

Seminar 2 – 16/10/2017: CAP and the environment II

Summary

Starting in September 2017, INRA is organising a cycle of scientific seminars on the Common Agricultural Policy (CAP). This cycle – conducted as a scientific review – is part of a series of debates on the CAP from 2020 onwards. It has two main objectives, in line with two primary INRA missions: i) to identify top priorities in research, and ii) mobilise key expertise for the creation and implementation of public policy. Over the course of the 2017-18 school year, these seminars are reserved for INRA scientists and academic partners. The French agriculture minister will also attend in order to present this effort in the context of planning for the next CAP. An assessment will be carried out after one year in order to examine how new partnerships can be developed with other public and private players and with civil society. Summaries and presentation material from the seminars are available to the public. This summary covers the second seminar held on 16 October 2017. Summaries, naturally, are not exhaustive. They focus on the main points of the seminar.

The primary focus of the first seminar on the environment in the CAP (04 September 2017) was a review and an analysis of the strengths and weaknesses of measures specifically targeted to the environment. This review looked more specifically at two greening requirements of direct aids (the protection of permanent grasslands and a minimum percentage of Ecological Focus Areas (EFAs) on farms), and Pillar II agri-environmental and climate measures (AECMs). The second seminar also looked at the environment in the CAP, but this time through the lens of improving or developing new tools to better protect the environment and increase the positive environmental services provided by agriculture. Morning presentations (by A. Thomas, V. Martinet, R. Sabatier, C. Tarot) focused on payments for environmental services (PSE). Afternoon presentations focused on three other tools: i) the green payment of Pillar I of the CAP in its capacity to promote the adoption of practices which help reduce greenhouse gas emissions produced by agriculture (S. Pellerin), financial instruments used to finance investment that is doubly effective (in economic and environmental terms) (A. Bell), and iii) the new mechanism of Certificates for Reducing the Use of Phytosanitary Products (CRPPs) recently introduced in France (M. Blanck).

A. Thomas examined three questions in his presentation. First, does agriculture provide enough environmental services, and, conjointly, should taxpayers pay for the provided services, or does the market suffice? Due to the non-rivalrous and non-excludable nature of environmental services provided by agriculture, their provision is most likely insufficient by market forces alone. Public intervention is therefore legitimate. Two conditions are necessary to introduce payments for environmental services which are at least partially taxpayer-financed in order to increase the provision of the environmental service or correct environmental degradation: i) the definition of desired environmental conditions by mediating between the value of environmental services and the public

cost of ensuring their good quality, and ii) the definition of a baseline condition from which environmental services are paid so as to attain the desired conditions.

Secondly, A. Thomas asked what form intervention should take. In cases where exclusion is impossible, or too costly, direct intervention by public authorities is required. If exclusion is possible at a “reasonable” cost, contributions from intermediary and/or end-users are possible. The next question is then: which environmental services from agriculture are pure public goods, and which are impure public goods insofar as they would be non-excludable (common-pool resources) and/or non-rivalrous (club goods). Among pure public goods, A. Thomas and co-authors noted climate stability, protection of biodiversity, as well as air quality, the ability to resist flood and fire, and the protection of agricultural landscapes; added to this list are other non-environmental public goods such as animal welfare, food security and rural vitality (institutional public goods). These pure public goods require direct intervention from public authorities. Other environmental services such as hiking trails, local biodiversity and water quality are impure public goods, the provision of which will be optimised by combining decentralised measures and incentives from the central government.

Lastly, there is the issue of levels of governance, and therefore levels of public financing for environmental services from agriculture. It was noted that the CAP does not adhere to the lessons of fiscal federalism. One such requirement is that global public goods of concern to all European citizens (and beyond) be managed at the European level, and that local public goods of concern to national and regional populations first and foremost be managed at the national or regional level. One possibility is to structure the CAP around three pillars: i) a multi-annual European budget centred on global, environmental and institutional goods and innovation; ii) a multi-annual European, national and regional budget centred on local public goods; and iii) an annual European budget centred on stabilising markets, managing crises and risks, as well as irregular spending.

Despite the coherency of the proposals, discussions exposed difficult issues related to their practical and concrete implementation: inclusion of disservices as well as services, mediation between different services, service packages, quantifying the degrees of non-rivalry and non-exclusion which determine the relative importance of public and private mechanisms; inclusion of local preferences, etc. The public economist stated that services, in addition to being identified and measured, must be given a value (monetisation), to guide public and private choices. Considerable research is needed on identifying, measuring and attributing monetary value to services, not on an approach service by service but by considering simultaneously the different services and disservices, and on linking their provision to agricultural practices and systems implemented in different temporal and spatial configurations and which influence how practices affect environmental outcomes.

The presentation by V. Martinet continued that of A. Thomas insofar as it aimed to identify the challenges of optimising the use of economic instruments centred on the provision of ecosystem services by farmers.

After challenges are identified and goals established (e.g. reducing greenhouse gas emissions by a given percentage), three issues must be addressed: i) target of the instrument (“who?”), ii) the timescale of the initiative (“when?”), and iii) its spatial perimeter (“where?”). *This triple questioning poses major challenges for research: identification, measurement, monetisation of ecosystem services targeted (promoted) by intervention, mediation between different services and between different service packages, observability and the ability to verify the intervention and/or its outcomes, choice of the best-suited instruments, optimal incentive levels, optimal levels of governance, etc.* Added to these global challenges are ones more specifically linked to the “who” question (differences between targeted agents, disparities in information between them and the regulator, to spatial factors (environmental effects and whether they are observable or not, depending on group actions, etc.), and to the “where” factor (ecological interaction in regions of varying characteristics, spatial coordination



requirements to ensure a minimum number of participants (threshold concept) spatial continuity, etc.). This worksheet was used to analyse five categories of instruments: i) regulatory constraints, ii) volunteerism and self-regulation, iii) price modification, iv) property rights, and v) information. Each category of instruments is associated with several elementary instruments, the relevance of which was examined in relation to the three challenges of “who”, “when” and “where”. In turn, each of these three challenges were classified into sub-challenges (for example, for the “who” challenge, the targeting of identified players and those through whom it is possible to maximise environmental benefits, anti-selection and moral hazard issues, spatial externalities, and the sharing of the burden / value).

This framework was tested on three applications: i) the protection of endangered species of birds in agricultural areas, ii) the development of biocontrol methods, and iii) soil carbon storage. The proposed approach can be used to exclude certain instruments for a given goal (for example, payments for environmental services to protect endangered species of birds, given the difficulty of identifying with precision the associated service) and recommend the use of more suitable / relevant instruments (for example, targeted aids or AECMs for the protection of birds).

Discussions showed that the proposed analytical framework could be used upstream to choose targeted economic instruments for a given environmental concern, notably by listing the right questions to ask depending on the characteristics of the environmental target. However consideration should be given to the simultaneous inclusion of all environmental concerns in the CAP, and the subsequent issue of the overall coherency of environmental measures and of other instruments, which, while not focused specifically on the environment, can have indirect and/or unintentional effects on different environmental compartments. The issue of overall coherency in public policy also includes the matter of simplicity: simplicity reduces public and private transaction costs. The need to include the practices of farmers is an incentive to develop experimental economics applied to environmental problems in agriculture.

The presentation by R. Sabatier focused on livestock farming in the European Union (EU) and specifically on the roles, impacts and services provided by European livestock production (a synthesis of the scientific expert report of the same name carried out by INRA, co-directed by B. Dumont and P. Dupraz, at the request of the French ministries in charge of agriculture and the environment, and the French Environment and Energy Management Agency (ADEME)). The expert report showed that livestock farms face numerous economic, environmental and social challenges. They have negative effects on the environment but progress can occur on certain levels: net greenhouse gas emissions can be reduced by improving animal diet, nitrogen cycle management, and the use of grassland systems as carbon sinks. More innovative and interesting was the part of the study which demonstrated that livestock regions had differentiated effects on different environmental compartments, and more generally, were a source of ecosystem services and disservices in varying proportions. Four categories of livestock regions were established based on two criteria: animal density per hectare of utilised agricultural land, and the percentage of livestock diet composed of permanent grassland. On that basis, the following types of regions were defined: i) high animal density regions, ii) livestock/crop farming regions, iii) grassland regions (further divided into three sub-groups according to high, medium and low animal density), and iv) low animal density regions. The presentation then identified and described the different service bundles of these four (six) regional categories. Also identified were the actions needed to reduce disservices and/or increase services. These actions are both the remit of farmers, on an individual level, and of the regions where these livestock farms are located. *The conclusion, and discussions following the presentation highlighted the trade-offs between service bundles within a given regional category. An approach by non-ranked service bundles within a region proved to be relevant, but poses problems regarding the availability of data needed to study the different components of a bundle. A lack of data means that these components must often be described*



using models or indirect assessments. There is also the issue of what public policies should be implemented to facilitate the designed transitions, and the role to be played by markets and consumers in this transition. Discussion also focused on the heterogeneous dependency of regions on public funding, for example, suckler or milking cow premiums, and the consequences of modifying this targeted funding on service package provision.

C. Tarot brought the morning to a close with a presentation on the INRA Area of Innovation (AI) on the financing of environmental services provided by agriculture and forests. Globally, INRA areas of innovation aim to ensure that the potential innovation offer resulting from INRA research and that of its academic partners matches the innovation demands of its socio-economic partners. More specifically, the AI involved here specifically recognises that agriculture and forestry help – or can help – provide environmental services. Finance mechanisms must be developed to increase the provision of these services; there is also a need to assess the intentional and unintentional impact of these (new) finance mechanisms.

The presentation by S. Pellerin recalled that agriculture in France is the source of just under 20% of all the country's greenhouse gas emissions. Three forms of action can be taken to reduce greenhouse gas emissions from agriculture: i) the reduction of direct and indirect CO₂, N₂O and CH₄ emissions, ii) soil carbon storage and woody biomass, and iii) renewable energy production. The potential capacity of 10 emission-reducing actions was measured: 32.2 million equivalent tonnes of CO₂. The associated costs of these 10 actions, broken down into 26 sub-actions, vary: they are negative in the case of actions aimed at increasing the efficiency of nitrogen inputs and energy (win-win actions); moderate in the case of a second group of actions requiring investments and/or changes in practices, the cost of which is partially compensated by lowered costs and/or additional revenues (for example, a reduction in the frequency of ploughing, to once every five years); and much higher in the case of the last group of actions also requiring investments and/or changes in practices, without lowered costs or additional revenues (e.g. the installation of hedges). On this basis, the degree to which the three greening measures of the CAP were able to encourage the adoption of practices which reduce greenhouse gas emissions from farming were analysed, by identifying, among the 10 actions and 26 sub-actions, practices imposed by these measures. The potential of the four identified actions (agroforestry, buffer strips, hedges and legumes) to reduce greenhouse gas emissions is modest: 4 million equivalent tonnes of CO₂ per year. This moderate performance is because greening measures do not target several major sources of emissions (nitrogen fertilisers, management of liquid waste from livestock farms), and only aim to maintain permanent grassland areas, not increase them. *This presentation shows that the greening of the CAP is unable, in its current form, to significantly reduce net greenhouse gas emissions from agriculture. A significant reduction can only be achieved by aiming towards a much higher number of actions via regulation (e.g. conditionality, greening) or incentives (e.g. AEMCs).*

Research conducted by the FINAGRI research chair (IAE Paris business school and INRA) presented by A. Bell aims to develop innovative financing mechanisms for French agriculture (and European agriculture tomorrow) using financial instruments, in combination with financing via banking networks available today. As an illustration, research put into action in two pilot regions (Nouvelle Aquitaine and Grand Est) consists of: i) calculating investment needs of farms, ii) assessing which needs are not met by current funding channels (failures of current funding markets), and iii) defining the development strategy for financial instruments which best meets needs and remedies shortcomings. Concerning the first point, on calculating investment needs, the approach is original in two ways: i) for its simultaneous identification of not only investments but also of changes in practices and even systems, which should be combined with these investments, so as to ii) later evaluate the impact of these investments and changes in practices on economic, environmental and social outcomes (i.e. the notion of multiperformance). Qualifying environmental performance is essential for the development of “green bonds” in agriculture. *Financial aspects aside, research priorities identified by the research chair include*



the development of analytical frameworks and integrated models for the purpose of assessing, ex-ante, and monitoring over time, the impact of investments and changes in practices on all outcomes using an initial diagnosis of the farm in terms of all aspects of sustainable development. Another research need addresses the problem of multi-performance indicators and the possibility of aggregating basic indicators into a small number of synthetic ones which could be used by financial investors. The issue of whether green bonds can improve the environmental outcomes of French/European agriculture remains unresolved, as does the issue of whether financial instruments are compatible with more traditional instruments used in agricultural ecosystems to protect the environment.

Certificates for Reducing the use of Phytosanitary Products (CRPPs) in French agriculture were the subject of the final presentation, given by M. Blanck. The mechanism imposes means-based obligations (i.e. practices-based obligations) and proposes actions (in the form of action plans) which have been proven to reduce the use of pesticides and, in return, entitle participants to a given number of certificates. Each distributor of crop protection products must collect a number of certificates equivalent to 20% of its sales of crop protection products (sales are expressed as “unit dose numbers” or UDNs). Action plans can be proposed by a wide range of players, not only product distributors (who are the “obliged”); but also by other agricultural consulting professionals (who are the “eligible”), along with farmers themselves. Those eligible, and farmers, transfer these actions to those under obligation, who can in turn meet their obligations either by developing clean actions, or by acquiring missing certificates from other eligible parties or farmers. The scheme is piloted by the two ministries in charge of agriculture and ecology; action plans eligible for certificates are validated by an independent scientific assessment committee. *It is too soon to judge the environmental effectiveness of the scheme, which is still in the experimental stage. Its advantages: it attributes (non-monetary) value to reducing the use of crop protection products; action plans take into consideration local conditions such as weather; it combines all known expertise and steers research, development and innovation towards an open innovative approach; and involves and obliges crop protection product distributors.*

General conclusions. *Framing environmental issues in public policy – and the CAP – through the lens of services, disservices, service/disservice packages, payments for environmental services (more generally payments for ecosystem services) is promising, particularly because instruments can be based on provided services, on reduced or prevented disservices, and, as a result, make the CAP more legitimate in the eyes of the general public. The concept remains only partially operational, however, primarily due to the difficulties of attributing a value to services, to the dependency of the latter on agricultural practices and systems and to the variability in service value depending on the preferences of actors. In this context, numerous research needs must be met. They are particularly focused on the issue of identifying, measuring (including in terms of cause and effect relationships between practices and services implemented and the level of services and disservices; cause and effect relationships are variable in function of temporal and spatial factors), and attributing value (depending on the preferences of actors). A service package approach in a given region naturally poses the question of aggregation rules for basic services/disservices, and of choosing relevant regions. Given the environmental significance of this regional aspect, we recommend that the next CAP promotes the implementation of regional pilot projects (experiments) which can be used to collect invaluable data on relations of causes and effects between policy instruments, practices and systems, and impact on all services related to the three aspects of sustainable development. The shift from a CAP essentially designed for individual farmers to a more collective and territorial one is a challenge. The territorial dimension does not entail the end of a European-level common policy; there is therefore a real need to better distinguish between global public goods that require European-level funding and governance, and local public goods that would better be managed with joint financing and joint governance at a*



more local geographical level. It is entirely possible to include global environmental issues such as climate change and protecting biodiversity in regional projects, and deploy measures at this level according to local conditions. Lastly, there is the issue of penalties for disservices: if ecosystem services provided by farmers are remunerated on a non-market or market basis (by taxpayers or intermediary/end users, respectively), according to the beneficiary-payer principle, then its opposite – penalties for disservices caused by farming activities in line with the polluter-pays principle – is worth studying, if only for the sake of coherence and legitimacy in public policy. There are ways to apply the polluter-pays principle without (or only slightly) penalising the competitiveness of European / French agriculture, for example by taking fiscal revenue generated by the agricultural sector and shifting aid from non-compliant farmers to compliant ones using a bonus/penalty system. Similarly, the legality of possible incentives and penalty systems, for implementation or testing, must be addressed.

The third seminar in the cycle (14 December 2017) will look at risks from two different angles: resilience in production systems (morning session) and public and/or private risk management tools. The fourth seminar (10 January 2018) will focus on the Brexit and the fifth seminar (25 January 2018) on food and nutritional considerations in the CAP.

Written by: Hervé Guyomard, Cécile Detang-Dessendre, 09 October 2017

