levels. A key ingredient to these measures is a better pricing regime for water, and therefore an enhanced definition of water property rights.

Le Vernoy's comments in "Agriculture and Virtual Water" add a critical aspect that would remove pressures on water policies. If water is a 'local good', then intra- or inter-national agricultural trade can link local water resources and their associated farm productions to widely-dispersed food consumptions. This approach is captured by the notion of "virtual" water, that is, the volume of water required to produce a given commodity. As the specific water requirement for a crop varies significantly in space and time from one country to another, trade of farm and food products represents virtual water flows between water-rich and water-poor countries, and between water-efficient and water-inefficient countries.

Levi's paper, "Energy and agriculture: The future of biofuels," focuses on a highly developed issue. Fossil fuels have been the backbone of growth during the two last centuries, but they are expected to become increasingly rare within the next fifty years and there is a range of competing successors. Should agriculture contribute to solving this problem by developing biofuels? In this respect, the ethanol and biodiesel first-generation biofuels experience deserves a cost-benefit analysis.

Levi begins by examining the three key rationale for introducing biofuels. First, energy security has historically been the leading feature of biofuel promotion. However, fears of oil and gas supply cut-offs do not represent a sound rationale for promoting biofuels for at least two reasons: There are many alternative measures, from diversification of supply to increased efficiency in the use of fossil fuels. Moreover, current biofuel technologies consume large amounts of natural gas through the production of fertilizers and in processing feedstock into fuel, hence exacerbating security problems rather than alleviating them, especially in gas-dependent regions such as Europe.

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Second, biofuels could be a solution to mitigate climate change. The net impact of biofuels is difficult to assess. Under fixed land-use, emissions of greenhouse gases resulting from biofuels are generally lower than those from the gasoline or conventional diesel they displace. However, from the energy crop planting to the consequent-biofuel burning, this first impact is only significant for sugarcane-based ethanol; it is very marginal for corn-based ethanol. More importantly, biofuels replace previous food production and hence generate land use changes, with pastures and forestries being transformed into crop fields. Such an indirect effect tends to be very negative, in some cases reversing decades of the positive effects (if one assumes fixed land use).

Third, biofuels have the potential to drive up global food prices, as best illustrated by the food price surges in 2007-2008. Substantial increases of food and energy prices were largely triggered by shifting land traditionally devoted to food production to the production of first-generation biofuels.

These observations raise two questions. First, could one expect better results with second-generation biofuels, mostly based on crop residues (such as cornhusks) and woody biomass (such as wood chips)? Such biofuels are projected to have a lower impact on agricultural land. But it remains to be seen whether they will fulfil their promise as none are currently produced commercially.

Second, what role should governments play in the biofuel sector? The most important conclusion in this respect is what they should not do. Governments should stop the large-scale support of both production and consumption of first generation biofuels, as well as public incentives for hazardous land use conversions. Beyond this urgent action, the main pro-active public policy in biofuel matters would consist of support for research and development investments in second generation biofuels, reinforcing a recommendation already underlined by climate change policies.

Agriculture and new public policies

The coming years will see the development of three types of public policies which were largely marginal during previous decades: those dealing with food safety and security, those targeting structural adjustment and those ensuring agricultural and rural areas' "multi-functionality."

These policies deal with concerns that often nurture fears and protectionism. It is worth recalling that Europeans' diet, an essential component of health, has little in common with typical diets thirty or forty years ago, and this is mainly due to international trade of food and farm products. That said, in a rapidly globalizing world, a key question raised by these three policies is to know how to develop them while limiting distortions on production and trade.

Swinnen's paper on "Agriculture and food security, safety and quality" focuses on recent concerns, reflecting the top rank of safety and quality issues in European preferences. The traditional focal points of agricultural policies, food security or adequate quantitative supply of agricultural products, are becoming less important in European agricultural policy, although they are still present among the main policy objectives. European Community (EC) expenditures are still dominated by market and income support. What can therefore be said to be the optimal policy mix with regard to food security, food safety and food quality?

"Lagging productivity growth rates in Europe (and elsewhere) make investment in research and development critical."

Food security is largely a demand problem, not a supply problem. This observation has two consequences. First, the EC should address food insecurity by ensuring a sufficient level of income for its poorest consumers (similarly, in developing countries, poverty reduction would also ensure food security, especially for households located in rural areas). Such an approach suggests a public policy shift, away from farm income support towards the issues of risk and uncertainty related to agricultural markets. Second, if upward pressures on farm and food prices would induce an increase in world production, lagging productivity growth rates in Europe (and elsewhere) make investment in research and development critical for an improvement in the productivity of farm production, while reducing the pressures of biofuels on farm and food prices. In this context, the EC should consider to reallocate a substantial share of the CAP budget for encouraging green technologies and stimulating the "rural/food/bio" economy.

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Food safety policy has been a Member States' competence until the early 2000s, except for veterinary rules. It is based on an integrated 'from farm to fork' approach focusing on tractability, controlling risks in all the stages of farm and food production and distribution. The EC has also adopted many specific sector regulations, from pesticide use to packaging restrictions. Since such regulations have been designed and implemented recently, it is essential to evaluate whether they are efficient enough in addressing public concerns related to food safety, and whether they need to be adjusted in the perspective of the coming CAP reform, trade agreements and trade developments.

Quality policy is not institutionalized at the European level, though it benefits from support granted under the CAP Pillar II, with some of the programs being explicitly linked to upgrading or producing quality. Most of the policy initiatives are recent and enforced at the Member State level. Governments are presently getting involved in the quality schemes and are setting up public-private partnerships, unlike the recent past when quality was only a private-sector initiative. Whether there is a need for a European layer for the food quality system remains a key policy issue for the future.

Swinnen's paper highlights a crucial point as to what extent European food safety and quality policies are barriers or catalysts to trade. Not only can almost any standard cause trade distortions, but there are also critical dynamics between public and private standards, the latter being usually more restrictive than the former. Hence, two key questions need to be raised. First, is there a need to make some adjustments as regards to public standards in light of rapidly growing private standards? Second, how could or should these standards be dealt with at regional and multilateral levels?

Moreddu's paper on "Agriculture and structural adjustment" begins by noting that structural adjustment reflects changes in resource allocation in a moving economic environment, leading to the consolidation and diversification of farm holdings. The paper stresses farmers' intrinsic ability to adapt, a feature often underestimated by governments and sometimes slowed down by public regulations and existing institutions.

Moreddu identifies the economic motivations behind public intervention in adjustment matters. First, authorities may want to facilitate ongoing adjustment for reasons of economic efficiency, such as in case of market failures, or when adjustment costs exceed short-term benefits. Second, public actions can be

triggered by equity concerns, for example minimizing losers' losses or limiting increases in income differences. Most EC adjustment measures pertain to CAP's Pillar II Axis 1, which targets the competitiveness of the agricultural sector.

Moreddu's text pays special attention to the importance of ex ante evaluations of adjustment problems. Lessons drawn from recent experience among OECD countries suggest three specific recommendations about adjustment policies. First, government should let farmers develop their own capacity for adjustment. Second, public support for adjustment should be irreversible and time-limited, unlike current Pillar I direct payments. Third, they should be consistent and integrated into the existing system. These recommendations complement the general principles of optimal agricultural policies: (i) identifying goals in a transparent way, assessing costs and benefits, winners and losers, (ii) decoupling between support and production, (iii) adapting level of efforts to expected results, and (iv) flexibility and equity.

“The provision of multifunctional services through the current Single Farm Payment scheme is doomed to be a delusion.”

Harvey's paper on "Agriculture and multi-functionality" examines the concept often used to justify continued support to farm production, namely market failures in the presence of externalities and public goods. It underlines the following crucial problem: Governments rarely address the origins of such failures, such as ill-defined property rights, and excessive transaction costs. Thus, policies tend to be inefficient and ineffective in solving the farm multi-functionality puzzle which is in a state of continuous flux and dominated by local considerations, individual preferences and future aspirations on both demand and supply sides. In such a context, the provision of multifunctional services through the current Single Farm Payment scheme is doomed to be a delusion.

This analysis leads to two decisive recommendations regarding the evolution of the most expensive CAP instrument. First, the Single Farm Payment scheme should be phased out because it is unable to provide the appropriate amount of conservation, amenity, recreation and environmental (CARE) goods and services. Second, EC Member States should define, design, implement and fund their own CARE programs—and they should do so in

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the most decentralized way possible, if they want the origins of the failures to be addressed.

To conclude, Harvey defines the three tasks that the EC should be confined to. First, it should regulate competition between Member States in order to ensure a level playing field within the European market. Second, it should promote economic development and cohesion between regions. Third, it should encourage research and development, and expand the potential of European agricultural and rural lands as multi-productive resources.

Agriculture and new private policies

The last decade has seen greater importance placed upon private policies capable of addressing a wide range of issues in a more appropriate manner than public policies. The management of increasing risks and the emergence of more complex farm and food market structures are among issues that have gained prominence.

Molander's paper on "Agriculture and risk management" begins with an overview of the main risks faced by farm business, namely, risks generated by climatic events, sanitary calamities, price fluctuations and public regulation, risks related to labor force, farm assets and financial markets. Not all of these are agriculture-specific. A key point is that there is no evidence that risks in agriculture are specific enough to receive exclusive treatment, or more precisely, to require more public intervention. In the same vein, are the effects of climatic instability, capital intensity and externalities more important in agriculture than in other economic activities?

Independently from these considerations, what matters is risk management per se; the benefits expected from the use of already well-developed instruments in other sectors. Molander focuses on a set of instruments that are increasingly drawing farmers' attention, from insurance schemes to various types of forward contracts, illustrating the relevance of such private law instruments in most circumstances. By the same token, he strongly suggests limiting public intervention to "catastrophic" occurrences, when usual statistical techniques on which private risk management is based cannot cope with the magnitude of events.

These observations suggest that the role of public intervention in risk management is rather limited. Nevertheless, Molander's paper underlines the role of public authorities in ensuring trans-

parency and a level playing field in the European market, a point echoed by the next paper.

Spector's paper on "Agriculture, agro-business and competition policy" begins by underlining prevailing tensions between CAP and competition policy, the two most integrated European policies. CAP was mostly based on "common market organizations" (CMOs) with commodity-price fixing, production quotas in some instances, production and export subsidies, and severe barriers to entry in the sector, such as access to land. All of these instruments are generally prohibited by competition policy.

However, since the early 2000s, successive CAP reforms have notably reduced CAP abnormality with respect to basic competition principles. The most significant changes have seen most CMOs dismantled, the elimination of quotas (or planned elimination) and declines in highly distorting subsidies. However, national or regional decoupling modalities of direct payments may impede competition between member states.

That said, Spector's paper explains how competition policy has also evolved, allowing it to take into account certain specificities of the agricultural sector. This point is crucial as contrary to a popular belief, the agricultural sector is within the reach of competition policy, as illustrated by decisions taken by the competition authorities, such as a 2003 competition case in which the Commission prohibited minimum purchase prices for some categories of beef in France.

"Agriculture is an uneasy exception to the principle that the polluter should pay."

The specific arguments that competition policy could take into account are not those mentioned in favor of production subsidies or import restrictions. Rather, they are those related to market structures. For instance, competition authorities may recognize the legitimacy of market organizations, as long as the limited restrictions to competition imposed by such organizations are aimed at solving clearly identified market failures and are unlikely to harm consumers' interests. Another domain where competition authorities may look favorably at the farmers' stance is the critical relations between farmers and distributors, particularly large retailers. Again, competition authorities will not intervene systematically in favor of one of the two sides. Rather, they will try to ensure that distributors' market power will not be excessive,

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Table 1. Declining policies and emerging policies										
Topic Author	Declining policies			Emerging policies						
	Market-rel. subsidies	Income support	Regulations	Targeted support	R&D investment	Insurance	Regulations Evaluation	Public-Private	Competition policy	Open trade
Climate change Nelson					XXX	XX				X
Water Schultz Le Vemoy	XXX				XXX	XX		X		X
Energy Levi	XXX				XX					X
Food security Swinnen	XXX	XXX			XXX			XX		X
Food safety Swinnen			X				X			X
Quality Swinnen			X				X	X	X	X
Adjustment Moreddu	XXX	XXX		XX				X	X	X
Multifunctionality Harvey	XXX	XXX	X				X	X	X	X
Risk management Molander	XXX	XXX				XX				X
Competition policy Spector									X	

Note: Policies marked “XXX” rely heavily on the EC budget. Policies marked “XX” have a moderate EC budgetary component. Other policies have a small or negligible impact on public budget.

to prevent the imposition of prices so low that farmers will be induced to decrease production, or to innovate less. In short, the tensions between CAP and competition policy may still be systematic on certain points, but the competition authorities’ “rule of reason” approach opens a degree of convergence with farm policy that is increasingly based on farmers operating in more competitive markets.

A final remark: European agriculture and budget in 2020

Despite their wide coverage of issues, the eight papers provide an extraordinarily convergent view on farm and food policies to be followed in the next decades: a much wider set of instruments, each of them targeting a very specific issue, ranging from fundamental public policies, such as a better definition of

property rights on water, to detailed private measures such as insurance schemes for natural disasters. Table 1 visualizes the main changes in policies suggested by the various authors.

To what extent will the European budget reflect these profound changes? Answering this question raises the issue of the political legitimacy of CAP. Clearly, the legitimacy of key current instruments, such as the Single Farm Payment, is rapidly declining. European tax-payers are likely to grow more reluctant to pay subsidies to large farmers that are based on increasingly faraway productions and yields; it remains to be seen whether such an evolution includes small farmers.

Similarly, the political legitimacy of subsidies to farmers for the provision of environmental services is unclear. European public opinion surveys imply mixed feelings on whether such subsidies

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should be granted to farmers who have so often polluted the environment during the past half century. Agriculture is an uneasy exception to the principle that the polluter should pay.

For all these reasons, it seems likely and indeed desirable that the post-2013 CAP budget will be subjected to deep, but progressive cuts. Such cuts should also be much greater for Pillar I than for Pillar II.

However, stopping here would be a serious mistake. A common theme of the reviewed papers is the huge need for investment, in particular for research and development related to areas such as new seeds, crops and production processes. As a result, European farmers should join industrialists in asking for a massive shift of the post-2013 European budget to research and development investments, a more accurate term than subsidies. They will benefit from such funds via increased productivity, lower costs, more diversified inputs and products. (Arrow et al. 2008)

“European farmers should join industrialists in asking for a massive shift of the post-2013 European budget to research and development investments, a more accurate term than subsidies.”

Such a dramatic shift deserves two final remarks. First, designing research and development investments (subsidies) is not straightforward. Arrow and alii 2008, provide a non-exhaustive list of key criteria to be respected for such subsidies: (i) stable commitments over a long period of time; (ii) a wide coverage, including the fundamental capacity to perform research in the future (for example, education and laboratory capacities); (iii) tolerance of failures that could provide valuable information and (iv) institutions (such as independent agencies, peer reviews, multi-year appropriations, payments based on progress and outputs rather than cost recovery) that minimise the risk of capture of research and development subsidies by public or private vested interests. It is rather concerning that EC Research and Development Policy meets these criteria rarely, if at all.

Second, European funds should also be devoted to stimulate research and development appropriate to countries poorer than Europe. This perspective could be seen as selfish to the extent that it may indirectly favor European farmers investing in land outside the EC, as they do already. However, such funds are by far the best policy that the EC could offer to repair the serious damage that the “old” CAP has inflicted upon the farm and food sectors of developing countries over the last fifty years.

References

All the papers of the Conference are freely available on GEM website: <http://gem.sciences-po.fr>. The other documents mentioned in this note are:

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