



EUROPEAN COMMISSION  
DIRECTORATE-GENERAL FOR AGRICULTURE AND RURAL  
DEVELOPMENT

Directorate E – Markets  
**The Director (acting)**

Brussels,  
AGRI.E.3/BM/S/6822379

**MINUTES of the *MEETING OF***  
***THE EXPERT GROUP FOR AGRICULTURAL MARKETS, in particular concerning aspects***  
***falling under the CMO Regulation – Animal products***  
***and***  
***the CIVIL DIALOGUE GROUP ANIMAL PRODUCTS***  
**12 September 2022**

Chair: Head of Unit, AGRI.E3 Animal Products

Delegations present for the CMO Expert Group: all Member States were present, except for SK.

Delegations present for the CDG: all organisations were present, except for AnimalhealthEurope, Bee Life-European Beekeeping Coordination (Bee Life), Bureau Européen des Unions de Consommateurs (BEUC), EuroCommerce, Eurogroup for Animals, European Federation of Food, Agriculture and Tourism Trade Unions (EFFAT), European Forum on Nature Conservation and Pastoralism (EFNCP), European Milk Board (EMB), European Public Health Alliance (EPHA), European Rural Poultry Association (ERPA), Stichting BirdLife Europe (BirdLife Europe)

### **1. Approval of the agenda and of the minutes of previous meeting**

### **2. Nature of the meeting**

The meeting was non-public.

### **3. List of points discussed**

#### **3.1 Opening by the chair**

After the kick-off meeting of 10 March (focussing on dependency on imported inputs (energy, fertilisers and feed) under the spotlight of Russia's invasion of Ukraine), two plenary meetings on 6 April and 25 May (that reviewed the sector's socio-economic dynamics) and a 3rd plenary meeting on 4 July (that opened the chapter of climate and environment), a 4th plenary meeting of the European Pigeat Reflection Group took place on 12 September to complete the review of climate and environment challenges by focusing on biogas as well as on research and innovation.

The reflection was guided by 7 questions:

- **Q1:** To which extent can **biogas** add value to the pigmeat sector?
- **Q2:** To which extent can biogas address environment and climate challenges?
- **Q3:** Are there pitfalls with biogas that should be avoided?
- **Q4:** Is the pigmeat sector kept actively informed of **research and innovation** in pig farming?
- **Q5:** What are the benefits expected from R&I projects for the pigmeat sector?

- **Q6:** What's the expected timeline of R&I projects before they can effectively apply to pig farming?
- **Q7:** What's the cost of implementing R&I projects for pig farming?

### 3.2.1 Session 1 Biogas

#### 3.2.1.1. An overview of biogas from pigmeat farming – academic – Head of Environment Department of CRPA - Research Centre on Animal Production, IT

Anaerobic digestion of animal manure was presented as the most effective technology to limit greenhouse gas emissions from livestock farming. Organic matter in the effluent coming from plant products partially digested in animals' stomachs has a microbial activity that leads to the production of methane. Direct feeding to anaerobic digestion allows:

- reducing direct methane emissions from manure, especially when time is short between excretion and entry into the anaerobic digester;
- reducing ammonia and nitrous oxide emissions, thanks to the digester's hermetic closure and its lack of oxygen ;
- 50-60% degradation of organic matter and increased ammonification coefficient of nitrogenous forms;
- producing biogas, a renewable, easily usable biofuel that can supplement/replace fossil natural gas or other forms of fossil energy that have a greater environmental impact;
- producing digestate, an organic fertiliser with high agronomic efficiency.

In addition, anaerobic digestion with animal manure allows for very stable biological processes that make it easy to apply co-digestion of other organic matrices (by-products and second-harvest crops), which are typically more deficient in nutrients. All forms of animal manure, including pig manure, are technically usable in anaerobic digestion, the only limitation being distance from the plant and energy concentration: that's why, in the biomethane production potential of European agriculture, animal manure represents a decisive item.

From an environmental point of view, manure-only biogas plants generate a greenhouse gas 'credit' in the atmosphere both because of the emissions avoided by the storage of manure and because biogas replaces fossil sources for energy production.

The environmental sustainability of pig farming has been assessed by quantifying the carbon footprint associated with meat production, using a life cycle approach (Life Cycle Assessment, LCA), i.e. estimating all greenhouse gas emissions, both those occurring in the stable and in the soil cultivation phase, and also those occurring upstream of the farm, induced by the production of the technical means used. Both the emissions produced and avoided as a result of the introduction of the anaerobic digestion plant must also be considered in the balance.

With a biogas plant, the carbon footprint of 1 kg of pig live weight (kgCO<sub>2</sub>eq/kg live weight) drops considerably to as much as 70%, in Italian heavy pig breeding. This is a very significant result considering that most GHG mitigation measures are able to reduce the impact by only a few percentage points.

#### 3.2.1.2. A farmer's experience – COPA - CEO Goodvalley Agro S.A., Group Vice President - Sustainable Development (PL)

The Vice-president of Goodvalley Group representing Copa-Cogeca, presented biogas as one of the best available techniques in pork production. The main advantages of biogas are:

- improvement of the image of the industry through GHG emission reduction – striving for carbon neutrality and using the Best Available Technique (BAT)

- reduction of production costs by lowering energy costs (electricity and heat)
- energy self-sufficiency is possible
- important element in Circular Economy and Full Value Chain
- facilitates the investment process in the case of new livestock buildings (permissions)
- digestate from biogas plants is used in the fields as high-quality organic fertilizer, which has a positive effect on the environment - very important in the "from field to table" model
- significantly lower odour nuisance – avoiding local complaints and conflicts
- unloading the General Power System – on-site self-consumption via own grid (additionally - stable source of Energy – complementary for other less stable RES).

Biogas addresses environment and climate challenges due to emission reduction from slurry management (methane capture), production of green electricity and replacement of black (conventional) energy, production of green heat and replacement of conventional heat sources (oil, coal, gas), production of biomethane/bio-LNG alternative to conventional gas, replacement of artificial fertilizers with digestate from biogas plants. Moreover, waste from agri-food industry, including gastric content from slaughtered animals, is a good input for a biogas plant. There is also a possibility to produce dry ice pellets for meat processing industry and green hydrogen for fuel purposes.

Goodvalley believes that consumers' awareness of how pork production and agriculture influences the climate is rather low, due to too technical terms. Consumers' readiness to pay a premium for climate-friendly products is also rather low and expected to be weakened by the forthcoming recession. The most important characteristics of processed products for consumers are: good taste, 100% meat, without additives, food nutrition value, without conservatives, natural products. Animal welfare and climate-friendly products come lower in the rank. Goodvalley's new approach is to replace calculation of Carbon Footprint with Life Cycle Assessment (from 2022).

Goodvalley presented a number of pitfalls with biogas that should be avoided:

- power of the plant not adapted to the raw material input
- unsecured input of raw materials (stable contracts needed)
- technology not adapted to the raw material input (e.g. too small tanks)
- insufficient amount of land for responsible management of the digestate
- challenges with obtaining official registration of digestate-based fertilizers
- no possibility of consuming or selling heat (important for the total economy)
- mistakes due to formal status: biogas vs. agricultural biogas (using wrong raw material)
- using of animal by-products without proper registering of the plant
- location far away from consumers of energy and raw material supply
- failure to systematic maintenance and service
- making investments and operations dependent on the national support schemes
- scale of biogas plant vs. size of the pig farm
- size of biogas plant must be adopted to the available volumes of raw materials and to the heat needs of the technological process.

Goodvalley is of the opinion that use of first generation raw materials applicable in food or feed production will be probably limited or forbidden in the near future. Therefore, it is necessary to develop technologies which can allow a viable replacement with second generation materials, e.g. straw.

### **3.2.1.3. A MS' approach to biogas – Germany - Department EU Affairs/International Affairs, Agency for Renewable Resources (FNR)**

A representative of the German Agency for Renewable Resources (FNR) presented an overview of biogas production from pig manure in Germany. There are 8 600 biogas plants in 2021 with 6.5 GW

installed electrical capacity. Manure represents roughly 50 % of mass input of biogas plants and energy crops the other half. However, only 30 % of total manure supply is used in biogas plants. There are some incentives for electricity generation from manure and investment support programmes established by the German Federal Ministry of Food and Agriculture (BMEL). Under the Climate and Transition Fund, there are 16 ongoing research projects focusing on fermentation process technologies, emission reduction, small-scale plants and efficiency increase. FNR is of the opinion that whether biogas can add value to the pigmeat sector depends on the market and legal framework as well as alternative uses of manure. An important factor is the guaranteed electricity price (feed-in tariff). In Germany the price is guaranteed for 20 years. FNR believes that 22 ct/kWh (in EEG) is not sufficient in many cases due to limited economies of scale. If there is enough manure and other useable co-substrates, biogas can provide extra income and reduce emissions. Currently, thanks to biogas production, 7-8 mio t GHG eq. per year is saved in Germany but there is a lot of potential to increase this figure. One of the pitfalls with biogas mentioned by FNR were challenges that the pig sector is facing (generational renewal, shortage of workers, energy and fertilizer price fluctuations, high cost of investments and payback time for biogas plans, secure substrate supply and energy sale, appropriate knowledge to run a biogas plant etc.

### 3.2.2 Session 2 Research and innovation

#### 3.2.2.1. An EU overview of R&I projects linked to the pigmeat sector – DG AGRI F2

DG AGRI presented an overview of specific projects on pig production financed with EU funds under Horizon 2020 and Horizon Europe. In the field of sustainability, several interesting projects were presented including [PATHWAYS](#) (Pathways for transitions to sustainability in livestock husbandry and food systems) and RE-LIVESTOCK (Facilitating Innovations for Resilient Livestock Farming Systems). Another project (EU Pig Innovation Group) aimed to help pig producers find tried-and-tested best practices from fellow producers across Europe, sharing new knowledge on four main themes (Health, Welfare, Precision and Meat Quality) in one place ([www.eupig.eu](http://www.eupig.eu)). Also other projects on sustainable animal production were mentioned: SusPigSys, SusPig, PigSys, PEGaSus, AnimalFuture, M4MODELS, MELS, CircaAgric-GHG, ConnectFarms, MI BICYCLE, PROENV, ReLive, SENSE, Solution4Farming.

DG AGRI presented also two projects on organic pig production ([POWER](#), ROAM-Free), six projects on manure and energy ([Fertimanure](#), [Res4live](#), [Agrocycle](#), [Nutri2Cycle](#), [Depurgan](#), [Biowave](#)). The result of four projects on genetic resources ([Treasure](#), [Image](#), GenRes [Bridge](#)) and two on genetics and breeding ([Gene-switch](#), [Geronimo](#)) were also presented. Thanks to Treasure project, there are tools describing and evaluating the performance of local pig breeds across agro-geo-climatic conditions and production systems (indoor, outdoor, organic). There is an open access book published with information on the main productive traits of representative local European pig breeds with significant genomic data generated highlighting the adaptive capacity and resilience of these breeds.

Furthermore, DG AGRI informed about results of projects related to feed and feeding technics ([Feed-a-Gene](#), [OK-NetEcoFeed](#)) and alternative sources for feed ([Susinchain](#), [Profuture](#), Nestler). For instance, OK-NetEcoFeed project carried out 18 field trials on alternative feed, involving more than 9 000 chickens and 1 000 pigs, developed a ration planning tool, an Excel-based app which allows farmers to calculate their own feed requirements based on the breed of animals they have, their stage of growth, and what sort of feed they are using.

There were also projects in the field of microbiome ([Circles](#), [3D-Omics](#)), product quality ([Metaquality](#)), housing ([HybridFarm](#)), infrastructure ([PIGWEB](#)) and digital ([IoF2020](#), [SmartAgriHubs](#)). The aim of IoF2020 project was to accelerate adoption of IoT for securing sufficient, safe and healthy food and to strengthen competitiveness of farming and food chains in Europe.

### **3.2.2.2. A farmer's and cooperative's perspectives- COPA-COGECA – chair of the Working Party on Pigeat**

COPA-COGECA is of the opinion that the pigmeat sector is not kept actively informed about research and innovation in pig farming. Various projects are carried out without any participation of producer organisations which are also not informed about the outcomes. Knowledge transfer is therefore very challenging and the possibility of applying the outcomes in the field limited.

In 2021 the sector tried to take an initiative itself and prepared a project (Wellfarmers) that was led by the farmers and involved 17 producer organizations and 14 research institutes from all over the EU. Although the active participation of the stakeholders is desired by the Commission, the project was not successful. The sector fails to see any improvement when it comes to involving producers in new projects.

Pig producers and their cooperatives expect research and innovation projects to help them adapt to the requirements of consumers, especially on animal welfare and the environment. More concretely, on animal welfare, the sector would need support on how to ensure the best conditions for sows and piglets without farrowing and gestation crates, on how to detect the boar taint at slaughterhouses and replace castration, as well as guidance on how to prevent tail biting. From the environmental perspective, the sector is challenged by agricultural valorisation and emissions control, especially on the biogas, green electricity, and hydrogen. A better project monetization technology is needed.

It takes time before the results of the projects apply in practice. For innovation in farm management, we would expect the implementation time to be 1-2 years and for innovation that includes investments, it would be 10-30 years.

The current situation can be improved through a reduced gap between research and technology that is ready for the market. The multi-actor approach must be strengthened and farming stakeholders, as well as real-farm experience, better involved. We would wish that the decisions on the future calls would be supported by an advisory board of the farming sector representatives and also use the applicability of project results as a score during the evaluation procedure. Some smaller calls with fewer required participants and smaller administrative burdens should be introduced. The sector would appreciate a Commission's proactive approach in the search for solutions, innovation, and new technologies. All the research projects must involve relevant stakeholders and also cover the experience costs. There must be a budget and remuneration for farmers that participate in the projects as well.

### **3.2.2.3. Implementing R&I projects at farm level – a MS's advisory service – Finland – CEO at Association of ProAgria Centres**

The Finish advisory system (ProAgria) is of the opinion that the future lies in farming data. Farming is developing more rapidly than ever before. Novel soil and climate sensor technology, satellite and drone imaging, 5G, MyData and machine integrated sensors are changing farming rapidly. Farmers need tools and guidance to move into Smart Farming era. Everything folds around optimal collection and use of data. ProAgria informed about recent and on-going research activities on pigs:

- Reduction of nutrient flows to surface waters and circulation of collected nutrients
- Speeding up knowledge transfer between farmers and researchers
- Several nutrient tests aiming to increase the feed-to-weight –ratio
- Continuous Salmonella eradication in pigs on a national level.

Certainly, advisors have a vital role in the implementation of recent research outcomes but these changes need to make farming more profitable, otherwise, they will not be permanent. ProAgria also informed about the Finish Animal Health organization (ETT) which was established and funded by

the industry in 1995. The main aims of ETT are: promotion of health and welfare of farm animals and prevention of disease risks, coordination of national animal health care and controls on the import of animal feed and materials.

### **3.2.3 Session 3 Research & Innovation projects nr 1, 2 and 3**

#### **3.2.3.1. Overview of the main elements of a R&I project on feed efficiency and sustainability – academic - Dept. of Animal Science, Aarhus University, DK**

The presentation was based on results obtained in WP1 of the H2020 project: Adapting the feed, the animal and the feeding techniques to improve the efficiency and sustainability of monogastric livestock production systems – Feed-a-Gene.

Europe is in a chronic protein deficit and approximately 70% of protein rich feedstuffs is imported; a situation that has lasted for decades in spite on several efforts to increase European protein crop production. The Feed-a-Gene project has investigated the potential of alternative European feedstuffs in order to increase their production in volume and quality in Europe. The focus has been on alternative sources and technologies that can increase protein quantity and quality as a response to the increased need for protein for food and feed. The investigated technologies have been:

- modified separation techniques for European grown soybeans
- “cracking” of green biomass resulting in end-products with different chemical, functional and nutritional properties
- separation of rapeseed meal into different fractions by physical means
- new technologies for measuring nutrient composition and value in real-time

Soybeans is the third most important protein crop in Europe and the one with the relative highest increase in production particularly in the south-east. The Feed-a-Gene project investigated new small-scale processing technologies involving extrusion or cooking without and with dehulling to produce expeller soybean meal, but also the influence of processing on the composition of macronutrients, amino acids and antinutritional compounds, the in vitro protein digestibility, and the nutritive values in experiments with piglets and amino acids. It was found that the nutritive value of European grown and processed soybean meal (SBM) in general was comparable to that of imported SBM from America both to piglets and broiler chickens.

Extracted protein from green biomasses (clover, grasses, lucerne) is a new protein source for monogastric animals. The rationale behind the interest is the high biomass production potential caused by a higher sun insulation in green biomasses because of a longer growing season compared to grains and seed legumes. A further reason is related to its potential to reduce leakage of nitrogen in environmental sensitive areas like lakes and fjords. To be able to utilise the protein in green biomass in an efficient way by monogastric animals, the extractable green protein has to be separated from the fibre-rich pulp fraction in a biorefining process. The Feed-a-Gene project investigated primarily nutritive value of the protein concentrate extracted on a pilot plant in experiments with ileal cannulated pigs. The extraction process was in an early phase of development and the standardized ileal digestibility of protein and amino acids was inferior to the digestibility of a high-quality SBM. However, the processing technology has been continuously developed since then and after the Feed-a-Gene project has ended there has been established demonstrations and small-scale production facilities in Denmark for the extraction of green protein for use in the feeding of particularly organic pigs and poultry.

Rape seed is by far the most important protein crop in Europe, but the digestibility of rape seed meal (RSM) and cake is lower than of SBM. The Feed-a-Gene project therefore investigated different means to improve the nutritional value of RSM such as the use of exogenous enzymes, bioprocessing and tail-end separation of RSM into a fine and course fraction. Using tail-end separation it was

possible to separate the RSM into a fine protein enriched fraction and a course fibre enriched fraction. In an investigation with pigs, it was found that the fine fraction resulted in higher total tract digestibility of nutrients and a better performance (daily weight gain, feed conversion) compared to unprocessed RSM. Bioprocessing also increased the nutritional value of conventional RSM for pigs whereas the use of exogenous enzymes only had limited effects on the nutritive value of RSM for pigs and poultry.

An additional important element of the Feed-a-Gene project was the development of calibration equations from NIR scans based on chemical and biological in vivo databases with individual feedstuffs and feed mixtures. Equations were developed for macronutrients, amino acids, ileal and total tract digestibility of amino acids, total tract digestibility of energy or nutrients and metabolizable energy. Based on the studies it was found that NIR can be a useful and strong tool for estimating the chemical composition of individual feeds and feed mixtures, the digestibility of nutrients, amino acids and energy as well as digestible and metabolizable energy. The models can be used to adjust diet composition when using feed batches with variable composition thereby helping the industry to deliver a uniform nutrient quality of feed mixtures. The models can further potentially be ported to online equipment that can be installed in feed processing plants to enable more or less automatic adjustment of feed composition to ensure that the feed produced is holding a uniform nutritive value.

### **3.2.3.2. Overview of the main elements of a R&I project on manure management – academic – Deputy Director of BETA Technological Center (UVIC, ES)**

More than 90 % of manure produced by livestock farms in the EU is used for land fertilization. However, this process is inefficient. The H2020 FERTIMANURE project ([www.fertimanure.eu](http://www.fertimanure.eu)) aims to recover nutrients from animal manure to produce high quality and safe bio-based fertilisers (BBFs) that can compete in the European fertilisers market.

To reach this goal, FERTIMANURE runs 5 on-farm pilots located in five of the EU's biggest livestock production countries: Belgium, France, Germany, the Netherlands and Spain. With these 5 pilots, FERTIMANURE is producing 18 different BBFs, characterized according to the EU Fertilizing Products Regulation (2019/1009). The agronomic quality of the products is tested by doing pot tests and field trials with different soil-crop combinations and the sustainability of these products is thoroughly assessed.

FERTIMANURE is also working on assuring that the obtained fertilizing products can have an interest in the European fertilisers market, and are accepted by end-users. The results obtained in FERTIMANURE should convert current challenges related with manure management into opportunities for the different stakeholders.

### **3.2.3.3. Overview of the main elements of a R&I project on reducing ammonia emissions and odour – academic – Agricultural Engineering Department, ILVO, BE**

The presented study was part of a larger R&I project funded by the Flemish Government (2014-2018). The study was focussed on ventilation-based techniques and aimed to understand the ammonia and odour transport behaviour at different ventilation control settings (VCS) in these buildings. A novel research approach was developed, integrating both mathematical and CFD modelling with field measurements.

The applied methodology enabled to gain detailed knowledge of the pollutants transport behaviour from emitting sources in the pig building and to assess emission reduction potential of different VCSs and design techniques. The study demonstrated the importance of avoiding air exchange with manure storage; innovations regarding emission reduction technologies should thus rethink pig building design and manure management. Field experiments confirmed that increasing the set-point temperature at the climate controller by +2 °C compared to reference (CON) setting, significantly

reduced the odour emission by 34% compared to the CON. Based on the VERA protocol, it was feasible to reduce the annual NH<sub>3</sub> emission by 11% compared to CON using this VCS.

However, large variations were observed in calculated yearly average NH<sub>3</sub> emission reductions based on the VERA test protocol concluding that emission measurement strategies should be carefully designed in order to obtain technologies with proven yearlong performance under practice conditions.

#### **3.2.3.4. A small farmer's perspective - ECVC**

ECVC is of the opinion that small farmers need different solutions from those of pig industry. Often small farmers produce their own feed and this model is not well represented in studies. Livestock data can be confusing as to the functioning and impact of different models. ECVC believes that the inclusion of small models in research would allow Europe to display a better balance in terms of livestock farming and agriculture. Emissions and ecologic impacts need to be assessed more precisely because animals are able to thermoregulate, move differently in different farming systems. Farming systems need to be defined more adequately. For example, certified organic feed for organic pork production comes from the global market with a high carbon footprint: inconsistent with environmental targets.

ECVC believes that research needs to be applicable and clearly communicated to farmers and local public authorities without delay. ECVC listed in which areas funding is needed:

- Research in slaughterhouse density throughout Europe and the mapping of mobile abattoirs systems
- Research on “naturally produced meat” - nutritional aspects; some research has already been done on free-range and organic, but is not disseminated and applied; there is a need for a difference in carcass grading systems
- Research on applying European regulations: hygiene regulation for small scale production exists at regional level (polyfunctional processing facilities, and multi-use processing for multiple producers) but is often not applied and its possibilities communicated
- Socio-economic research on pig farmers welfare: decreasing number of workers in the sector, with a high average age - motivation, working conditions, and remuneration need to be looked at in order to keep jobs in rural areas; interdisciplinary research is needed
- Research on strengthening regional food networks

ECVC is of the opinion that the Commission and EU MS should:

- include small scale farmers who have been particularly marginalised by industrialised systems, in the development, governance and decision-making processes for new technologies.
- use participatory processes to decide to what extent new technologies might contribute to, or detract from food sovereignty
- regulate corporations and other technology developers, including research institutions
- allocate public funds for research and subsidies towards a transition to technologies for small-scale food producers' organisations and grassroots-led, publicly accountable research initiatives

ECVC believes that research is needed due to growing concerns about animal welfare in slaughterhouses. ECVC proposed innovation in small scale slaughtering as follows: takeover of fixed slaughterhouse threatened with bankruptcy by farmers, establishment of a fixed slaughterhouse, creation of a complete mobile slaughterhouse (perfect for ASF areas!), creation of mobile slaughter units ("slaughter boxes") dependent on a fixed slaughterhouse, creation of fixed carcass units without a cage, which is supplied by slaughter boxes and creation of slaughterhouses that can move to animal assembly areas ("plots").

ECVC insisted on the main problems faced by small farmers: average age, generational renewal, lack of innovative solutions for environmental adaption, few investment possibilities.

ECVC believes that there are tools to share information among a farming community quickly, and new apps that enable farmers to sell their products directly. Digital tools can also be used in agro-ecological approaches by open-source information sharing of, for example, crowd-sourced soil and feeding data, and experimental stable set-ups for pig housing and animal welfare.

### **3.2.3.5. A retail perspective – Eurocommerce**

EuroCommerce (the European association for retail and wholesale) described a number of initiatives in which retailers collaborated with other supply chain partners (farmers, food manufacturers and processors) and researchers in academia for research and innovation projects.

For instance, the European Commission kicked off discussions in the supply chain a few years ago on best practices to end surgical castration of piglets. Retailers cooperated with academia and farmers to develop surgical castration-free pork and explain the benefits of such practices to consumers (in relation to health, sustainability, animal welfare).

There are other initiatives in which retailers have partnered with academia on R&I projects on pigmeat involving animal welfare, emissions reductions, effective water usage, etc.

### **3.2.3.6. A MS' perspective – Ireland – Head of the Pig Development Department at Teagasc, IE**

The Teagasc Pig Development Department (PDD) is the part of the Irish authority dedicated to carry out research, KT and education for the Irish Pig Sector. The PDD includes a total of 40 people (4 researcher, 5 advisors, 20 PhDs-PDs) serving around 140,000 sows in around 300 farms. The different stakeholders in the Irish pig industry work together to develop integrated systems to use all the data available to advise farmers. Teagasc does research in this context to develop and pilot new systems and does part of the advice to farmers.

The main current areas of research in Teagasc PDD are related to the 3 main societal challenges: need to increase animal welfare, need to decrease AMU and environmental impact. Teagasc has several projects ongoing to reduce environmental impact including use of low protein diets, slurry management technologies and new designs for facilities. Solving societal challenges will require radical changes in current farms and new technical knowledge to be disseminated. Research in this area needs high levels of capital investment and needs more involvement of farmers (bottom-up), otherwise EU farmers will not have the technical solutions they need to respond to societal challenges.

## **3.3 Conclusions by the chair**

The chair showed appreciation and gratefulness for the quality of the presentations that were particularly outstanding and inspiring, full of avenues for improved sustainability in the years to come. She recalled that there is only one plenary meeting left (on 21 November) before the group adopts its report in January 2023. She recalled the need for all to send in contributions on all questions dealt with by the group since the kick-off meeting on 10 March. The group's report can only be as good as members' contributions are.

## **4. Stakeholder organisations' and Member States' written contributions**

**Three Member States** sent a written contribution (**PL, NL, MT**).

For **PL**, the effective use of biogas can contribute primarily to decreasing greenhouse gas emissions from agriculture and reducing agri-food waste. Biogas plants and biomethane installations can be

means of reaching emission neutrality and improving the image of pig farming. The benefits from biogas also include, among others:

- cheaper waste management, a cheaper source of energy, efficient use of resources, an additional source of livelihood from sales of surplus heat or digestate as a valuable organic fertiliser,
- a lower feed production cost (the use of very effective natural fertilisers arising as a result of the digestion process),
- the stimulation and strengthening of local economic development and economic activation.

PL is of the opinion that as a renewable energy source, biogas can primarily limit the energy production from fossil fuels and thus reduce not only carbon dioxide emissions, but also those of other greenhouse gases (nitrous oxide and methane) from agricultural sources. Consideration should also be given to the reduction of CO<sub>2</sub> emissions, achieved by replacing artificial fertilisers with digestate and reducing the emissions of methane released from manure and slurry left in the open air (or applied in the fields). Their correct management also contributes to eliminating weed seeds, parasite eggs and pathogenic microorganisms from fertilisers of animal origin, reducing the risk of surface runoffs and water eutrophication, limiting the pollution of groundwater and watercourses, as well as reducing odours.

PL believes that, during the construction and operation of biogas installations, applicable standards and regulations need to be complied with in order to avoid the risk of a breakdown, the release of harmful gases into the atmosphere or the pollution of the environment with waste substrates. Literature data indicate, among others, that:

- when digestate is incorrectly managed, there is a risk of pollution of the environment, particularly soils and waters.
- just as in the case of slurry, excessive fertilisation with digestate can cause damage to plants, migration of nutrients into groundwater and also surface runoffs.
- biogas is a flammable substance and poses a risk of explosion in specific conditions.
- residents also have concerns about odour emissions, increased transport of substrates of unknown origin and failure to ensure correct transport conditions.
- The risks may also include the incorrect operation of the installation or shortcomings related to its operation – corrosion, leaks from tanks, the absence of emergency procedures and operating instructions, including occupational safety and health instructions.
- Fortuitous events (e.g. explosions, fires, atmospheric discharges, hits) and the poisoning of employees.
- The use of target crops as substrates in biogas production: maize, cereals grown as pure species, cereal mixtures, cereal and legume mixtures, topinambur (sunflower bulb), grasses, alfalfa, clover, mixtures of alfalfa or clover with grasses, sugar beet leaves and others which can be found locally. The same plants are used for food and feed purposes, which can pose a risk or cause competition for substrates. Energy plants intended for biogas production should meet the same requirements as the biomass intended for feeding animals, particularly for ruminants.

This is due to the fact the methane digestion process is comparable to fermentation which takes place in the gastrointestinal tract of a ruminant. The risks posed by biogas production can be avoided and minimised, among others, by using optimum technologies and materials during the construction of a biogas plant. The appropriate stability of the digestion process needs to be achieved and maintained. The technical condition of facilities and equipment must be continuously monitored, including the ability to immediately cut them off and shut down their operation, and systems must be in place to alert about breakdowns and to monitor the air composition, particularly in the buildings of the biogas plant. Other important elements include the appropriate training of the crew in all operating activities, the OSH rules, the fire protection regulations and the control of persons present in the facilities. In

order to minimise odour emissions, it is important to appropriately secure the sites where substrates and digestate are stored.

PL informed that most information on R&I in pig farming can be acquired from sectoral news or the Agricultural Advisory Centres. Current information on programmes and projects launched and their results can also be found on the website of the [National Centre for Research and Development \(NCBR\)](#), which is the key centre supporting and creating innovative technological and social solutions. The NCBR beneficiaries are able to increase their co-financing rate (+15%) when they disseminate project results and most of them use this opportunity. Dissemination can occur through participation in conferences. Up to 10% of direct costs of all projects implemented with EU support are earmarked for project promotion. The beneficiaries meet this obligation, among others, by participating in sectoral events, preparing publications in sectoral periodicals, creating websites dedicated to their projects, advertisements in social media etc., thus providing information about the projects which they implement. The PL Ministry of Agriculture and Rural Development carries out its tasks in the scope of the coordination and management of matters related to the implementation of the national and international scientific, research and implementation cooperation. In particular, this includes the implementation of analyses of national and international solutions for the purpose of research and development and implementation activities and the commercialisation of knowledge in the scope of agriculture, agricultural markets and rural development, or the implementation of activities within the framework of scientific cooperation in the scope of research and innovation in agriculture for the purpose of the cooperation between science and practice and their dissemination.

PL believes that the main benefits from research and innovation projects in each sector include the improvement of innovativeness, development or attainment of a higher technological level. In the case of the pigmeat sector, this primarily involves making animal production sustainable and minimising its adverse impact on the environment.

Therefore, it is well-advised to carry out research and place on the market solutions, equipment and systems which will make it possible to reduce the adverse impact of breeding locally and globally, contribute to increasing electricity production from renewable energy sources and reduce greenhouse gas emissions into the environment.

The projects co-financed by the National Centre for Research and Development concerned, among others:

- the development of new slaughter technologies, the management of leftovers from the cutting of a pig carcass, new methods for evaluating the quality of pig half-carcasses and new methods for chilling carcasses;
- a number of issues related to sustainable production: the development of a technology for comprehensive disposal of waste generated by pig fattening, the treatment of waste air from buildings used for pig breeding, the production of NPK type fertilisers from pig slurry using cleaner technologies and also e.g. increasing the use of raw meat by utilising production waste and by-products;
- the reproduction, health and welfare of animals, with effects expected in the scope, among others, of the acceleration of diagnoses of pig diseases, the development of vaccines, new technologies for monitoring pathogens and environment in herds and the reduction of the mortality rate of pig embryos;
- the development of recipes and technologies for the production of innovative meat products, and meat and vegetable products from the sector of so-called convenient food, the improvement of the effectiveness of the process of making cold cuts, the improvement of the quality and safety of products (e.g. by the reducing the PAH content in smoked products).

Innovation projects in the agriculture are also implemented under RDP 2014-2020 by the EIP Operational Groups. Examples of these projects are available at:

<https://ec.europa.eu/eip/agriculture/en/find-connect/projects>.

The scope of the projects includes i.a.:

- development and implementation of an improved technology that reduces the negative effects of intensive pig farming on animal welfare and the environment and reduces the emission of gaseous pollutants, including odor-nuisance substances,
- development of assumptions, implementation and practical verification of methods reducing greenhouse gas emissions and increasing carbon sequestration in agriculture.

PL is of the opinion that it takes from 2 to 3 years to apply the results of the project to pig farming.

The cost of implementing project results depends on both the aim of a project and the expected scope of the impact of its effects; therefore, it varies substantially. The beneficiaries of the projects initiated by the National Centre for Research and Development indicate that the constant costs related to implementation can vary between several hundred thousand PLN and even more than 100 million PLN (estimated in the period of 5 years from the completion of a project). Higher implementation costs are forecast by large producers of meat products and are mainly related to the production scale. Lower implementation costs are predicted for projects related to veterinary medicine (among others, due to the relatively low final production cost of veterinary preparations and a small production scale) and the projects related to ICT technologies (due e.g. to low maintenance costs of software).

The estimated cost of implementing one biogas investment to generate biomethane based on biogas produced, with equivalent capacity of 0.5 MW<sub>et</sub>, is about 26 million PLN

For NL, developments in the field of nutrient-recovery from livestock manure, anaerobic digestion and other organic waste streams, where residual flows could be valorised and kept within the nutrient cycle, have proved that reducing the effect of livestock manure on the environment and climate change is possible. A better local use of livestock manure not only has environmental benefits, it also improves the economic benefits for livestock farmers and farmers producing arable crops.

NL is of the opinion that the production of biogas/biomethane can lead to a 90% reduction of methane emissions from manure, especially when combined with barn innovations that transfer the manure fast (daily/hourly) to the anaerobic digester. Given the importance of methane as a greenhouse gas, a reduction of its emissions in the pigmeat sector can strongly contribute to addressing climate change.

NL believes that the production of plants (e.g. silage maize) solely for the production of biogas might lead to risks for biodiversity and landscape. The use of residual wastes is therefore preferred. The use of residual waste streams from industry as a coproduct in digestion introduces more risk factors (e.g. increased level of heavy metals or pathogens). A good quality control scheme is necessary to reduce risks for the environment.

NL is of the opinion that the pigmeat sector is actively informed of research and innovation in pig farming. The pigmeat sector organization POV, as a recognized producer organization, has drawn up a research and innovation agenda for pig farmers: [Onderzoek-en-innovatie-2021-2027- varkenssector](#). See Theme 3: the contribution to climate and energy transition. Biogas is seen as one possibility of production of green energy. [Ambitie: Erkende bijdrage aan Klimaat- en energietransitie | Vitale varkenshouderij](#). Members of the POV are involved in drawing up the agenda and are informed about results

NL believes that R&I projects show good potential. Several EU-Horizon 2020<sup>1</sup> projects demonstrate that recovery of nutrients, production of fertilisers and the use of these tailor-made fertilisers can be worthy alternatives for replacing conventional mineral fertilisers. The market for biobased fertilisers is still young and needs to be further developed. However, current legal barriers in Nitrate Directive (RENURE EU 91/676) and animal By-product Regulation (EU 2009/1069) need to be reconsidered to come to a system of responsible fertilization with locally available fertilisers.

NL is of the opinion that the expected timeline of R&I projects before they can effectively apply to pig farming depends on the research and the R&I programmes. The current R&I agenda of POV end in 2027. NL currently has reserved 50 million euros for the coming 10 years to implement R&I initiatives for the production of high quality fertilisers from livestock manure. For information: [Subsidieregeling hoogwaardige mestverwerking | Maatregelen | Aanpak Stikstof](#). This subsidy scheme for the production of renewable energy will be open soon.

For **MT**, the possibility of biogas adding value to the pigmeat sector cannot be excluded, and indeed biogas may contribute, to some extent, and in different ways, along the supply chain. Firstly, biogas generated on farm may improve the revenue of pig breeders, by selling this biogas directly or selling electricity surpluses generated from gas combustion into the grid or using it on farm to reduce electricity consumption from the grid and thus reducing running costs. Secondly, subject to the necessary legal framework being in place, biogas production may generate value by creating carbon credits on the basis of mitigated methane and nitrous gas emissions; these may subsequently be sold to entities looking to purchase carbon credits to compensate for emissions which are difficult or expensive to curb. Thirdly, the treatment of pig slurry for biogas can also generate digestates as a by-product, which may accrue economic value as nutrient-rich plant growing medium/mulch and a method by which to return nutrients to local soils given that it is free from contaminants or treated for the removal of any contaminants. This is of course subject to the nutrient management plans of the end users. Fourth, reductions in the carbon and environmental footprint of the pigmeat sector via the production of biogas may make pigmeat in general, but also locally produced pigmeat specifically, more attractive to consumers who are increasingly climate-conscious by increasing the scope for green labelling indicating beneficial climate and environmental properties of pigmeat production, and therefore conferring further value.

There are, however, major challenges in Malta to translate such theoretical wins into practice:

- Quality of slurry. Pig manure is made up by and large of undigested grains and other materials of endogenous origin. Pelleted pig feed is usually made up of a mixture of grains that are ground to a very fine grade so as to maximise exposure to digestive enzymes. With this in mind, pig slurry that has the highest capacity of biogas generation originates from farms with pigs that have poor digestive capacity and hence poor overall performance. Implicitly, the more efficient the production system of a breeder, the less biogas per unit of meat produced is generated.
- Limited physical space on farm coupled with capital limitations.
- The slurry is usually so watered down that co digestion with other materials needs to be given serious consideration, which raises the question of sourcing such material.
- Issues related to economies of scale, both from a CAPEX and from an OPEX perspective.

Further down the supply chain, due to the state and scale of the pig industry in Malta, as well as the available technology, the generation and use of biogas from by-products of carcass generated during the slaughtering and initial processing stages (including bones, skins, fat), i.e. at abattoir stage, is unlikely to be economically feasible.

---

<sup>1</sup> <https://systemicproject.eu/>; <https://www.nutri2cycle.eu/>; <https://www.fertimanure.eu/en/>

Whilst noting the possibility of biogas helping the pigmeat sector reduce its environmental and climate footprint, one should also consider the challenges, which are considerable, and the effective net benefit is not necessarily clear.

The use of pig slurry for biogas generation would reduce direct emissions entering the atmosphere generated by the natural digestion of slurry; it will also substitute other energy source from being utilised, which are predominantly fossil fuels. Thus, there would likely be an overall positive effect on the climate. Furthermore, the negative effect of pig farming on the environment could be decreased by reducing the emission of environmental atmospheric pollutants, such as nitrous oxides and sulphur dioxide.

In addition, the use of the digestates from biogas production such as mulches can further improve circular economy goals and the nutrient balance. The approval process for the licensing of biodigesters would lead to a better understanding of the (mineral, micronutrient) contents of digestates, potentially further improving the utilisation of digestates, and allowing for more effective management and control of nitrates and other pollutants within the context of farmers' nutrient management plans.

However, within the context of small-scale farming, and keeping in view the limited economies of scale for small-scale producers, the potential environmental benefits accrued from such treatment of pig slurry may be offset by the negative environmental (and economic) externalities related to the transportation of such material, and the output digestate particularly if it is high in nitrogen content, and therefore has limited applicability in a nitrogen vulnerable zone like Malta.

The theoretical attractiveness of biogas to the pigmeat sector should be carefully considered to avoid pitfalls as follows:

1. Avoid being overly optimistic, especially where optimistic projections do not translate into real value to the sector
2. Adopt 'solutions' which create more challenges than what they purport to solve. By way of example, and the list in no way is to be considered exhaustive, this would be the case if:
  - a) 'solutions' result in an increased economic or administrative burden on pigmeat producers, effectively increasing their costs
  - b) 'solutions' result in an increased negative environmental footprint related to the transportation of slurries to centralised depots, soil-sealing by new infrastructure to facilitate such investments etc.

An additional issue, particularly in case of Malta, is having enough land to apply the digestate containing this mineral nitrogen while adhering to the nitrates directive, and the limits on nitrogen application arising therefrom.

MT is of the opinion that biogas must also not be portrayed, or purported to be the solution to the local sector's economic challenges. The major economic and spatial challenges described above, together with technical considerations related to the high nitrogen content of pig slurry limit its potential applicability. Undoubtedly considerable State support would be needed for producers, likely in the form of subsidies or grants, to render the technology accessible to many of the local producers (due to aforementioned scale limitations). Within the context of a small-scale pigmeat sector, the risks of shifts in pig-population size may be too high to justify any investment towards biogas production which risk such an investment becoming a white-elephant. Furthermore, such an investment may make it even more difficult for already financially challenged local producers to recuperate investment costs. At worst, promoting the uptake of biogas digestors without appropriate research and understanding could bring about the collapse of the local sector due to added financial burdens from unserviceable investments, which would necessitate government financial support or contravene national food security interests.

MT believes that pig farmers may not always be aware or have access to information related to R&I at all. There are occasional presentations organised by the local pig farmer cooperative with the aim of explaining and promoting beneficial practices or investments, but there are not formal avenues through which farmers are informed of research/innovation, and there is very limited initiative from farmers' to seek out new findings to adapt and modernise farming practices. Furthermore, the limited research being undertaken in the Maltese Islands on farming means that the possibility of local farmers being exposed to research or participating in research projects is further limited.

MT is also of the opinion that the sector could expect R&I to focus on improving productivity, farm efficiency, and cost reduction. Benefits could also be environmental, for example in reduction of GHG emissions and enhanced groundwater protection from nitrates, as well as providing options/technology for processing pig slurry into 'safe' fertiliser. From an economic perspective, ensuring that improved pig rearing performance, along with the adoption of nutrition and other husbandry standards to work towards optimum growth performance without compromising quality and welfare is desirable. Operators downstream are more interested in improving the consistency of locally produced pigmeat and pig carcasses. There is also scope for new product development.

MT is of the opinion that due to the scarcity of projects and research being carried out on/with local pig farmers, it is difficult to determine what would be a realistic timeline of R&I projects before they can effectively apply to pig farming. There are likely to be fewer hurdles in gaining access to farms to conduct the research. Major barriers appear when project require additional effort or investment (time, finances) from farmers. Undoubtedly, the greatest delay in applying project findings is in convincing farmers to actually take up these findings. There is very little interest in changing farming practices, and it has proven very difficult to change farmers' mentality. Even measures which require little or no financial investment have not been taken up to a satisfactory degree.

Due to the limited financial/capital resources available for local farmers and actors in the pigmeat sector, the primary cost of implementing R&I projects for pig farming relates to opportunity cost. Investment in implementation of R&I is likely to come at the expense of financing of essential operations and processes. This is compounded by two factors. Firstly, there are limited research resources locally, increasing transaction costs for local actors as they will have to deal with foreign entities. Secondly, the very limited exposure of local farmers to ongoing and novel research means that there is a significant learning leap that would have to be made in order to be in a position to implement such R&I, increasing transaction costs further.

## **5. Next steps**

The Commission asked participants to send their written contributions after the meeting, if not done before.

## **6. Next meeting**

21 November 2022

## **7. List of participants**

See Annex

(e-signed)

Michael SCANNELL

List of participants– Minutes  
**MEETING OF  
 THE EXPERT GROUP FOR AGRICULTURAL MARKETS, in particular concerning aspects  
 falling under the single CMO Regulation –  
 Animal Products**

**Joint with**

**MEETING OF CIVIL DIALOGUE GROUP ANIMAL PRODUCTS**

**12 September 2022**

<b>Member State</b>	<b>Ministry/Organisation</b>
<b>BELGIQUE/BELGIË (Belgium)</b>	SPWARNE
<b>BELGIQUE/BELGIË (Belgium)</b>	Vlaamse overheid
<b>БЪЛГАРИЯ (Bulgaria)</b>	Ministry of Agriculture
<b>ČESKO (Czechia)</b>	Ministry of Agriculture
<b>DANMARK (Denmark)</b>	Danish Ministry of Food, Agriculture and Fisheries
<b>DEUTSCHLAND (Germany)</b>	Bundesministerium für Ernährung und Landwirtschaft
<b>DEUTSCHLAND (Germany)</b>	Fachagentur Nachwachsende Rohstoffe e.V. (FNR)
<b>EESTI (Estonia)</b>	Ministry of Rural Affairs
<b>ÉIRE/IRELAND (Ireland)</b>	DAFM
<b>ΕΛΛΑΔΑ (Greece)</b>	Ministry of agriculture
<b>ESPAÑA (Spain)</b>	Ministerio de Agricultura, Pesca y Alimentación
<b>FRANCE (France)</b>	FranceAgriMer
<b>FRANCE (France)</b>	Ministère de l'agriculture

<b>HRVATSKA</b> <b>(Croatia)</b>	Ministry of Agriculture
<b>ITALIA</b> <b>(Italy)</b>	MIPAAF
<b>ΚΥΠΡΟΣ</b> <b>(Cyprus)</b>	DEPARTMENT OF AGRICULTURE
<b>LATVIJA</b> <b>(Latvia)</b>	Ministry of Agriculture
<b>LATVIJA</b> <b>(Latvia)</b>	Ministry of Agriculture Republic of Latvia
<b>LIETUVA</b> <b>(Lithuania)</b>	Ministry of Agriculture
<b>LUXEMBOURG</b> <b>(Luxembourg)</b>	Service d'économie rurale
<b>MAGYARORSZÁG</b> <b>(Hungary)</b>	Ministry of Agriculture
<b>MALTA</b> <b>(Malta)</b>	MAFA
<b>NEDERLAND</b> <b>(Netherlands)</b>	Ministerie van Landbouw, Natuur en Voedselkwaliteit
<b>NEDERLAND</b> <b>(Netherlands)</b>	Rijksdienst voor Ondernemend Nederland
<b>ÖSTERREICH</b> <b>(Austria)</b>	BML
<b>POLSKA</b> <b>(Poland)</b>	MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT
<b>PORTUGAL</b> <b>(Portugal)</b>	MAA-GPP
<b>ROMÂNIA</b> <b>(Romania)</b>	Ministry of Agriculture and Rural Development
<b>SLOVENIJA</b> <b>(Slovenia)</b>	Ministry of Agriculture, Forestry and Food
<b>SLOVENSKO</b> <b>(Slovakia)</b>	

<b>SUOMI/FINLAND (Finland)</b>	Ministry of Agriculture and Forestry
<b>SVERIGE (Sweden)</b>	Board of Agriculture

<b>Organisations</b>
European agri-cooperatives (COGECA)
European Coordination Via Campesina (ECVC)
European Council of Young farmers (CEJA)
European Environmental Bureau (EEB)
European farmers (COPA)
European Liaison Committee for Agriculture and agri-food trade (CELCAA)
Fédération Européenne pour la Santé Animale et la Sécurité Sanitaire (FESASS)
FoodDrinkEurope (FoodDrinkEurope)
IFOAM Organics Europe

### **8 Ad hoc experts present**