WHAT FUTURE FOR AGRICULTURE AND FOOD IN AN INCREASINGLY GLOBALISED WORLD?

Symposium Report for the Advisory Group for the Preparation of the Agricultural Ministerial Meeting

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NOTE BY THE SECRETARIAT

This report summarizes of the Symposium ‘What future for agriculture and food in an increasingly globalised world?’ held 30-31 March 2009 at the OECD Paris and falling under the 2009/10 Program of Work and Budget (item 3.2.1). It tries to present a factual account of the main outcomes of the discussions held in the various sessions. It does not develop the themes further beyond what has been concluded at the symposium, and it is not in its current form intended to serve as an ‘issues paper’ for the 2010 Ministerial. Such an issues paper is still to be developed, but the Symposium and this Symposium report will serve as useful inputs into that.
1. **Aims of the symposium**

1. The symposium aimed at identifying key developments that determine the medium-term future of the agriculture and food sector. The time horizon is 2030, which is short enough to be relevant for today’s policy making, but also long enough to go beyond the current situation of volatile agricultural markets, and beyond the current global financial and economic crisis. Identifying key drivers, trends and tradeoffs should help in developing “robust” policies for alternative futures.

2. The symposium did not seek to identify policy solutions, nor did it seek to arrive at shared conclusions. Its main purpose was to identify the issues that are widely seen as being of paramount importance, and which are likely to influence the design of agriculture and food policies in the years to come.

3. The OECD provides a unique forum for dialogue on important policy issues that involves OECD Members as well as Observers and other non-Members. Its distinctive strength is to provide a platform for debate on collective – in contrast to national – policy responses to challenges facing the global agriculture and food system as well as to assist countries in developing shared views on good policy practice.

2. **Format and participation**

4. The driving forces for the future of agriculture and food span multiple dimensions, which include environmental, social, political and economic elements. The themes of the symposium were broadly defined, to cover as much as possible a wide range of issues and the format sought to encourage as much as possible the exploration of innovative avenues for reflection. The four main themes of the symposium sessions were:

   - **Competing claims**: What are the main scarcities that will drive agro-food developments?
   - **Innovation**: What can technology and innovation contribute?
   - **Agriculture and its neighbours**: What are the links with non-agricultural sectors?
   - **Great expectations**: What is society expecting from the global food system?

5. In each case the objective was to identify the major trends within each theme and to identify the main ‘drivers’ of future developments. Participants were encouraged to deal with at least three dimensions of each of these main drivers: the uncertainties behind the trends, the implications for the future of agro-food and the key ‘institutional’ features behind the drivers, including private sector and government initiatives.

6. The symposium, which lasted 1.5 days, was intentionally ‘paperless’ as its intention was to stimulate a free thought discussion, in contrast to a structured exchange of views. Each session’s chairperson, assisted by a member of the Secretariat staff, prepared a summary of the discussion. In
addition the symposium rapporteur, Ms. Alison Burell, synthesized the contributions of each session and presented an overall summary of the discussions to the delegates at the 152nd session of the Committee for Agriculture, was held the following day. The delegates to the Committee discussed the report and the discussion benefited from the fact that many of the delegates had also attended the symposium.

7. Participation at the symposium was by invitation only. Invitees were selected by names suggested to the Secretariat by the COAG delegates with additional contacts and resulted in about 130 [check] participants from a variety of institutions, associations and geographic areas. They included academics, policy makers, civil society (through TUAC), business (through BIAC) and International Organisations (FAO, IFPRI, IAEA). Farmer organisations were also invited (IFAP), but declined e at the last minute.. The country coverage was naturally biased towards OECD Members, with only few participants from non-OECD countries (, Chile, India). This country bias is likely to have had an influence on the content of the discussion, in particular the absence of participation from Africa and developing Asia meant little attention devoted to issues facing the least developed countries.

8. The symposium was financed through Part 1 funds (PWB item3.2.1), supplemented with a contribution from the OECD Cooperative Research Program and benefited additionally from a voluntary contribution from Switzerland. The main budget items were travel costs of non-government participants.

3. Main messages

9. The symposium revealed a widely shared ‘sense of urgency’ about the global agriculture and food system, that went well beyond the recent experience of price spikes in 2007/08 and the subsequent steep drop in commodity prices in the latter part of 2008. An analysis of the economic crisis and mid-term prospects for recovery was presented in a keynote speech by Mr. J.P Cotis of the National Institute for Statistics and Economic Analysis of France (INSEE), which stressed the need to redress global imbalances in savings and investments. Behind the current economic crises there may loom another and far more important long-term threat, that is the growing scarcity of natural resources and sharpening of efficiency-equity trade-offs. Business as usual may not be an option and innovations on all fronts are needed.

10. Growing scarcity of natural resources (land, energy, water, micro-nutrients and phosphates) underlines the urgent need to better internalize externalities and to correct for market failures through prices of goods. New approaches will be needed to overcome the resistance of farmers, to overcome consumers’ unwillingness to pay, and to address difficult trans-border issues. If prices reflect the true cost of production, this should stimulate more efficient use of scarce resources, and more innovation in their efficient use.

11. But getting the prices to reflect the true costs of production may also sharpen the efficiency-equity trade-offs. If adjustments via the market fall heaviest on the poorest households, especially in developing countries, and policy makers will have to address this as part of any policy package.

12. One of the dilemmas facing the future food system is to produce more food, or more broadly to meet the Millennium Development Goals, while reducing greenhouse gas emissions. In his keynote address Tim Searchinger, of Princeton University, argued that when the effects of deforestation are taken into account agriculture currently contributes 25-35% of greenhouse gases. While food production must increase to meet the needs of a growing population and changing diets, agriculture’s contribution to GHG emissions has to reduce significantly at the same time, along that of other sectors, to achieve GHG reduction targets. This already poses a tough problem for food production, but in addition, there are upbeat predictions of increasing biofuel production that will compete for the same scarce resources with food production.
13. There is much uncertainty in measuring the contributions of agriculture to missions and to carbon sequestration. There is a need for measuring the extent of the problem correctly. A system-wide comprehensive climate change accounting framework that transcends the various sectoral boundaries (agriculture, forestry, energy sector…) and is consistent across sectors is needed to avoid double counting and the existence of mutually incompatible goals in different sectors.

14. Availability of minerals for fertilizers is growing scarce. These non-renewable and finite resources, used primarily by agriculture, are essential components of plant life, and are both limited and regionally concentrated. This emerging scarcity may deserve more attention even if the focus remains on soil fertility, water and biodiversity.

15. The linkages between the agriculture sector and the energy sector have strengthened due to increased demand for biomass as feedstock for energy production. The relative prices of oil and biomass will be a main driver of this trend, in addition to biofuel policies, developments in biomass technology, and the rate of innovation in generation of alternative renewable fuels (solar and wind). An increasing price of energy may change the pattern and extent of agri-food trade flows.

16. The extent of agriculture’s integration with other sectors differs widely between developed and developing countries. This implies a different degree of exposure to economy-wide volatility, but also less possibilities to tap into resources outside the agricultural sector in developing countries. For example private bank lending to agriculture in many developing countries is often limited, and this in turn has implications for innovation uptake. The food supply chain tends to be very weak in developing countries, resulting in colossal post-harvest wastage, poor price transmission and high transaction costs. In Latin America and developing Asia multinational operating supermarkets are assuming a central role in meeting, mainly urban, consumer demands by improving product quality and reducing transaction costs in an environment that is characterized by many small producers and bad infrastructure (roads, storage, cooling, communication…). Private standards for quality and safety support the emerging centralisation of procurement and logistic improvements along the chain.

17. Innovation and technologies needed to feed the anticipated growing population and in light of climate change and resource scarcities are key factors for the future of agro-food. The question is how to generate the right incentives for innovations and their adoption in different economic, agronomic and cultural contexts. An effective regulatory framework is an important part of the incentive system for innovations, and it will have to address both the economic interests of the innovator and the potential hazards of introducing new technologies into existing ecosystems.

4. The panels

Competing claims: What are the main scarcities that will drive agro-food developments?

18. The aim of this panel was to identify the main scarcities and resource constraints facing agriculture, in a context of climate change. There is a growing pressure on natural resources, in particular of water and land, due to demand pressures (population growth, dietary change, biofuel). Depletion of non-renewable resources and irreversibility (including irreversibility of land degradation) are identified as key issues. Climate change increases the pressure on already scarce resources.

19. It stressed need for increased total factor productivity, as opposed to looking just at yields, in the food and agricultural system, and for ecological, economic and social sustainability.

20. Key aspects of the discussion in the panel were the role of technological change; the generation and diffusion of new technologies; the role of institutions; and the balance between markets and regulation.
If policies are consistent in terms of objectives and design, a variety of delivery mechanisms can be exploited

- bottom-up (community, local) and top-down (national, international)
- individualism and collective action
- public/private partnerships for both creation and diffusion

21. Particularly in developing countries, stronger efforts for knowledge transfer are needed (domestic/international partnerships) to improve the management of scarce resources and to develop improved technologies and agricultural practices. This underscores the importance of human capital and good governance. The assignment of property rights over scarce resource is paramount for getting prices to reflect scarcities better.

22. The panel also drew attention to less well known scarcities of plant nutrients. Together with good land, water and biodiversity, availability of minerals for fertilizers grows scarce. Phosphorus is an essential component of plant life, and agriculture is the main user of this mineral whose reserves are limited. Current scientific knowledge does not allow making firm predictions, but according to some estimates, the known reserves would last 124 years at current consumption levels and with the given technologies in place. In addition to phosphorus the plant depends also on the availability of micro-nutrients which become scarcer and which have competing uses outside food production. This concerns for example Zinc and Copper.

*Innovation: What can technology and innovation contribute?*

23. The aim of this panel was to identify key developments in agri-food innovation, in particular key factors helping or hindering innovation (private versus public funding, intellectual property rights regimes, regulation ), and to reflect on the question how developing countries can best participate and benefit from agricultural innovations.

24. The discussion identified as key innovation areas: water use efficiency, waste utilisation, aquaculture including the food supply potential of algae, biotechnology (going well beyond GM). It also noted the importance of the innovation trajectory, from the initial innovative idea right through to uptake and public acceptance. This chain can be quite long and linkages may need to be developed and improved. Some of the technical innovations that will determine state-of-the-art technology in 2030 have already occurred.

25. The private sector expressed the belief that public acceptance of innovation in agriculture and food is crucial, but in affluent societies people are becoming too selective about what they will accept. A better balance between risk and benefit of innovations will be need to be evidenced in order to improve the adoption of new techniques and products.

26. Effective intellectual property regulation and data protection are seen as significant for creating the correct economic incentives for investment in innovation.

27. An emerging scarcity is the shortage of young scientists, as fewer young people find the field of agriculture and food an attractive intellectual area of endeavour.

*Agriculture and its neighbours: What are the links with non-agricultural sectors?*

28. The aim of this panel was to look into the question whether the integration of agri-food with other sectors in the economy has undergone major changes relative to the past.
29. It saw growing links between agriculture and the energy sector, due to increasing demand for biomass as biofuel feedstock. In the future, this trend will be driven by the price of oil relative to biomass prices, biofuel policies, developments in biomass technology, and the rate of innovation in generation of alternative renewable fuels (solar and wind). At the same time, the increasing price of energy may change the pattern and extent of agri-food trade flows, involving the relocalisation of production.

30. The discussions revealed wide differences between developed and developing countries regarding the extent of agriculture’s integration with other sectors. For example:

- **Energy sector**: very weak links either via production input, or source of biomass (except Brazil).

- **Financial markets**: in many developing countries, the rapid growth of a technology-intensive financial services sector has not resulted in private banks lending to agriculture – the technology is absent in rural areas; this has implications for innovation uptake in these countries. This contrasts with the situation in the developed world with a strong financial input into agriculture of both to agricultural credit and provision of risk management tools.

- **Vertical integration**: the food supply chain tends to be very weak in developing countries, resulting in colossal wastage of harvested food before it reaches the consumer; poor price transmission; high transaction costs. By contrast, in developed countries, where food supply chains are highly integrated, there are concerns about the structure of chains with large numbers of primary producers and consumers, with a high degree of concentration in between and slow responsiveness and increased vulnerability of highly integrated chains at times of rapid innovation and new challenges.

“**Great expectations:** What is society expecting from the global food system?"

31. The aim of this panel was to address consumer attitudes and consumer concerns and expectations vis-à-vis agriculture (food safety, food quality…). What is the likely nature of societal demands on agriculture round the world? (provider of food at reasonable prices, provider of green space for recreation, a custodian of natural heritage, an engine of development in poor countries, source of rural well being, an alternative source of energy – and other non-food uses, and much more?) Is the global food system evolving to a dual system: food for the poor, food for the rich? What is the interaction of Corporate Social Responsibility and public policy?

32. This panel considered that the patterns of evolution of consumers’ demands for food is very similar across countries worldwide, driven by income growth. Starting with the desire for food sufficiency, then efficiency and followed by food safety, differentiation, and ‘process’ attributes. The possibility of short-circuiting this evolution (i.e. in developing countries, leapfrogging the supermarket stage by passing from the first to third stage) was discussed.

33. There was discussion about the possibility of pure market solutions for consumers’ preferences in the third stage – and felt that this is only possible when the majority become citizen-consumers. As long as the purchasing behaviours of most consumers is guided mainly by price, consumer concerns as represented by the food lobbies will not be automatically transferred to producers. Is this a dilemma for policy makers?

34. Consumers are demanding traceability; there is a role here for governments. *Either* technologies will develop to allow traceability through global food chains *or* the return to local product sourcing will remove the need for this.
35. This panel mused about a gradual return to local food supply systems, in the limit to individual or household supply systems, and raised doubts about the sustainability of global food chains in the future.

5. Concluding remarks

36. The symposium revealed some of the important issues that the future global agri-food system will be facing, but surely more reflection will be needed to identify the crucial dilemmas and to identify points for policy interventions to achieve the fundamental shift that symposium participants felt is needed.

37. The problems are multi-faceted and are broader than agriculture alone. There is a need for more holistic thinking that goes beyond the different trends in different segments of the puzzle, and embraces an integrated approach to the whole system. This implies the need for multidisciplinary studies, and approaches spanning the different OECD Directorates. Agriculture is part of the wider economy, and agriculture and agricultural policies cannot solve all issues.

38. Much of the agricultural policy analysis and current policy settings rest on assumptions that take endowments, prices and preferences as given, and assume that once efficiency, given current prices, is achieved, non-agricultural policies will take care of equity issues. But insights emerging from the symposium stress that:

- resource scarcity is a problem that needs to be addressed by innovations in technology, improved efficiency along the supply chain;
- fixing market imperfections and getting prices to better reflect resource scarcities is a key challenge;
- distributional consequences of improving resource use policies have to become integral to policy design. The consequences of prices that better reflect resource scarcities will particularly be felt in poor households in developing countries;
- the future is uncertain and fraught with uncertainties, and anticipating emerging scarcities is one important aspect of preparations for the future. But scarcities are not necessarily absolute and can be overcome. Policies must get the incentives right for long-term growth in the context of increasing environmental pressures.

6. Further steps

39. This report has attempted to give a brief summary account of the discussion at the symposium. The symposium has touched upon some of the relevant themes, but it has not developed them in great depths. This comes not unexpected as this was not the purpose of the symposium, and its format was not designed to have in-depths substantial discussions. This report will be one of the inputs into an issues paper that the Secretariat is going to prepare for the Ministerial, but the issues paper will have to go considerably further in elaborating the important trade-offs (dilemmas) and to develop the themes of the Symposium further.

40. The issue paper is planned to be available for the September 2009 meeting of the advisory group for the 2010 Ministerial.