



## The 2020 European Agriculture: Long term challenges, new public and private policies

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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. There were few debates on these goals which went without saying at that time.

Things are much more complex nowadays. Climate change, water and energy have joined the challenges that have emerged in the 1990s, such as food safety and quality. Some of them are largely man-driven (adjustment to changes in previous policies). Others are being imposed on the human kind (natural resource management) and magnified by human actions (resource misallocation and waste).

So many challenges require the use of a much broader range of policies than those used in the past, and they require private as well as public actors. This observation echoes the lesson learnt from the Treaty of Rome enforcement: using *one* single policy (guaranteed production prices) to reach the *five* goals of the Treaty of Rome largely explains the CAP's total or partial failure in relation to its last four objectives.

This note presents briefly the eight papers discussed at the Conference on the 2020 European Agriculture held at Sciences Po in January 2009. Two main conclusions emerge from these papers. First, one constant in all the scenarios looking at long term challenges (climate change, water and energy) is that *more* international trade is deeply needed to increase global resilience of agriculture. Second, *better targeted* public and private policies would also be critical—including public policies with a budgetary dimension, such as much larger and better designed investments (subsidies) in research and development in agricultural matters.

### Long term challenges: climate change, water and energy

The time horizon involved by these three intertwined sources of challenges is quite different. Problems related to climate change will develop over the coming century. Those related to water are becoming rapidly pressing. Energy issues already show how taking wise decisions can be difficult, and how costly wrong decisions could be, as in the first generation biofuel case.

<sup>1</sup> Groupe d'Économie 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>

Nelson's paper on "*Climate change and agriculture*" starts by presenting 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—agriculture being only one of them.

Nelson draws four common results from the half-dozen different available models. First, the world appears to be able to continue to feed the increasing human population during the 21<sup>st</sup> century despite climate change. Second, there would be substantial differences between regions, some of them benefiting from climate change, while others are harmed by such a change. Third, the regions most likely to face negative evolutions are developing countries, especially the poorest ones. Last but not least, a crucial way to adapt to these contrasted evolutions is to facilitate trade among countries and/or regions—a result that could surprise many decision makers, but that is confirmed by French sources (INRA-CIRAD 2009).

These results have strong implications in terms of policies. First is to create a much more open trade in agriculture. Cuts in tariffs and subsidies take a new "*raison d'être*"—to be an available tool for fighting climate-driven hunger. Second, freer trade require to be combined with a wide range of pro-active policies, such as (i) taxes (or cap-and-trade regimes) revealing the damages caused by emissions leading to climate change, (ii) pro-poor and pro-development policies capable to help the poorest people facing detrimental climate change, and (iii) a wide range of investment policies in agricultural and rural infrastructure providing the appropriate mix of crops, etc. In particular, improving research and development that addresses both mitigation and adaptation of agricultural sector to climate change is most than required.

Schultz' paper on "*Agriculture and water*" focuses on water availability, a problem expected to become rapidly critical in many countries. The fact that water resources are expected to be globally sufficient to feed nine billion people is a very partial answer to the problem because water resources are very unevenly distributed (water is a "local" good).

As agriculture is the main user of water (present irrigated agriculture represents 70 percent of world water withdrawals) any solution to the water problem requires serious improvements in agriculture water use, in terms of both irrigation efficiency and rainwater management. Today, 45 percent of the world food production is achieved on 1,1 billion hectares without any water management system (hence with low yields) compared to 40 percent on 0,3 billion hectares of irrigated land, and to 15 percent on 0,1 billion hectares equipped with a drainage system. All these problems are made more complex because they should also address the issue of water quality and its sustainability.

Schultz' paper describes the many water management policies that are urgently needed—from storage increase to basin-wide planning, from water system modernisation to stakeholder control, be at the national or local level. A key urgent ingredient to these measures is a better pricing regime of water, hence an enhanced definition of property rights in water matters.

Le Vernoy's comments on "*Agriculture and virtual water*" add a critical aspect that would remove pressures on water policies. If water is a local "good", agricultural trade—be intra or international—can link such 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 from one country to another (in space and time) 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 on "*Energy and agriculture: the future of biofuels*" focuses on an already pressing issue. Fossil fuels have been the backbone of the growth during the two last centuries. But, they are expected to become increasingly rarer within the next fifty years, with many options—from nuclear to solar energy—that could replace them. Shall agriculture contribute to solve this problem by developing biofuels? In this respect, the first-generation biofuels' experience—ethanol and biodiesel—deserves an assessment of its pros and cons.

Levi's paper begins by examining the three key rationale for introducing biofuels. First, energy security has been historically the leading feature of biofuel promotion. However, such fears on possible oil and gas supply cut-offs are not a good rationale to promote biofuels at least for two reasons. There are many alternative ways to cope with such worries—from diversification among sources of supply to increased efficiency in the use of fossil fuels. Moreover, current biofuel technologies consume large amounts of natural gas in making fertilizers and in processing feedstock into fuel, hence exacerbating security problems rather than alleviating them, especially in gas-dependent regions, such as Europe.

Second, biofuels could be a solution to mitigate climate change. The biofuels' net impact in this respect is hard 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 substantial only for sugarcane-based ethanol. It is very marginal for corn-based ethanol. More importantly, biofuels replace previous food production, hence generate land use changes, with pastures and foresteries being transformed into crop fields. Such an indirect effect tends to be very negative, annihilating in some cases decades of the positive effects when assuming fixed land use.

Third, biofuels have the potential to drive up dramatically 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.

All these observations raise two questions. First, how should biofuel technology develop in the coming years? 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 expected to have a lower impact on agricultural land. But, it remains to be seen whether they will fulfill their promise (none of them are produced at commercial scale yet).

Second, what role should governments play in the biofuel sector? The most imperative conclusion in this respect is what they should *not* do. The governments should stop the current massive support to both production and consumption of first generation biofuels as well as public incentives for hazardous land use conversions. Ironically, changes in deficient policies require adjustments of farmers having been induced to invest in such crops. Beyond this urgent action, the main pro-active public policy in biofuel matters would consist in supporting research and development investments in second generation biofuels, reinforcing a recommendation already underlined when dealing with climate change.

## Section 2. Agriculture and new public policies

The coming years will develop three kinds of public policies which were largely marginal during the previous decades: those dealing with food safety and security, those targeting structural adjustment, and those ensuring agricultural and rural areas' "multifunctionality". 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 what it was thirty or forty years ago, and this is mainly due to international trade of food and farm products. That said, in a rapidly globalising 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. Traditionally the 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, with EC expenditures still dominated by market and income support. Which then could be the optimal policy mix with regard to food security, food safety and food quality?

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 world production to increase, lagging productivity growth rates in Europe (and elsewhere) make critical to invest in research and development in order to improve 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.

Food safety policy has been a EC 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 pesticides 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 quality or producing quality. Most of the policy initiatives are recent and enforced at the Member State level. Unlike in the recent past (when quality was almost only a private sector initiative) governments are presently getting involved in the quality schemes and are setting up public-private partnerships. 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 on what extent are European food safety and quality policies barriers or catalysts to trade. Not only almost any standard can 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 the light of rapidly growing private standards? Second, how could or should these standards be dealt 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 the farmers' intrinsic huge ability to adapt—a feature often underestimated by governments and sometimes slowed down by public regulations and existing institutions.

Then, 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 its short-term benefits. Second, public actions can be triggered by equity concerns (minimizing losers' losses or limiting increases in income differences). Most EC adjustment measures pertain to the CAP Pillar II's Axis 1 targeting the competitiveness of 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, the government should let the farmers to develop their own capacity of adjustment. Second, public support to adjustment should be irreversible and time-limited—unlike current Pillar I's direct payments. Third, they should be consistent and integrated into the system already implemented. All these recommendations complement the general principles of optimal agricultural policies: (i) identifying the goals in a transparent way, assessing the costs and benefits, the winners and losers, (ii) decoupling between support and production, (iii) adapting the level of efforts to the expected results, (iv) flexibility and equity.

Harvey's paper on "*Agriculture and multifunctionality*" examines in detail the concept often used to justify continued support to farm production—namely market failures in presence of externalities and public goods. It underlines the following crucial problem. Governments rarely address the *origins* of such failures (ill-defined property rights, excessive transaction costs, etc.). As a result, policies tend to be inefficient and ineffective in solving the farm multifunctionality puzzle which is dominated by local considerations, individual preferences, future aspirations on both demand and supply sides, and which is in a continuous flux. 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 CAP most expensive 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, the EC Member States should define, design, implement and fund their own CARE programmes—and they should do so in 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 egg research and development, and expand the potential of European agricultural and rural lands as multi-productive resources.

### **Section 3. Agriculture and new private policies**

While requiring new public policies, the last decade has also witnessed the rising needs of private policies capable of addressing a wide series of issues more appropriately than public policies do. Among those issues figure prominently the management of increasing risks and the emergence of more complex farm and food market structures.

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

Independently from these considerations, what matters is risk management *per se*—that is, the benefits to be expected from the use of instruments already largely well developed in other sectors. Molander focuses on a set of instruments that are drawing farmer's attention ever more—from insurance scheme to forward contracts of all kinds. He shows the relevance of such private law instruments in most circumstances. By the same token, he strongly suggests to limit public intervention to “catastrophic” occurrence when the usual statistical techniques on which private risk management is based cannot cope with the magnitude of the events.

These observations suggest that the role of public intervention in risk management is rather limited. That said, Molander's paper underlines the role of public authorities in ensuring transparency and a level playing field in the European market—a point that echoes the next paper.

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

However, since the early 2000s, the successive CAP reforms have notably reduced the CAP abnormality with respect to the basic competition principles. Most CMOs have been dismantled, quotas have been eliminated (or are planned to be), highly distorting subsidies have been declining—to quote the most significant changes. It remains that the national or regional decoupling modalities of direct payments may impede competition between Member States.

That said, Spector's paper shows that the competition policy has *also* evolved, allowing it to take into account some specificities of the agricultural sector. This is a key point since, contrary to a wide belief, the agricultural sector is *within* the reach of competition policy—as illustrated by decisions taken by the competition authorities, such as the 2003 competition case on French beef (in which the Commission prohibited minimum purchase prices for some categories of beef).

The specific arguments that competition policy could take into account are not those mentioned in favor of production subsidies or import restrictions. They are rather 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 aim 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 (in particular, large retailers). Once again, the competition authorities will not intervene systematically in favor of one of the two sides. Rather, they will try to make sure that the distributors' market power will not be excessive, that is, to be able to impose prices so low that farmers will be induced to produce less, or to innovate less. In short, the tensions between the CAP and the competition policy may still be systematic on certain points. But, the competition authorities' "rule of reason" approach opens a degree of convergence with a farm policy increasingly based on farmers operating increasingly in competitive markets.

### **A final remark: the European agriculture and budget in 2020**

Despite their wide coverage of issues, the eight papers provide an extraordinary convergent view on the 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 scheme for natural disaster). Table 1 visualizes the main changes in policies suggested by the various authors.

To which extent the European budget will reflect these profound changes? Answering this question raises the issue of the political legitimacy of the CAP. Clearly, the legitimacy of key current instruments—such as the Single Farm Payment—is rapidly declining. European tax-payers will be increasingly reluctant to pay subsidies to large farmers 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 granted to farmers for providing environmental services is unclear. European public opinions have mixed feelings on whether such subsidies should be granted to farmers who have so often and massively 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—indeed desirable—that the post-2013 CAP budget will be subjected to deep (but progressive) cuts. Such cuts should be much more massive for Pillar I than for Pillar II.

**Table 1. Declining policies and emerging policies**

Topic	Declining policies			Emerging policies								
	Market-rel. subsidies	Income support	Regulations	Targeted support	R&D Investment	Insurance	Regulations Evaluation	Public-Private	Competition policy	Open trade		
<b>Climate change</b>					XXX	XX						
Nelson												
<b>Water</b>					XXX	XX	X		X			
Schultz	XXX											
Le Vernoy												
<b>Energy</b>					XXX	XX						
Levi	XXX											
<b>Food security</b>					XXX	XXX	XX		X			
Swinnen	XXX	XXX										
<b>Food safety</b>					X					X		
Swinnen												
<b>Quality</b>					X					X		
Swinnen												
<b>Adjustment</b>					XXX	XXX	XX		X	X		
Moreddu	XXX	XXX										
<b>Multifunctionality</b>					XXX	XXX	X	X	X	X		
Harvey						X						
<b>Risk management</b>					XXX	XXX	XX		X			
Molander												
<b>Competition Policy</b>												
Spector												

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

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

Such a dramatic shift deserves two final remarks. First, designing research and development investments (subsidies) is not an easy matter. Here is a non-exhaustive list of key criteria to be respected (Arrow and *alii*, 2008) for such subsidies: (i) stable commitments over long period of time, (ii) a wide coverage including the fundamental capacity to perform research in the future (education, laboratory capacities, etc.), (iii) tolerance of failures that could provide valuable information, (iv) institutions (independent agencies, peer reviews, multi-years appropriations, payments based on progress and outputs rather than cost recovery, etc.) minimizing the risk of capture of research and development subsidies by public or private vested interests. It should be a source of concerns that these criteria are not often (to say the least) met by the EC research and development policy.

Second, such European funds should also be devoted to stimulate research and development appropriate to poorer countries 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. But, such funds are, by far, the best policy that the EC could offer to repair the heavy damages that the “old” CAP has done to the farm and food sectors of the developing countries during 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:

Arrow, K., L. Cohen, P. David, R. Hahn, C. Kolstad, L. Lane, W. Montgomery, R. Nelson, R. Noll and A. Smith, 2008. “*A Statement on the appropriate role for research and development in climate policy*”. Reg-Markets Center. Available on <http://ssrn.com/abstract=1313827>.

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