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EU commodity market development: Medium-term agricultural outlook

Proceedings of the October 2018 workshop

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2018

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Foreword

The workshop on the *'EU commodity market development: Medium-term agricultural outlook'* is part of an annual workshop series on market modelling and development[1]. The workshop is an integral part of the intensive validation procedure of the results of the European Commission's report on *'Prospects for EU agricultural markets and income'*. It provides a forum for presentations on preliminary projections to 2030 of EU agricultural commodity markets and for discussing in-depth the EU prospects in a global context.

This report contains a summary of the presentations and subsequent discussions from the 2018 workshop, held on 22 and 23 October at the University Foundation in Brussels (Belgium). The workshop was jointly organised by the Sustainable Resources Directorate (D.4) of the European Commission's Joint Research Centre (DG JRC) and the Directorate-General for Agriculture and Rural Development (DG AGRI).

Participants in this year's workshop included high-level policymakers, modelling and market experts from various countries, stakeholders from the agri-food industry, and representatives from international organizations, such as the Organization for Economic Co-operation and Development (OECD), the Food and Agriculture Organization of the United Nations (FAO) and the International Institute for Applied Systems Analysis (IIASA).[2] Special attention was given to the sensitivity of the projections to different settings and assumptions (e.g., uncertainties regarding macroeconomic conditions, specific policies, supply and demand drivers).

Comments made during the workshop were taken into account to improve the final version of the *'Prospects for EU agricultural markets and income, 2018-2030'*. The final outlook report, previous versions, background information on how projections are made and the methodology used for analysing market uncertainty are available online:

http://ec.europa.eu/agriculture/markets-and-prices/medium-term-outlook/

[1] Previous workshop proceedings are listed in the Annex 2.

[2] Please note that the views expressed are those given and presented at the workshop and may not in any circumstances be regarded as stating an official position of the European Commission or of the other institutions that participated in the workshop.

Acknowledgements

We would like to acknowledge contributions made by all participants (see Annex 3) and their consent to share their expertise and comments, as well as the DG JRC staff involved in the organisational arrangements, particularly Sandra Marcolini. We thank all contributing and participating colleagues working at the DG JRC (Jesús Barreiro Hurle, Maria Bielza, Mariia Bogonos, Giovanni Di Santi, Emanuele Ferrari, Giampiero Genovese, Mihaly Himics, Jordan Hristov, Adrian Leip, Robert M'Barek, Panos Panagos, Guna Salputra and Martina Sartori), DG AGRI (Sylvie Barel, Andrea Capkovicova, Tassos Haniotis, Sophie Hélaine, Barthelemy Lanos, Carl-Johan Linden, Pierluigi Londero, Koen Mondelaers, David Pérez Zaitegui, Fabien Santini, Magdalena Grzegorzewska, Benjamin Van Doorslaer and Marijke van Schagen) and DG CLIMA (Thais Leray). Finally, we thank the following invited external experts who were involved in the chairing of sessions, formal presentations and discussions:

Invited participant	Affiliation
Hans van Meijl	Wageningen Economic Research
Sonsoles Castillo	BBVA Research
Tom Scott	Informa Agra
Philippe Binard	Freshfel
Jacques Dasque	AREFLH
Jan van der Blom	COEXPHAL -EUCOFEL
Matthieu Lovery	Groupe Carrefour
Phil Bicknell	AHDB
Philippe Chotteau	IDELE
Tadeusz Blicharski	POLSUS
Raphaël Moreau	Euromonitor
Jukka Likitalo	Eucolait
Wim Kloosterboer	FrieslandCampina
Peter Paul Coppes	Rabobank
Doris Marquardt	European Environmental Agency
Petr Havlik	IIASA
Holger Matthey	FAO
Marko Janhunen	Leaders of Sustainable Biofuels
William Hohenstein	USDA
Hubertus Gay	OECD
Martin Banse	Agmemod
Sandy Wilson	Cargill
Nathalie Lecocq	FEDIOL
Stefan Uhlenbrock	F.O. Licht
Jérôme Bignon	Cristal Union
Julian Price	Sugar analyst and consultant

Abstract

The workshop 'Medium-term Outlook for the EU Agricultural Commodity markets' is an integral part of the intensive validation procedure of the results of the European Commission's report 'Prospects for EU agricultural markets and income'. It provides a forum for presentations on preliminary medium term projections of the most relevant EU agricultural commodity markets and discussing in-depth the EU prospects in a global context. This year the workshop was held on 22-23 October 2018 in Brussels. The workshop was jointly organised by the Joint Research Centre (DG JRC) and the Directorate-General for Agriculture and Rural Development (DG AGRI). Participants included policy makers, modelling and market experts from various countries, as well as stakeholders of the agri-food industry. This document summarises the presentations and discussions on the macroeconomic and energy assumptions associated with this outlook, and on each of the EU agricultural markets addressed: fruits and vegetables, meats, milk and dairy, biofuels, cereals, protein crops, oilseeds and sugar. Additionally this year challenges regarding international trade disputes, vegetable protein self-sufficiency, climate change, soil erosion, organic agriculture and biodiversity were also discussed.

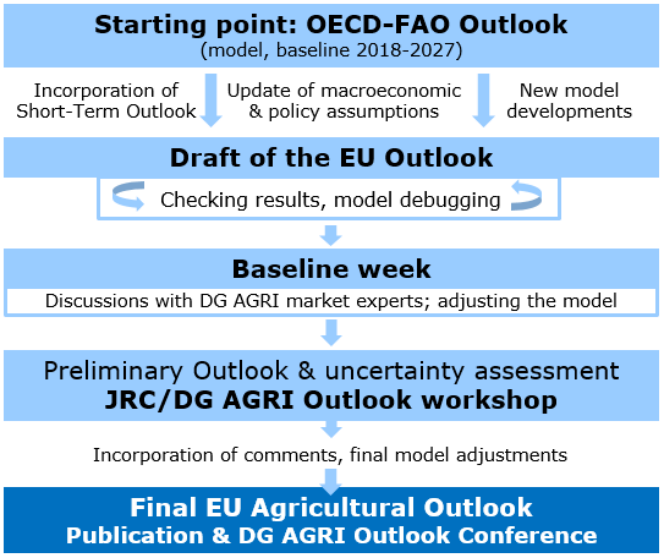
1 Introduction

Giampiero Genovese (DG JRC Seville) opened the workshop by providing background information on the EU agricultural outlook and its construction process. Tassos Haniotis (DG AGRI) presented priorities and challenges of the future Common Agricultural Policy (CAP) towards 2030.

1.1 Background of the workshop

Giampiero Genovese (DG JRC Seville) presented the background of the workshop and the yearly construction process of the EU medium-term outlook for the developments of agricultural markets, emphasizing the importance of this workshop in the overall validation process of the market projections. The final outlook publication is the outcome of a close collaboration between DG AGRI and the DG JRC, together with a large panel of market experts, academics, and stakeholders who are consulted along the construction process of the outlook (**Figure 1**). The starting point for the EU version of the outlook is the OECD-FAO global agricultural market outlook, which was published on the 3rd of July in Paris[3]. The EU part of the OECD-FAO outlook is then updated with the latest macroeconomic and policy assumptions and with short-term EU agricultural market information[4]. Moreover, the latest model developments for the Aglink-Cosimo model[5] are incorporated. Once all the updates are included, a first draft of the outlook is generated and validated by market experts. This process of checking results and model debugging is repeated numerous times. Every year in early October, a baseline week, i.e. an intensive technical exercise week, is held at DG AGRI premises, where the draft outlook results are checked for consistency, subsequently discussed with experts of the DG AGRI market units, and the model is correspondingly revised. The results of the updates and adjustments are presented as the Commission´s preliminary outlook at the Medium-term agricultural outlook workshop, which is documented here. This workshop is organised in Brussels on annual basis by DG JRC-Seville and DG AGRI. The comments gathered at this two-day evaluation workshop are then incorporated as far as possible to the commodity projections and underlying model. The final EU agricultural outlook report is then presented and published during the DG AGRI Outlook Conference in Brussels, which this year is held on the 6th and 7th of December[6].

Figure 1: The EU outlook process.



Source: Slide by Giampiero Genovese (DG JRC Seville)

[3] http://www.fao.org/publications/oecd-fao-agricultural-outlook/2018-2027/en/
[4] https://ec.europa.eu/agriculture/markets-and-prices/short-term-outlook_en
[5] www.agri-outlook.org
[6] https://ec.europa.eu/info/events/2018-eu-agricultural-outlook-conference-2018-dec-06_en

Genovese further explained that the DG JRC supplements the outlook with a partial stochastic analysis, taking into account alternative macroeconomic developments and yield levels taken from history. In addition to the stochastic analysis, the standard medium-term outlook is also complemented with "what-if" scenarios. These scenarios are used to change assumptions with regard to major drivers of the EU agricultural markets in order to show what could happen to the main outlook results if alternative pathways compared to the standard assumptions are taken. This year, the alternative scenarios assess the possible impacts of (i) the trade dispute between the US and China (conducted with the Aglink-Cosimo model), (ii) the drivers for protein rich crops development in the EU (Aglink-Cosimo), and (iii) the reduction of households' food waste (MAGNET model). Moreover, the standard outlook is further accompanied by additional analysis on the results of cereals and oilseeds markets at Member State(MS) level (AGMEMOD model), the analysis of environmental indicators such as carbon footprint, biodiversity and soil erosion (CAPRI and RUSLE models), the interlinkages between organic farming and climate change (literature review) and the impacts of climate change in Europe (CAPRI model).

1.2 CAP post-2020

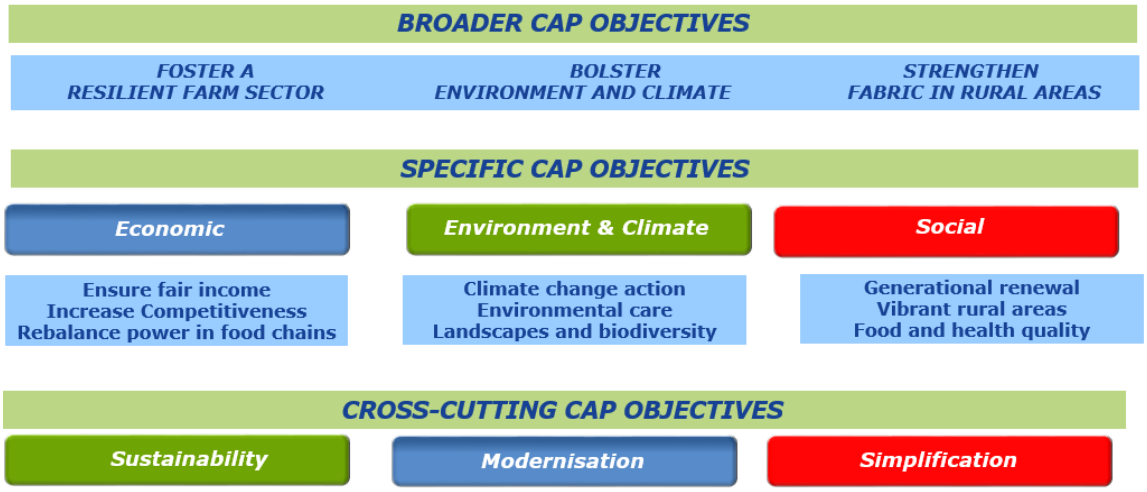
Tassos Haniotis (DG AGRI) underlined the importance of the annual agricultural outlook exercise and the assessment of scenarios to answer policy questions. This is especially important in light of the new CAP post-2020. The priorities of the future CAP can be summarised as follows: simplification and modernisation of the CAP, support to the development of a knowledge-based agriculture, higher ambition on environment and climate action, a fairer and more effective distribution of support across MS and farmers, and a more balanced way of working together along the agricultural supply chain. With respect to the background of the CAP reform, Haniotis stressed that the analysis and wide public consultation confirm major achievements of the CAP, like the increase in EU competitiveness, a positive impact on jobs, growth and poverty reduction in EU rural areas, and the relative income stability within a very volatile farm-income and commodity-price environment. The analysis and public opinion, however, also reveal shortcomings that need to be addressed, like a further improvement of the environmental performance of EU agriculture, the need for more research and investment, and improvements with regard to issues of equity, safety-nets and simplicity. Moreover, the CAP needs to be adapted to a changing broader environment that comprises new multilateral, bilateral and regional trade agreements, and new climate change, environmental and sustainability commitments.

Regarding main trends in the EU food markets, Haniotis pointed out that the domestic market still dominates EU production (90%), although the share of EU exports in value added terms is increasing. Arable crop production in the EU is stable with respect to land use, but shows mixed risks and opportunities on productivity. The EU livestock sector is more challenged as a result of demand shifts, trade negotiations and diseases. Moreover, agricultural markets are in the center of the food security debate, while they are also challenged by increasing pressures of environmental sustainability and climate change.

Against this background, the European Commission has set the objectives and priorities in its legislative proposal for the CAP post-2020. The nine objectives of the future CAP comprise: ensuring a fair income to farmers, increasing competiveness, rebalancing the power in the food chain, climate change action, environmental care, preservation of landscapes and biodiversity, supporting generational renewal, vibrant rural areas, and protecting food and health quality (**Figure 2**). Among the key priorities for the future CAP is the strengthening of the environment and climate action. To achieve this, the EU sets wide objectives and a list of available types of interventions. MS have to define strategic plans on how to meet the EU objectives, and farmers have to apply for schemes and comply with stringent environmental criteria defined by the EU and the MS. Another key priority is the better targeting of support. While direct payments will continue to

provide a safety net for farm incomes that are lagging behind the rest of the economy, the targeting of income support is supposed to be improved with internal convergence, redistributive payments, as well as digressive cuts and capping of payments. As a third key priority, Haniotis mentioned that the future CAP seeks to rely more on knowledge, innovation and technology. Therefore, the use of smart agriculture will be promoted, research will be more funded, and exchange and knowledge transfer will rely more on the improved functioning of the Farm Advisory Service (FAS) and European Innovation Partnership (EIP). To achieve the objectives and priorities of the CAP post-2020, a new delivery model of the CAP is envisaged, with the EU setting out broad objectives, intervention types, and common indicators (for output, results and impacts), and which MS can tailor and implement according to their needs.

Figure 2: The new architecture of CAP objectives.



Source: Slide by Tassos Haniotis (DG AGRI)

2 Macroeconomic context

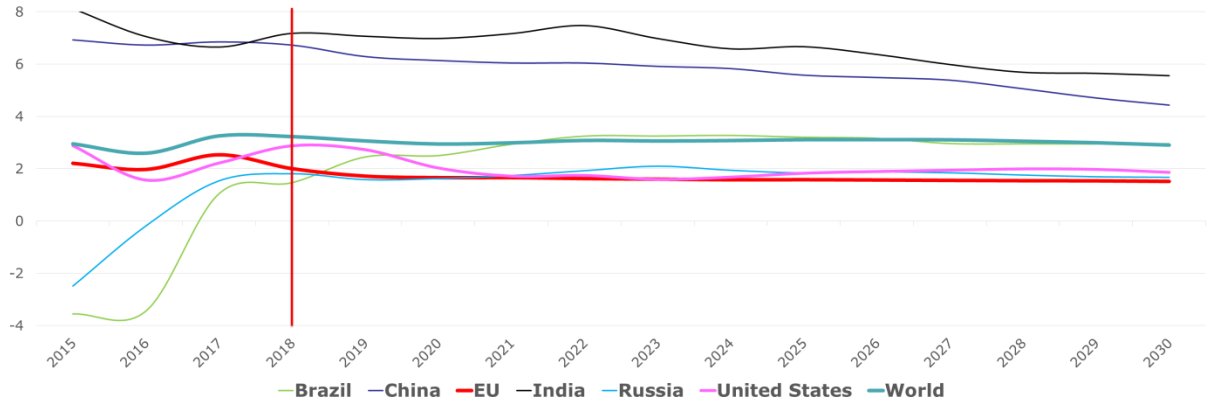
The session on the macroeconomic context of the agricultural market outlook was chaired by Hans Van Meijl (Wageningen Economic Research). Pierluigi Londero (DG AGRI) provided an overview on the macroeconomic and policy assumptions taken in the preliminary EU outlook. Thomas Chatzopoulos (DG JRC) presented the results of a scenario analysis on the potential market impacts of Chinese retaliatory tariffs on US soybean and pigmeat imports. Sonsoles Castillo (BBVA research) presented some views on the EUR/USD exchange rate developments and Tom Scott (Informa Agra) on crude oil prices and agriculture markets.

2.1 Baseline macro and policy assumptions, 2018-2030

Pierluigi Londero (DG AGRI) presented the macroeconomic and policy assumptions taken in the preliminary EU outlook. Like in previous years, Londero first clarified that with regard to trade policy assumptions only ratified Free Trade Agreements (FTAs) are considered in the outlook. For instance, the Free Trade Agreement (FTA) between the EU and Canada is included but not the one with Japan. Correspondingly also only the agreed developments of tariff-rate quotas are assumed. The outlook is provided for the EU-28, i.e. it includes the UK, to date there are no Brexit details ratified. The Russian import ban is assumed to continue until the end of 2019 (including the pork sanitary ban) and from 2020 onwards with a partial recovery. With respect to the EU´s agricultural policy assumptions, the outlook is presented with the current CAP in place throughout the projection period.

Turning to the macroeconomic assumptions, Londero outlined that the EU economic growth is assumed to be slightly below 2% per year (**Figure 3**). The world population is assumed to increase to about 8.5 billion by 2030, whereas the EU population remains stable at around 513 million. Crude oil prices are taken form IHS Markit, and are assumed to be at about 92 USD/barrel in 2030. This is a small increase compared to the assumption taken in last year´s agricultural outlook (90 USD/barrel), but the starting point is very different, as we see higher crude oil prices in 2018 than in 2017. The assumed crude oil price in the Commission´s outlook is quite above the assumptions of the OECD (about 80 USD/barrel) and the World Bank (72 USD/barrel). The USD/EUR exchange rate is assumed to be at about 1.20 by the end of the projection period. Londero compared this assumption to the 1.23 USD/EUR in last year´s outlook and the 1.11 USD/EUR assumed by the OECD.

Figure 3: Annual economic growth rates in the preliminary outlook.



Source: Slide by Pierluigi Londero (DG AGRI)

2.2 Presentations by invited experts and discussion

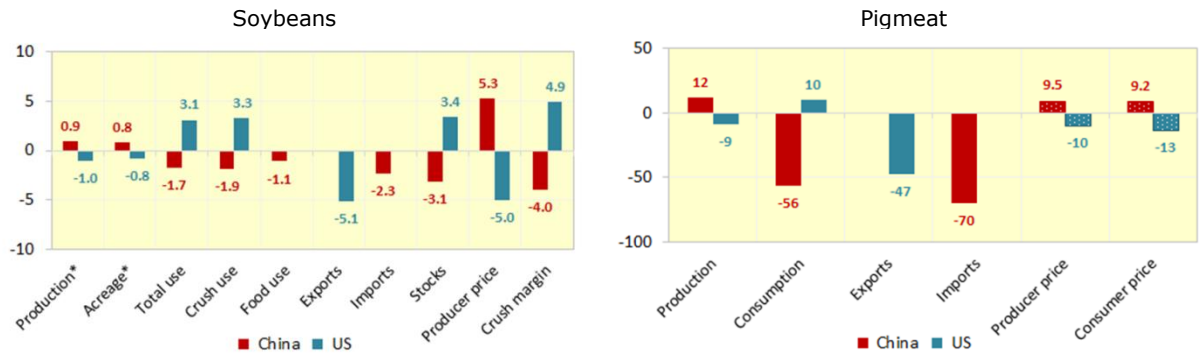
Thomas Chatzopoulos (JRC Seville) provided a scenario analysis on the potential market impacts of Chinese retaliatory tariffs on US soybean and pigmeat imports. The background of this scenario is the escalating trade dispute between the US and China since January 2018, which currently results in US tariffs on more than 1000 Chinese products and Chinese tariffs on more than 100 US products. The Chinese tariffs cover also agricultural commodities such as soybean, pigmeat, cotton, sorghum, fruits and vegetables. Especially the import tariffs on soybean and pigmeat are potentially important for global agricultural market developments and trade flows, as China is the main importer of soybean and pigmeat, whereas the US is among the leading exporters of either commodity. This "what if" scenario assesses the possible impact if the trade dispute between the US and China would not be solved and China´s additional tariffs on US soybean and pigmeat would remain until the end of the projection period. The assumed Chinese ad valorem tariffs on US soybean are 27.4% (+25% from the baseline) and 62% on US pigmeat (+50%).

Compared to the baseline, the scenario results for soybeans show a decrease in Chinese imports from the US from 36% to 27%, and a decrease in US exports to China from 60% to 47%. Regarding trade diversion, total US soybean exports drop, whereas exports from competitors rise by about 1% (mainly Brazil, Argentina, Canada, Paraguay, and Ukraine). Global soybean imports decline by 2% and world prices are projected to increase by about 1%. A small increase of around 1% in soybean area is shown in China, Brazil and Argentina from 2019 onwards. The projected impact on the EU are minor, also showing slightly lower imports of soybean and a small increase in soybean prices (less than 1%).

Scenario results for the pigmeat markets show that the bilateral US-China trade-flow shares halve, as Chinese pigmeat imports from the US decrease from 14% to 7% and US exports to China drop from 8% to 4% compared to the baseline projection. The US redirects exports to other world regions (mainly Asia and Africa), while other key exporters of pigmeat (EU, Brazil, Canada) lose some market share in the rest of the world (<1%) and world prices slightly decrease (less than 1%). The EU experiences a small decrease in pigmeat exports, leading to slightly lower domestic prices (< 1%).

Chatzopoulos concluded that potential impacts of the US/China trade dispute, as modelled in this scenario, are visible on agricultural markets, but due to trade diversion the impacts are only modest for the world and EU markets. For the US and China, however, the trade dispute is a lose-lose situation, with increasing prices in China (+5.3% soybeans, +0.5% pigmeat) and decreasing producer prices in the US (soybeans -5%, pigmeat -0.7%) compared to the baseline. As **Figure 4** shows, short-term impacts can generally be larger, especially regarding pigmeat.

Figure 4: Scenario results for China and the US, average change between 2018 and 2020 (in %).

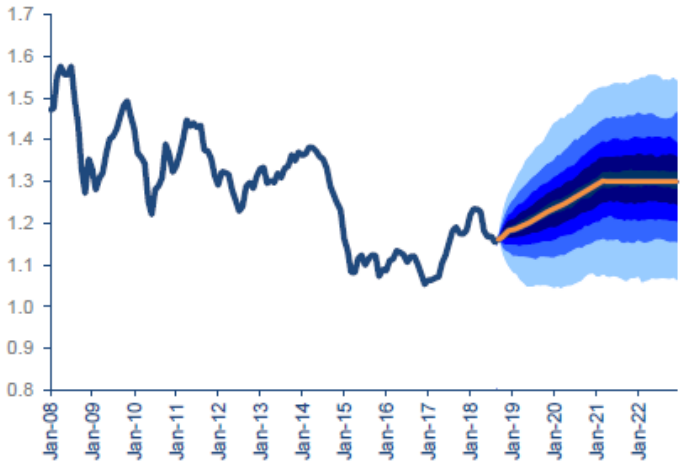


Note: relative change for soybeans (%) and absolute change for pigmeat (000 t cwe, USD/t).

Source: Slide by Thomas Chatzopoulos (DG JRC Seville)

Sonsoles Castillo (BBVA research) presented some views on the EUR/USD exchange rate developments. Castillo first outlined the main forces that have shaped the recent evolution of the EUR/USD exchange rate. The recent appreciation of the Euro indicated a broken correlation between the EUR/USD with the interest rate differential (in this case US versus Germany) during 2017, which seems to be due to the central banks´ quantitative expansion and the key role of forward guidance on the one hand, and on the other hand, due to a portfolio rebalancing towards European assets, mainly led by the combination of positive economic and political surprises. In April 2018, however, the appreciation of the Euro halted, which Castillo attributes to combative US Federal Reserve (Fed) versus European Central Bank (ECB) anchoring interest rates through forward guidance, the turning of economic surprises from positive to negative, political concerns (mainly regarding the Italian budget), global concerns with regard to increasing protectionism, and turmoil in emerging markets (especially Turkey). Despite these factors, Castillo sees the EU domestic macroeconomic outlook remaining supportive for the Euro. The main assumption of BBVA Research with respect to the EUR/USD exchange rate development in the short-run is that the ECB proceeds with the monetary policy normalization, and for the medium- to long-term, a gradual convergence to the equilibrium exchange rate of 1.30 EUR/USD is expected. This expectation, however, contains high uncertainty as it assumes no structural changes in productivity, trade or the role of the USD as reserve currency. Therefore the range of the projected EUR/USD exchange rate is seen between 1.16 and 1.5 (**Figure 5**).

Figure 5: EUR/USD exchange rate projections.



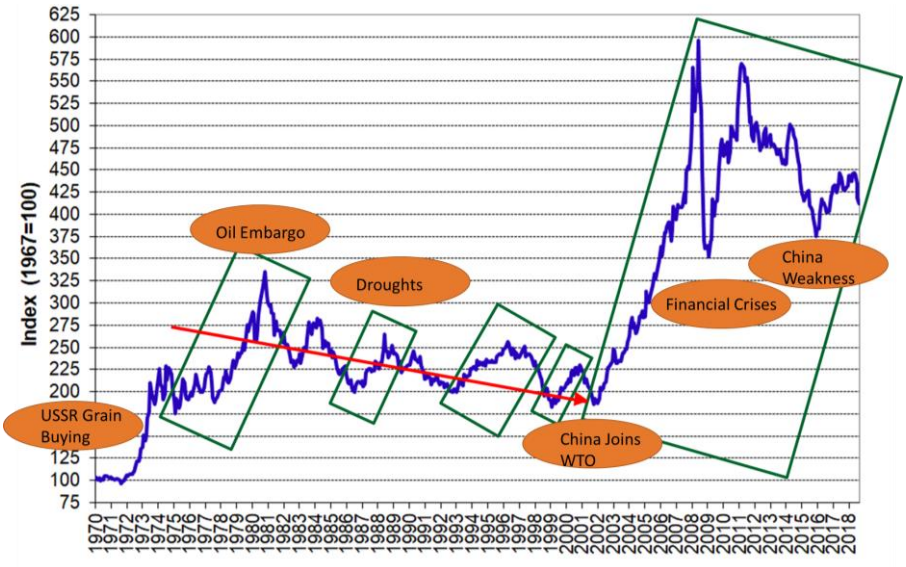
Source: Slide by Sonsoles Castillo (BBVA research)

In summary, Castillo foresees that in the short-run the EUR/USD exchange rate will be driven by both the normalization of monetary policy (i.e. interest rate differentials between the US and the Eurozone) and investors' mood (i.e. the risk appetite for Euro/Dollar assets). Assuming that the ECB and the Fed proceed as expected, the Euro should strengthen compared to the USD in the short- to medium-term (from 1.19 EUR/USD in 2018 to 1.21 EUR/USD in 2019. However, other factors can still exert downward pressure on the Euro, as for example investments in Euro assets can be negatively affected by political concerns with regard to, for example, Italy or Brexit. The coming year 2019 will present important challenges. In the medium-term, once financial swings abate, Castillo expects the EUR/USD exchange rate to converge to the equilibrium rate that, at the onset of the global financial crisis, was estimated by BBVA Research at around 1.30 EUR/USD. However, this estimate of the EUR/USD equilibrium exchange rate rests on three current strengths of the US, namely its leading role in terms of productivity growth, its leading role in global trade, and its hegemony as issuer of international currency.

Tom Scott (Informa) provided comments on crude oil prices and agricultural markets. Regarding the latter, Scott sees a new era for both agricultural and non-agricultural commodity markets (**Figure 6**), explaining that the situation changed with China entering the WTO in 2001 and also due to some FTAs. In general, the situation is now more demand-driven than before. With regard to the trade dispute between the US and China, Scott expects the dispute to last longer than most people might expect, and even if it is dismantled, it might already have led to a shift in the mentality and expectations, with China possibly not going fully back to the same US import quantities as before the current dispute (i.e. he expects a rather permanent shift in trade flows).

Regarding crude oil prices, Scott expects both conventional and unconventional oil prices to trend higher than in the past, although both will hit some constraints. Despite a steady global economic growth, a slow growth in conventional and unconventional production can be observed, whereas at the same time the market share for alternative fuels is increasing. Therefore, it can be expected that conventional oil production will rise at a decreasing rate, facing diminishing rates of return by the mid-2020s, with declining output from existing oil fields and lower capacities. Conversely, unconventional production will remain in an increasing trend for several years, although it will face challenges with production costs after cheaper options, such as the Permian Basin (i.e. the largest petroleum-producing basin in the US), become depleted. Price volatility is expected to remain relatively high, with political instability being one of the main volatility drivers for crude oil, as currently seen in Venezuela and Iran as well as the broader Middle East. Oil demand can be expected to be relatively less volatile than supply, however, technological developments that reduce energy intensity could exert a downward pressure on demand rather quickly. In this respect, it remains also to be seen which impact electric vehicles will have over the medium term, as oil demand trends could considerably change if electric vehicles get adopted faster than currently expected. Regarding the co-movements of agricultural and energy markets, Scott highlighted that both markets have been linked in the past by economic and policy developments and it can be expected that this continues also over the next decade.

Figure 6: Monthly CRB BLS Spot Index.



Source: Slide by Tom Scott (Informa)

Discussion

During the open discussion it was commented that the monetary policy of the ECB started to ease in 2015. However, increasing interest rates are expected by September next year and, therefore, an appreciation of the Euro versus the USD is likely in the next two years. However, discussing further on the development of exchange rates in the short term, participants raised also concerns. One example for concern is the current political situation in Italy, which has an impact on the Euro through speculative short-term positions. The uncertainties and concerns may probably bring the exchange rate down in the next two years, but they are rather not seen as a threat to the medium-term projections.

With respect to the trade dispute between the US and China, it was discussed that for agricultural markets the important issue is the development of high protein-rich feeding (i.e. soybean meals) in China. An important question is how the feed mix will evolve with the recent changes in the domestic cereals support policy and if China could be using the trade dispute to restructure its feed market, like the EU did in the past (i.e. more cereals, less soybeans). Although it can be expected that there will be a switch towards less soybeans use in China, this switch has its limitations and it can also be expected that US soybeans can get into China via third countries.

Regarding the general macroeconomic developments, participants underlined that the fiscal stimulus in the US might disappear in 2019, and that the US trade dispute with China along with other US trade uncertainties might affect the whole macroeconomic environment stronger than currently expected. Moreover, participants raised concerns about a (possible) next financial crisis. In this regard, a possible collision of the end of the fiscal stimulus in the US with first noticeable trade effects was highlighted as a potentially important threat for macroeconomic developments in 2019.

On crude oil prices, it was asked whether the US could become the biggest producer of oil in the world and what changes this would imply for global macroeconomic developments. The answer to the question on the US potential leading role as oil producer largely depends on the development of oil prices, but even with rising oil prices a definitive answer is hard to give due to many uncertainties surrounding US oil production.

With respect to the development of other currencies and exchange rates it was asked if the problematic devaluation path of the Brazilian Real and the Turkish Lira is expected to

continue. This was also considered to be an issue to which no straight answer could be given as there are too many uncertainties involved. It was, however, also stressed that different exchange rates imply different competitiveness and would hence also affect the agricultural market projections.

3 Fruits and vegetables

Philippe Binard (Freshfel) chaired the session on fruits and vegetables, and Sophie Helaine (DG AGRI) presented the preliminary outlook results for selected fruits and vegetables. Jacques Dasque (AREFLH) focused in his presentation on the production and markets of peaches, nectarines, apples and pears, and commented also on market power and pesticide use. Trends in tomato production in Southern Europe were presented by Jan van der Blom (COEXPHAL-EUCOFEL), with a special focus on the sustainability of greenhouse horticulture in Spain. Matthieu Lovery (Groupe Carrefour) outlined consumption trends and gave some insights on organic/local fruits and vegetables, traceability and packaging.

3.1 Preliminary EU outlook, 2018-2030[7]

Preliminary outlook results for tomatoes, apples, peaches and nectarines were presented by Sophie Helaine (DG AGRI). Beginning with the tomato market development, she highlighted that the main market driver is demand, which holds for both fresh and processed tomatoes. Domestic demand for fresh tomatoes can be marked by many different attributes, like diversity, convenience, organic, local, etc., with the trend going to smaller varieties (like cocktail tomatoes, cherry tomatoes and other miniature tomatoes) with higher value added. EU production of fresh tomatoes is expected to stay relatively stable, with production increases in Poland and the Netherlands, whereas production may decline in Spain. The EU trade volume of fresh tomatoes mainly depends on seasonality and competition, the latter especially from Morocco. The two major demand drivers for processed tomatoes are a Mediterranean lifestyle and the general demand for processed food. EU production of processed tomatoes is expected to slightly increase, mainly due to increasing yields. Trade in processed tomatoes also depends on the competition, and for 2030 EU tomato exports are expected to equal imports. Increasing competition can be observed particularly from Ukraine.

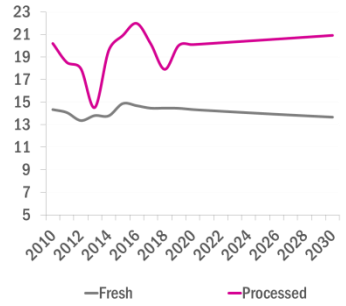
Regarding the EU apples market development, EU production is expected to be quite stable over the projection period, with increasing yields compensating for a reduction in production area. The main driver for the yield increases is modernisation. A rather stable domestic consumption, less waste, slightly lower imports and increasing EU exports of fresh apples are expected over the projection period. Consumption of processed apples (mainly juices) in the EU is projected to further decrease (**Figure 7**), which will lead to increasing EU exports.

The EU markets of peaches and nectarines are expected to see a restructuring and increasing competition. The restructuring is marked by lower area and higher yields, but also by a move towards more quality, leading to a slightly lower EU production over the projection period. Competition can especially be observed with regard to consumption of other summer fruits, leading to a slightly decrease in the consumption of fresh peaches and nectarines in the EU.

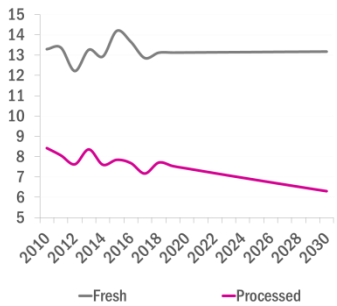
[7] Projections for fruits and vegetables are done by experts and not part of the Aglink-Cosimo model.

Figure 7: EU per capita consumption (kg) of tomatoes, apples, peaches and nectarines.

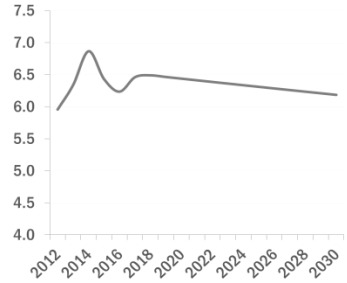
Tomatoes



Apples



Fresh peaches and nectarines



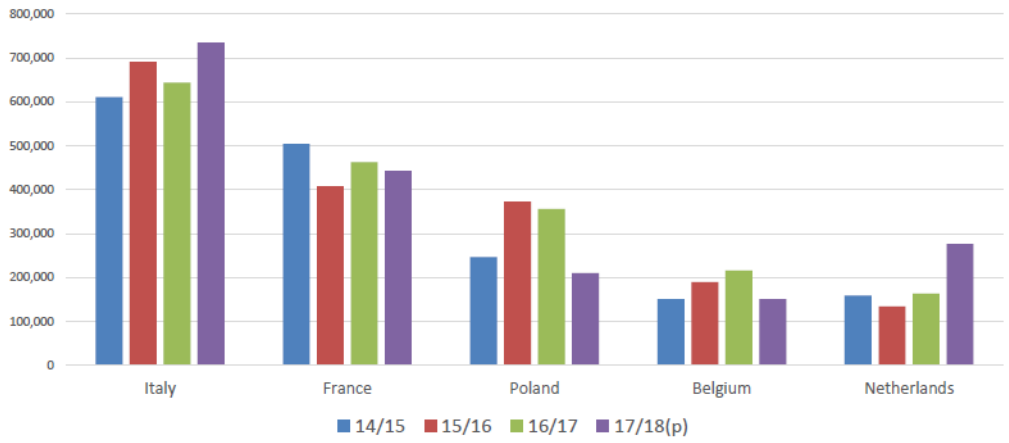
Source: Slide by Sophie Helaine (DG AGRI)

3.2 Presentations by invited experts and discussion

Jacques Dasque from the Assembly of European Horticultural Regions (AREFLH) provided a detailed presentation of EU production and markets of peaches, nectarines, apples and pears. The stable European production of peaches and nectarines is dominated by Italy and Spain. EU imports are usually only occurring off-season and exports are diversifying, EU exports are quite destabilized since the loss of the Russian market. Moreover, the market is quite fragile and there is a permanent risk of supply/demand imbalance if the climatic conditions are not favorable for production. EU producers seem to experience quite strong pressure from retailers with regard to prices, which does not allow for the market to rebalance if supply decreases. In this respect, also exports are a key factor for the EU market management.

Commenting on the production and markets of apples and pears, Dasque explained that, following a significant decrease, the European apple orchard has been stable for five years now. Poland is the main producer of apples in the EU. Organic apple production is progressing in the EU, but remains still marginal, with a share of 3.5%. The apples market sees significant intra-European trade (**Figure 8**), between 2.15 and 2.3 million tonnes with a value of about 2.2 billion EUR, and rather low third-country imports. Regarding pears, the EU production potential has seen a sharp decline over several years, until it remained stable from 2014 onwards at around 177,000 hectares. Italy is the leading producer of pears in the EU, followed by the Netherlands, Belgium and Spain. EU exports are dominated by the Netherlands and Belgium. Off-season imports come from the Southern Hemisphere.

Figure 8: Intra EU apple trade.

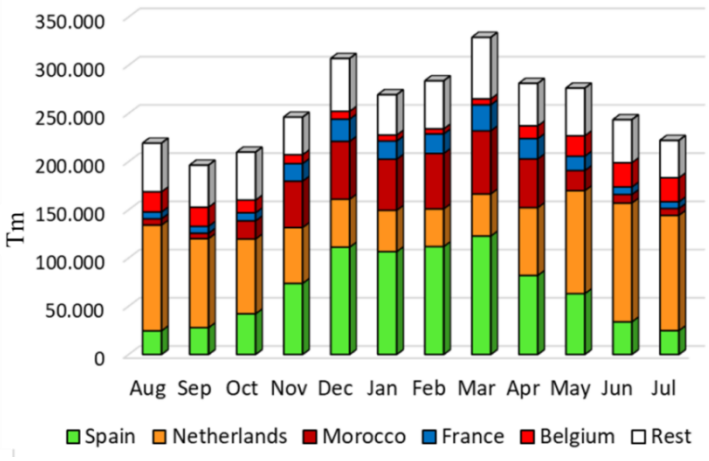


Source: Slide by Jacques Dasque (AREFLH)

Turning to broader topics, Dasque commented on the issues of market power and pesticide use in the EU fruits and vegetables sector. With regard to the balance of market power between upstream and downstream actors in the sectors, Dasque stressed that 15 central purchasing bodies control almost 60% of fruit and vegetable distribution, compared to 1500 producer organisations representing 60% of European production. This may lead to an imbalance in market power, apparently putting pressure on producer prices. As a solution, Dasque sees the need to further strengthen producer organisations and associations in order to increase their bargaining power. Dasque also highlighted that pesticide use is an important topic for fruits and vegetables production, especially because NGOs and the media accuse the sector of widespread use of pesticides. There is, however, a significant evolution of production methods over the past decades towards sustainable agriculture. More than 60% of the crops are under integrated production and organic production has a market share of 5% to 8%. Moreover, the sector is confronted with high pressure of diseases and pests on crops, with emerging new invasive diseases (due to globalisation of trade) and the need for new control strategies due to climate change. This often contrasts with the market demand for products of high quality and the absence of internal and external defects, and increases the urgency of having economically viable biological alternatives for pest control.

Jan van der Blom (COEXPHAL-EUCOFEL) presented a closer look on trends in tomato production in Southern Europe, specifically focusing on Spain. Setting the scene, van der Blom highlighted the importance of EU tomato production in international trade, as especially Spain, the Netherlands, Italy, France, and also Belgium and Poland play an important role in the international tomato market, along with Morocco. Depending on the season, the share of the main producers in international trade varies, as for example Spain holds a share of 27% and Morocco 13% in the winter months, and the Netherlands 30% in spring (**Figure 9**). With respect to Spain, especially Andalucía increased its exports over the last decade (68% of the total Spanish tomato exports are coming from this region). The production concentration in Spain often raises concerns about the sustainability of the Spanish tomato production. Van der Blom showed that the plastic covered landscape, as seen from pictures from the air, raises sustainability concerns ('mar de plástico'). This production method, however, covers only a relatively small area. In general, Spanish greenhouse horticulture has an extremely high production on a small surface. In Almeria, for example, it covers 3.4% of the surface and generates 40% of the region´s GDP. Van der Blom argued that this production system also requires no artificial heating and helps absorbing atmospheric CO_2.

Figure 9: International EU tomato trade (2016/2017).



Source: Slide by Jan van der Blom (COEXPHAL-EUCOFEL)

Specifically commenting on technological challenges with regard to sustainability, van der Blom highlighted the optimization of water and fertilizer use, maintaining biological pest control, reaching 100% recycling of plant and plastic residues, and focusing on agro-ecological production. Water dripping irrigation is very efficient and hence good also in terms of conservation of water resources. With regard to pesticide use there is a clear indication that it has been reduced over the last years, and nowadays biological control is the major means of pest control. For instance, there have been no pesticide residue issues since 2007, when excessive concentrations were detected on sweet pepper. Concerning the management of plant residues, van der Blom highlighted that the burning of residues stopped already years ago and that recycling into compost is generalized. There is also a high percentage of recycling of the plastic foliage, even if further improvements in plastic recycling are still needed. Another aspect for sustainable tomato production is to further increase agro-ecological features. Including flowering plants and hedge rows next to the greenhouses would increase biodiversity, which has additional benefits with regard to pest control.

Matthieu Lovery (Groupe Carrefour) outlined some consumption trends and presented specific information on organic fruits and vegetables, local supply and packaging. Total consumption of fruits and vegetables in the EU was almost stable over the last five years, but the consumption composition changed a lot. Nowadays not only the price is important for consumers, but also aspects of health, nutrition, organics, taste, origin, traceability, convenience, and waste reduction.

The turnover of organic fruits and vegetables increased over the last years and is expected to considerably increase further over the next five years. As consumers demand more organic products, an increase in organic growers and agricultural area has been observed. In France, for example, organic production has now a share of 40%. Lovery underlined that the market shows a need for more organic products and these products need to be produced locally. With regard to the developments of local supply of fruits and vegetables, the local label shows to be a better incentive for consumers to buy the product than the organic label. For example, about 75% of French consumers state that for them the origin and traceability of products are as important criteria as quality and price. Accordingly, traceability is a way of providing "local" products. In this respect Lovery also highlighted the need for new distribution networks to bring the customer closer to the producer. 'Blockchain', as a record-keeping technology, can be used to have maximum information and traceability along the supply chain of fruits and vegetables. Lovery stressed that creation of value added through identification, differentiation, etc., is very important and is something the customer notices and seems to be willing to pay for. Accordingly, added value has to be captured on the product labelling.

With regard to packaging of fruits and vegetables, Lovery underlined that packaging is

sometimes necessary, but the sector has to reduce and improve it. About 40% of the fruits and vegetables is distributed pre-packaged and the rest bulked. Prepackaging fruits and vegetables is often needed due to fragility, hygiene, and regulation, but the sector is using it also for reasons of marketing (e.g. labeling) and convenience (e.g. no need to weigh is saving time). The sector, however, needs to have packaging that preserves the environment, i.e. less and better packaging, but this requires technically and economically feasible solutions.

Discussion

In the open discussion, a participant asked about the biggest winners and losers of Brexit in the fruits and vegetables sectors. With rather low production and large consumption the UK is a significant importer of EU fruits and vegetables. The question of winners and loser, however, cannot be answered as so far it is unknown how a Brexit agreement will look like.

Regarding greenhouse horticulture production in Spain, the question of working conditions and illegal workers was raised. It was argued that there is a very strict control, backed up by high penalties, so illegal workers cannot be employed. Furthermore, growers are not interested in having workers who will disappear as soon as they see another possibility. The official statistics of Social Security in Almería show that the number of labourers with a contract in horticulture completely covers the needs for the greenhouses, so there is no space for illegal workers.

With respect to challenges and possibilities to expand organic production of tomatoes, it was discussed that for growers in Spain it seems not so hard to meet the definition of organic production - at least for the presented regions in Spain - as for example pest control is mostly already in line with sustainable production and biological pest control is the major mean used. Since 80% of the growers have their crops in soil, it is only a matter of adapting the fertilisation according to the rules of organic production.

A further discussion point was the use of plastics in greenhouses and possibilities to reduce their use. It was highlighted that producers are indeed very interested in alternative materials, but the alternatives that are currently on the market seem to be very new and not yet economically viable for producers.

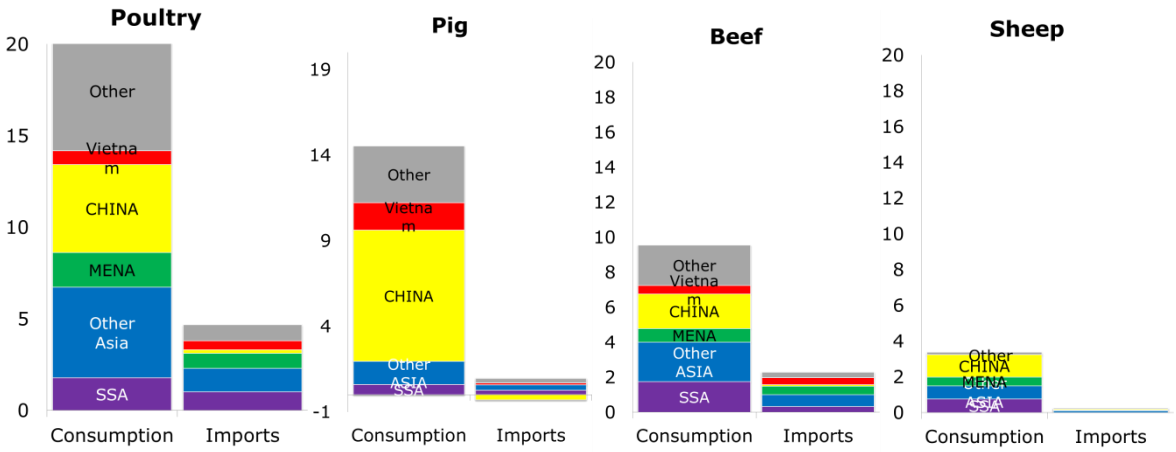
4 Meat Markets

The meat markets session was chaired by Phil Bicknell (AHDB). Preliminary projections for the medium-term development of EU meat markets were presented by Magdalena Grzegorzewska (DG AGRI). This was followed by a presentation by Philippe Chotteau (IDELE) giving an insight about organic beef in France and the EU and the environmental constraints on beef production. Tadeusz Blicharski (POLSUS) presented an overview of pig production in Poland, while Raphaël Moreau (Euromonitor) highlighted meat substitutes and meat consumption trends in the EU.

4.1 Preliminary EU outlook, 2018-2030

According to the preliminary EU meat market Outlook, presented by Magdalena Grzegorzewska (DG AGRI), a steady growth in world meat consumption and imports is expected between 2018 and 2030 (**Figure 10**)

Figure 10: Change in world meat consumption and imports 2018-2030, million t.

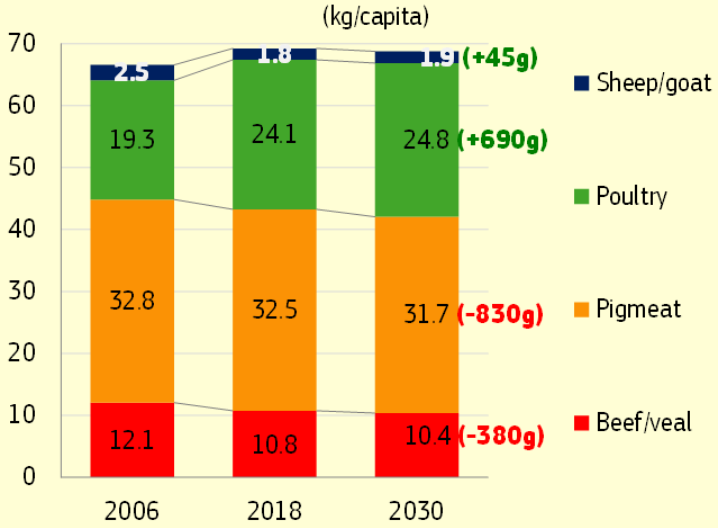


Source: Slide by Magdalena Grzegorzewska (DG AGRI)

Global meat consumption outlook to 2030 is expected to grow by 1.2% p.a. while world imports are expected to rise by 1.6% p.a. between 2018 and 2030 due to increasing demand in developing countries particularly for poultry and pigmeat. The expansion of the Chinese domestic market is expected to account for 53% of the increased pigmeat consumption and 23% of poultry meat worldwide. Population change, income growth, religious guidelines, social ethical and environmental concerns will remain major factors impacting the dynamics of world meat markets.

The Outlook foresees low rates of change in per capita annual consumption of meat in the EU (below 1% in the period 2018-2030). Increasing demand for poultry and sheep is generally expected over the Outlook period, while pigmeat and beef consumption follows a downward trend (**Figure 11**).

Figure 11: Meat types in the European consumer basket (kg per capita)



Source: Slide by Magdalena Grzegorzewska (DG AGRI)

This represents a slight decline in meat consumption in the EU (0.5 kg/capita/year by 2030), but with a higher demand for organic and local products. The impact of alternative plant based meats and changes in consumer trends towards vegetarianism, veganism and in the number of flexitarians is expected to have a limited impact on EU meat consumption during the outlook period.

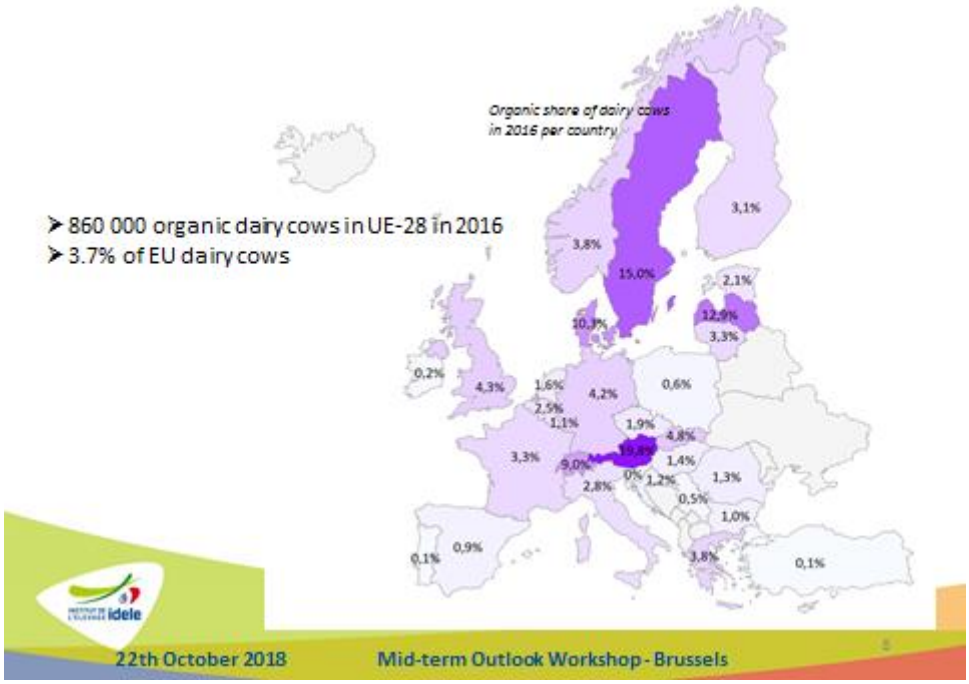
Poultry production and exports are expected to rise by respectively 4% and 19% (2018-2030) due to increasing demand both at the domestic and international levels. Pigmeat production is projected to decline at a slow pace (-2%) due to declining domestic demand, rising environmental concerns, and competition on the world market. Pigmeat exports are stable, only increasing by 1% during the outlook period. Domestic beef production and exports are projected to drop by respectively 6% and 17% in 2030 following the corresponding declines in EU beef and dairy herds, domestic consumption, and import demand in niche markets facing strong competition. Sheep and goat meat production will slightly increase (5%) due to increase EU consumer demand and unfilled tariff rate quotas from New Zealand, though export prospects seem unfavourable due to high competition on international markets.

At the end of the projection horizon, domestic producer prices are expected to eventually stabilise and clear at the levels of 1,538 EUR/t (pigmeat), 1,849 EUR/t (poultry), 3,513 EUR/t (beef) and 5,173 EUR/t (sheep), respectively.

4.2 Presentations by invited speakers and discussion

Philippe Chotteau (IDELE) presented an insight about organic beef in France and the EU, highlighting environmental constraints on beef production. The main source for organic beef in the EU stems from the dairy herd, which accounts for two thirds of EU organic cows. In 2016, the share of organic dairy cows amounted to 860,000 cows, 3.7% of the EU-28 total dairy herd (see **Figure 12**).

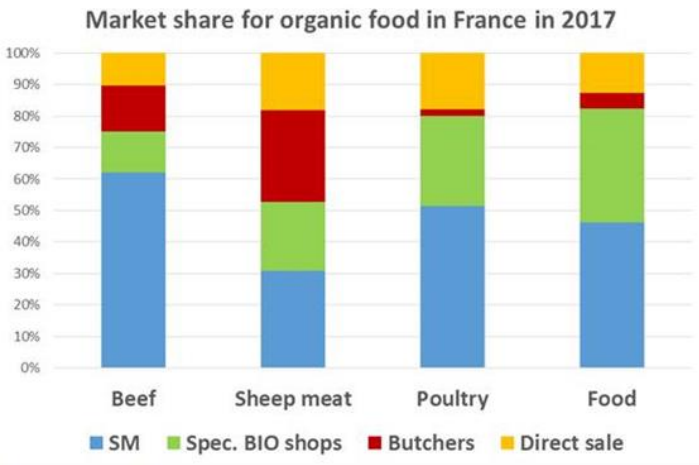
Figure 12: Organic dairy cows in Europe



Source: Slide by P. Chotteau (IDELE)

Dairy beef is a quite suitable commodity for processing burgers, which now accounts for half of the beef consumption in France. But there could a problem with beef production from male animals due to long production cycles (if to be grass fed) hardly being profitable and concerns about castration. Chotteau concluded that more veal production is still possible, but not in the current mainstream. Next he highlighted the perspectives of organic beef from the suckler herds. In France, he found brilliant perspectives for female beef already accounting for 80% of beef consumption but a lot went into burgers and questioned if a segmentation of the burger market is required to highlight organic beef. In France organic beef is mainly sold in supermarkets (**Figure 13**) with sales of organic food projected to increase by 6.9% per year to 2021.

Figure 13: Organic meat shares by outlet, France 2017



Source: Slide by P. Chotteau (IDELE)

With regard to the environment, Chotteau highlighted the Life Project "Beef Carbon", a project that associates stakeholders in 4 countries (France, Ireland, Italy and Spain). It is important to identify and reduce the beef production carbon footprint and improve sustainability of the sector. It is needed to educate farmers and technicians, develop tools and methods to approach this problem and identify, test and promote the low carbon practices in a network of innovative farms in order to build carbon action plans for beef production. This would involve a dynamic partnership involving farmers, agricultural advisors, businesses and the entire production chain.

Tadeusz Blicharski's (POLSUS) presentation focused on pig production in Poland. He started by pointing out that in 2016 there were 717,500 farms in Poland keeping animals and 24% of these were classified as pig farms producing 38% of total slaughtered animals. Historically, the number of pigs and pig farms has been declining over the last decade (**Figure 14**). In the last couple of years production has been at the same level but with declining number of farms and the appearance of new big farms with 6000 to 7000 sows. The number of small family farms keeping pigs is shrinking as they are not profitable (i.e. low productivity) and have difficulties in accumulating capital investments. He also pointed out that young people do not want to work on small farms producing pigs in smelly stables. He mentioned that the consumption of pig meat can change very quickly during the year. If the weather is good, Polish people grill more pig meat during the summer, but in general poultry consumption is increasing from year to year. He highlighted that Poland was a net importer and that the Polish market at this present point in time has a lot of pigmeat from Belgium where there has been an outbreak of African swine fever. The disease prevented Belgium from exporting pigmeat to China, reallocating some of this into the nearby Polish market.

Figure 14: Dynamics of the Polish pig.

	No of pigs	No of sows	No of piglets	No of imported piglets	Fatteners slaughtered (no)
2010	14 781 600	1 383 500	4 299 700	2 500 000	19 700 000
2017/2018 (June)	11 827 500	870 800	2 852 900	5 750 000	18 000 000

	No of pig farms	No of farms producing piglets
2002	760 600	452 300
2012	359 730	207 960
2016	172 200	116 700
Change y/y	- 52,7%/-52,13%	- 54%/-43,88%

Source: Slide by Tadeusz Blicharski (POLSUS)

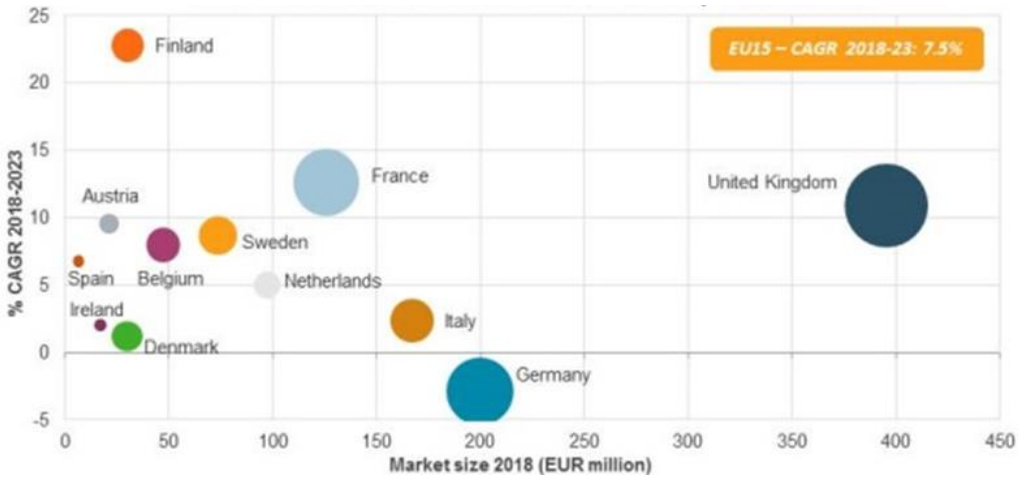
Blicharski also mentioned that outbreaks of African swine fever have been reported near the border with Russia. African swine fever entered Poland in February 2014 and since then 213 outbreaks have been reported on farms and 2904 cases in wild boars. He said that it was very difficult to protect each herd due to the high mobility of people.

Raphael Moreau's (Euromonitor) presentation addressed meat substitutes and meat consumption trends in Europe. He mentioned that the demand for meat substitutes is driven by vegetarians/flexitarians with Germany and the UK accounting for 49% of EU-15 sales in 2018. **Figure 15** shows the current value of sales (horizontal axis), the growth between 2013 and 2018 (bubble size) and the forecast growth from 2018 to 2023 (vertical axis). Flexitarianism is expected to be a long-lasting trend in Europe with the

market growing by 7.5% in the next five years. The German market seems to be slowing down after many new brands were introduced in the last two years. Moreau pointed out to the fact that meat substitutes do not taste as meat and, therefore, not all consumers continued buying these products. He argued that quality needs to be improved to keep people consuming more meat substitutes. Flexitarians could be addressed by products that better replicate meat taste, e.g. burgers with red beet juice.

Moreau mentioned that other firms are looking at reverse-engineering of animal products (meat, dairy and fish) and their goal is to produce a full range of meats and dairy products for every region in the world. Other new types of meat alternatives are insect-based snacks giving high protein, which are already sold in supermarkets in Finland and Spain. With regard to meat consumption trends in Europe, Moreau said that the fall in pig meat consumption is not offset by increases of other meat types (e.g. in Germany) and that overall red meat consumption is in decline. Poultry is affordable and perceived by consumers as healthy and environmentally sustainable, contrary to red meat. In general he said that environmental, animal welfare and health concerns undermine red meat consumption except for sheep and goat meat. Lamb, mutton and goat meat is expected to benefit from the growth in demand caused by a growing migrant population, for whom lamb and goat are more popular.

Figure 15: Meat substitute sales and growth prospects E15, 2018 - 2023



Note: bubble size shows actual growth in market sizes in 2013-2018. Range displayed EUR 4 – 160 million. Greece, Luxembourg and Portugal are excluded

Source: Slide by Raphael Moreau (Euromonitor)

Discussion

The discussion went into the future of meat production with relation to consumer preferences and environmental concerns. A question was raised about the potential impact of changing consumer trends and environmental constraints on beef herds. This would depend a lot on the evolution of meat substitutes and the growth in vegetarians and flexitarians. It was mentioned that 4% of French people are vegetarians and 1% vegans and that the share was much higher among younger people in France.

Somebody asked about the market share of substitute meats. To this the answer was that the market share of meat substitutes in brands is usually less than 1%.

Somebody else asked about African swine fever and whether it had an impact on meat consumption. The reply to this was that consumption did decline but this impact was temporary and after one and a half years consumption patterns recovered.

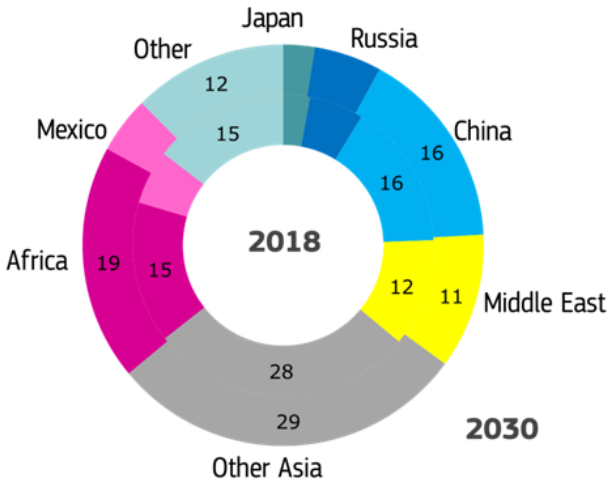
5 Milk and Dairy Markets

Jukka Likitalo (Eucolait) chaired the session on milk and dairy markets and Andrea Capkovicova (DG AGRI) presented the preliminary EU outlook. Wim Kloosterboer (FrieslandCampina) made a presentation on a more sustainable management of natural resources, with focus on less volume and more value added, and a corresponding food chain strategy. Finally, Peter Paul Coppes (Rabobank) addressed the topic of alternatives to dairy products.

5.1 Preliminary EU outlook, 2018-2030

The preliminary outlook results for the milk and dairy markets were presented by Andrea Capkovicova (DG AGRI). She started by pointing to a growing global and EU demand for dairy products, with world import demand being driven by population growth (especially in Africa) and income growth (China), but at a slower pace compared to the past with more focus on quality and less on quantity. In the EU, consumption is also expected to rise, with less drinking milk and more cheese being consumed. Global milk supply is expected to grow by about 2% per year with India to become the world largest milk producer in 2030 (incl. buffalo milk). The milk production in Africa is also projected to increase during the period, but not enough to meet the increasing domestic demand. World trade is expected to grow by 1.4% per year (0.9 million tons of milk equivalent, half the volume of last decade) with China remaining the largest single country importer (see Figure 16).

Figure 16: Main importers of dairy products, 2018 and 2030 (%)



Source: Slide by Andrea Capkovicova (DG AGRI)

EU milk production is projected to reach about 182 Mt by 2030, which would be an increase of 1.3 Mt per year over the outlook period. EU milk deliveries will reach 175 Mt by 2030, with the deliveries in the EU-N13 set to continue increasing at a faster rate. Breaking down the dairy categories, cheese remains an EU asset and is expected to be of higher quality in the future and higher value added. Cheese consumption is estimated to grow in 2030 by 1.3 kg per capita. EU cheese exports are estimated to increase up to 1.2 million tonnes per year from 2018 until 2030 (3.3% annually, higher than the global average growth rate of 2%). EU is expected to take 40% of world cheese exports in 2030. With regard to milk powders, EU production of skimmed milk powder and whole milk powder will slightly increase over the outlook period. By 2030, skimmed milk powder is expected to increase at slower pace (1.2% per year) as compared to last 10 years and whole milk powder is stabilizing at a growth rate of 0.5% per year. Drinking milk consumption is declining, but yogurt consumption is increasing. Cream use has stable growth and other fresh dairy product's consumption keeps on increasing. In

addition, further expansion of exports of fresh dairy products is expected. Finally, there is a growing market of plant-based drinks with soya being the major contributor. All in all, there is an increasing demand for organic dairy products. With regard to butter, there is a sustained but slower growth in domestic demand.

With respect to sustainability and societal demands, these should drive the dairy market as follows: (1) milk collection expected to further increase, (2) small decline in EU dairy herd, (3) higher demand for products with a lower environmental footprint (organic, non-GM and local production) and (4) increasing role of environmental constrains.

5.2 Presentations by invited experts and discussion

Wim Kloosterboer (FrieslandCampina) made a presentation on a more sustainable management of natural resources, with focus on less volume and more value added. He linked these elements to the food chain strategy. More specifically, Kloosterboer presented the large dairy co-operative FrieslandCampina and highlighted the global goals of a better nutrition for the world. He presented the vision 2025 for FrieslandCampina and pointed at the merits of milk (Figure 17).

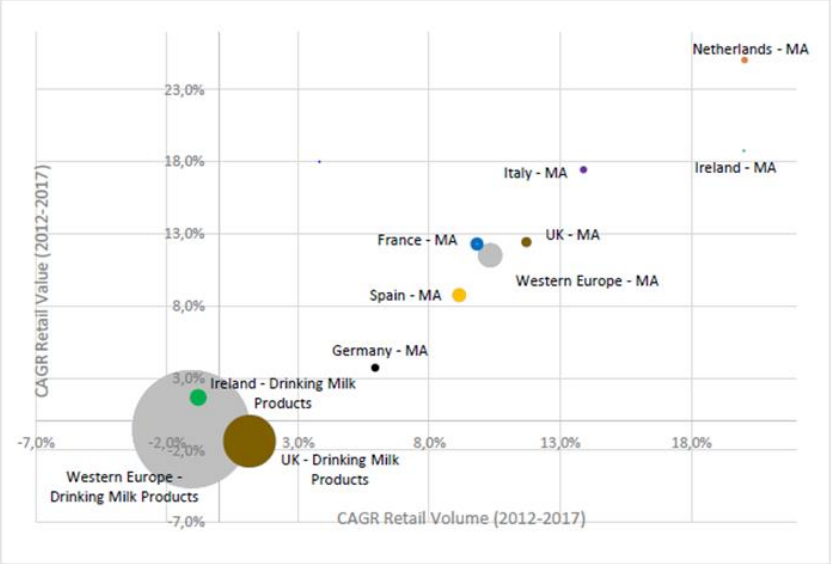
Figure 17: The merits of milk: vision 2025

Source: Slide by Wim Kloosterboer (FrieslandCampina)

Kloosterboer highlighted that collective owners of FrieslandCampina want to produce milk in a sustainable way, such as to feed the growing world population and maintain a healthy landscape. For this, he stressed the point that farmers should be appreciated and rewarded.

In his presentation, Peter Paul Coppes' (Rabobank) pointed out to the fact that consumers are increasingly going dairy-free. In his opinion this is all about perception (e.g. dairy free is better and more sustainable) and touches upon some health-related concerns (e.g. dairy free is healthier due to the presence of lactose intolerance and milk allergies). He stressed the fact that when looking at the 2030 dairy outlook projections people that are going to drink that milk are not yet born. He also mentioned that people in the first 7 years of life rely to a large extent on milk (i.e. 40% of their diets consists on milk) and that adults often start buying milk again when they have children. However, in general "consumers are going dairy-free" and the growth in dairy alternatives is already happening (Figure 18).

Figure 18: Western European milk alternatives market: retail value and retail volume growth – bubble equals market size



Source: Slide by Peter Paul Coppes (Rabobank)

Coppes mentioned that soy remains the most prominent alternative to milk, but it is losing ground in some regions. He also added that it is not all 'sunshine' for dairy alternatives. There are challenges for the dairy alternative market with regards to taste (i.e. matching the taste of milk is difficult), fewer nutrient availability, intense processing needed (including additives) and higher cost than conventional dairy products (i.e. higher price).

Discussion

In the discussion the question raised was: why are milk yields lower this year compared to last year's outlook? This was justified with the fact that increased production of organic milk and climate events are expected to push down yields.

One comment from the audience mentioned that increased sustainability concerns in the Netherlands had in fact increased milk yields. In connection with this comment, one person was asking for an in-depth analysis of an organic GMO free dairy sector in the EU.

With regard to milk alternatives it was asked whether milk could be used to define/label all products or whether there should be a more exact definition between milk and non-milk products. It was said that this is a regulatory issue.

One comment mentioned that in Germany all is about perception and people return to drinking milk when they get children. Parents know more about dairy products and give milk to children.

6 Agriculture and the environment

The Agriculture and environment session was chaired by Doris Marquard (European Environment Agency, EEA). In this session, invited experts analysed various environmental aspects related to agricultural production in the EU. Given the growing importance of environmental and climate ambition of the future CAP, Maria Bielza (Seidor, consultant for the DG JRC) and Panos Panagos (DG JRC) presented an environmental analysis of the EU baseline and erosion projections for 2030 respectively. Thaïs Leray (DG CLIMA) gave an overview of the EU Strategy on Adaptation to Climate Change along with evaluation outcomes. Petr Havlík (IIASA) closed the session with a talk on the potential impacts of the EU climate policy on livestock production by 2030.

6.1 Presentations by invited experts and discussion

Maria Bielza presented CAPRI baseline model results for GHG emissions[8], projecting almost stable non-CO2 emissions from 2012 to 2030 (-1%), mainly driven by a reduction in methane (CH4) emissions from ruminants digestion (-6%). The latter, which is the result of a projected decrease in dairy cattle herds, is partially compensated by an increase in nitrous oxide (N2O) emissions from crops (projected increase in crop yields) and manure spreading on field crops. Emission factors following a life cycle analysis methodology (i.e. accounting for inflows and outflows of nitrogen by e.g. feed crops) will be on the lower-end for most crops, with the exception of paddy rice. Higher values are computed for animal products.

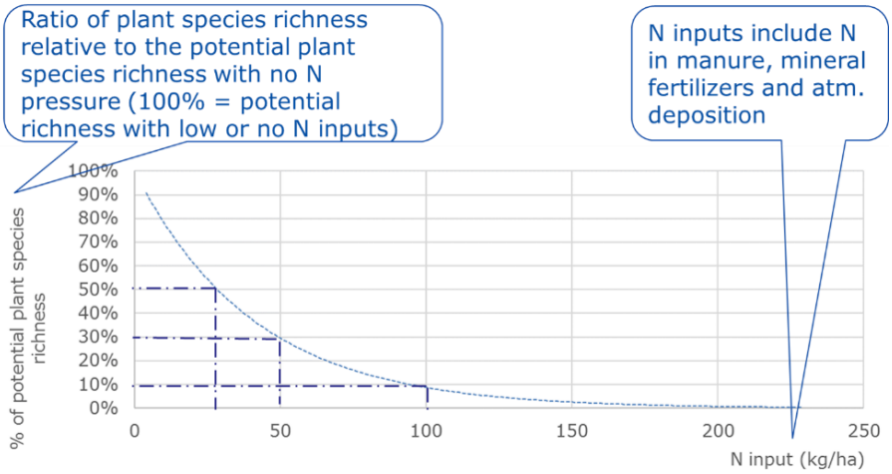
Ammonia (NH3) emissions are projected to drop by 9% mainly due to lower manure excretion. The impacts will spatially differ across the EU. In Poland, for example, they are expected to increase by 13% due to an increase in meat production, mainly poultry and beef, and in the use of mineral fertilizer. Nitrogen leaching to water bodies will decrease (-9%) due to lower livestock pressure, but higher use of mineral fertilizers will lead to more runoff (+2%), so that total losses to the water will decrease by 8%.

Regarding the impact of nitrogen pressure on plant species richness on permanent grasslands, in general lower/higher values of nitrogen enrich/impoverish the potential plant species (**Figure 19**). In general, nitrogen input (i.e. manure, fertiliser and atmospheric deposition) over 30kg/ha starts harming biodiversity in the atlantic and continental parts of Europe. Based on the amount of assumed nitrogen allocation[9], plant species richness change may range from +1% to +5% compared to the 2012 levels. This change can be associated, among other factors, to the predicted decrease of ruminants and the CAP limitations to reduce permanent grassland area.

[8] The CAPRI baseline was constructed by Mihaly Himics and the CAPRI team at JRC.D.4 with relevant input from the outlook team at DG AGRI.

[9] The impact of agri-environmental and climate measures (AECM) has not been considered in this scenario.

Figure 19: Nitrogen pressure on plant species richness in permanent grasslands

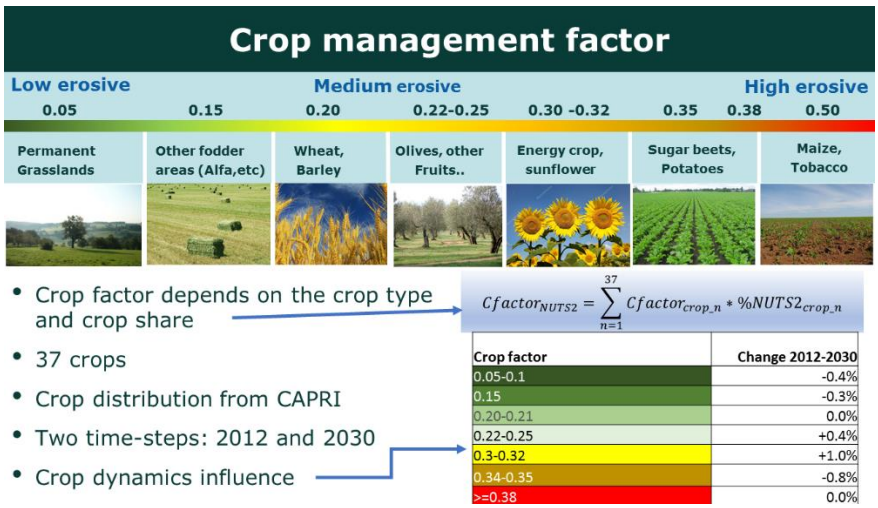


Source: Slide by María Bielza (Seidor - consultant for the DG JRC)

Panos Panagos explained that the DG JRC estimates of soil erosion are the result of a complex modelling system that takes into account soil erodibility, rainfall intensity, crop management, vegetation density, and slope attributes. Inappropriate management practices, which are also taken into account, generally accelerate the former processes.

Mean soil loss by water erosion in 2012 was higher in agricultural lands (3.25 t per ha and year) compared to overall mean erosion rate taking into account all land types (2.4 t per ha and year). Considering the mean soil formation rate of about 1.4-2.0 t per ha and year, over one-fourth of EU lands could be characterized as 'more eroded than a sustainable rate'. Minor shifts in crop distribution of EU agricultural lands will increase soil erosion from water from 3.25 t per ha and year in 2012 to 3.27 t per ha and year in 2030 (Figure 20). This corresponds to rise of about 0.5%. Low-to-medium erosive crop types (permanent grasslands, other fodder areas) will decrease by 0.7%, while medium-to-high erosive crops will have the highest increase (1%) due to rise of rapeseed shares. The decrease of sugar beets and potatoes contributes to a reduction by 0.8% in the high erosive areas.

Figure 20: Crop management factors for assessing soil erosion potential, 2030 projections



Source: Slide by Panos Panagos (DG JRC)

In the majority of EU countries the risk of soil erosion is not expected to change. Exceptions are Italy, Denmark and the UK, where it will rise, and Greece and Slovenia, where it will drop. In Italy, the increase of fallow land is expected to replace less erosive areas (i.e. fodder crops, barley, wheat), which is the main reason for increasing soil erosion in agricultural lands. In Greece, a decrease in soil erosion of agricultural land is expected due to an important increase in fodder crops, which will replace tobacco and cotton plantations. In interpreting these results some uncertain factors should be kept in mind such as rainfall intensity, which will be higher in central EU and thus lead to more erosion, and the impact of policies on management practices within the future CAP.

Thaïs Leray (DG CLIMA) highlighted that the key findings from the 2012 EEA report on climate change, impacts and vulnerability in Europe are still valid. For instance, climate change is occurring (with effects on the EU) and the probability of extreme weather and climate events has risen. Observed changes in climate and land use already have wide-ranging impacts on ecosystems, economic sectors, and human health. Moroever, the magnitude of climate change impacts will depend on the effectiveness of coordinated mitigation efforts.

Against this background, EU policy faces the dual challenge of mitigation (i.e. to prevent unmanageable impacts by sharply reducing GHG emissions in the near future) and adaptation (i.e. to manage unavoidable impacts by increasing society's resilience). This will happen by encouraging adaptation strategies in MS and funding them to help build resilience, integrating climate adaptation needs into agriculture, fisheries, energy, regional development, and by bridging the knowledge gap through research (**Figure 21**). An example of the latter is the so-called Climate-ADAPT platform, which is an initiative of the European Commission that helps users accessing and sharing data and information on expected climate change and vulnerability of EU regions to it, as well as on adaptation strategies and actions. The main findings of the evaluation of EU's strategy on adaptation to climate change is that more work is needed to implement and monitor national strategies, to bridge newly emerging knowledge gaps, and to address territorial and social differences in vulnerability to climate change.

Figure 21: Bridging the knowledge gap between policy and research

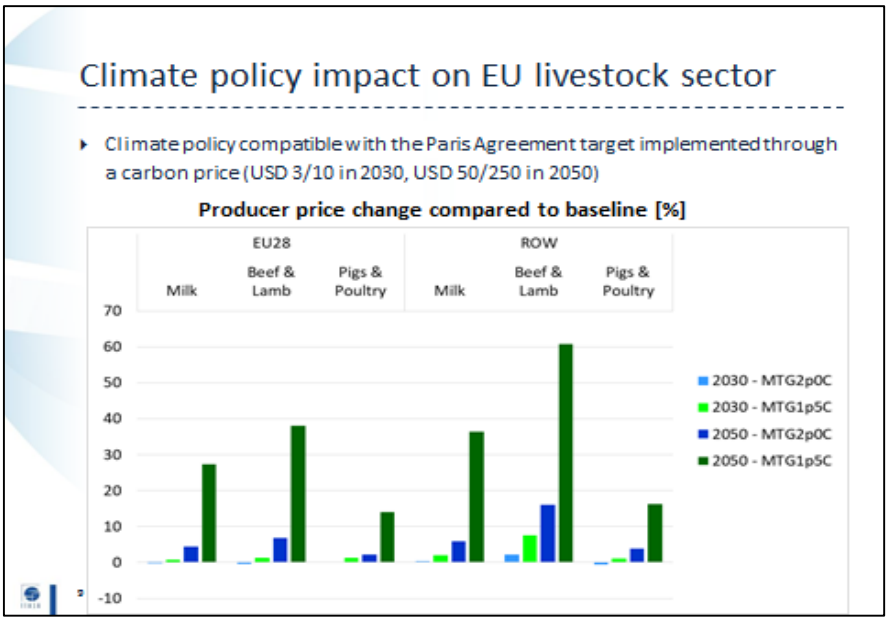
Source: Slide by Thaïs Leray (DG CLIMA)

Petr Havlík (IIASA) focused his talk on the mitigation potential of the European livestock sector. Within a broader global warming stabilization context by the end of the century (i.e. limit the level of global temperature rise to 1.5 °C above pre-industrial levels), the relative contribution of the livestock sector in terms of GHG emissions is expected to triple, reaching 24% by 2050. The EU targets are in line with the global objectives: a 40% reduction of all GHG emissions should be achieved by 2030 relative to the 1990 levels.

The EU livestock sector accounts for 16% of global livestock production and is responsible for 8% of global livestock emissions. Therefore, the EU sector can be considered as generally more GHG-efficient than the global average. However, large (feed) efficiency gaps prevail between production systems and the different regions.

Multi-model simulation results based on uniform mitigation scenarios compatible with the targets of the Paris Agreement[10] show modest results for the EU livestock sector compared to the rest of the world (**Figure 22**). Overall, the mitigation potential of EU agricultural GHG emissions depends on the carbon price level. Basically mitigation is achieved through changes in production levels at lower carbon prices and through changes in technical and structural options (i.e. innovation and changes in trade patterns) at higher carbon prices. Depending on the carbon price, models project EU emission savings of up to 0.7 Gt CO_2^e per year, which would lead to an EU contribution to global targets of about 5%. Half of this reduction could be achieved through technological change.

Figure 22: Producer prices under uniform climate change mitigation scenarios



Source: Slide by Petr Havlík (IIASA)

Discussion

The open discussion following the presentations focused mainly on clarifications of the methodologies behind the environmental results. For example, it was highlighted that emissions from cereals/grains that are used for feed are subtracted from crops and added to livestock. This is how agricultural activity-based emissions (i.e. per ha or head) are converted to agricultural commodity-based equivalents (i.e. per litre of milk or kg of meat).

[10] https://ec.europa.eu/clima/policies/international/negotiations/paris_en

7 Biofuels

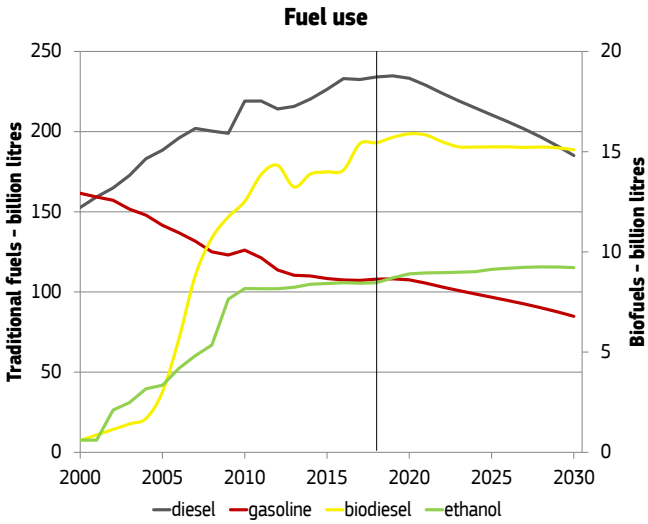
The development of a biofuel market in the EU is relatively recent. It emerged in the early 2000s in order to comply with biofuel consumption mandates defined by EU legislation. The mandates will likely remain a driving force of this market as the recent Renewable Energy Directive (RED II) agreement defines a new policy framework towards 2030. The presentations of the preliminary outlook results, presented by Sylvie Barel (DG AGRI), and the two following discussants Marko Janhunen (Leaders of Sustanable Biofuels) and William Hohenstein (USDA) tried to disentangle the likely medium-term impacts from a policy perspective. A fourth presentation was also given by George Philippidis focusing on food waste. The session was chaired by Holger Matthey (FAO).

7.1 Preliminary EU outlook, 2018-2030

In presenting the preliminary outlook results for EU biofuel markets, Sylvie Barel (DG AGRI) highlighted that most uncertainties for the biofuel industry have been lifted with the agreement on RED II, providing a new policy framework until 2030. The agreement decided on a target of 14% of the energy consumed in road and rail transport by 2030 to be sourced by renewable energy, with a maximum contribution of 7% for crop-based biofuels. An additional target was also set for advanced biofuels at 3.5% by 2030 and a maximum contribution from oils and fats at 1.7%, In addition the agreement foresees to phase-out biofuels from feedstocks with high risk of Indirect Land Use Change (ILUC).

It is expected that the overall, road transport fuel use will decrease by 21% by 2030. However, biofuel demand is expected to increase driven by the RED II agreement (**Figure 23**)

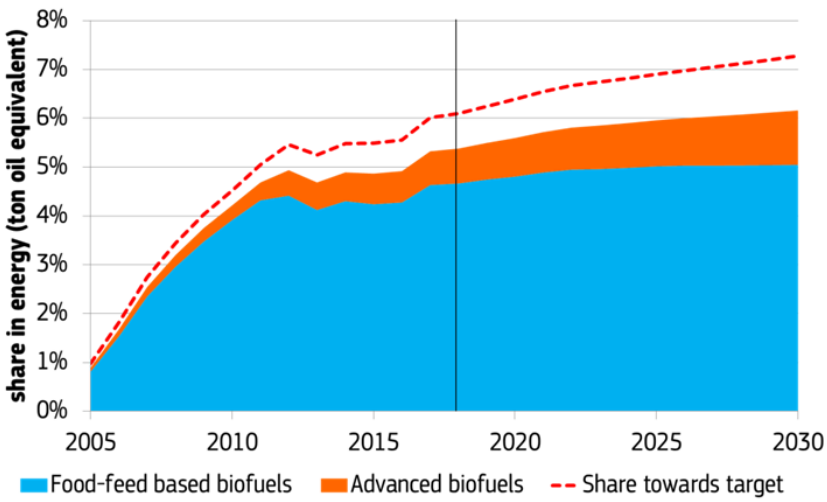
Figure 23: Overall transport fuel use, EU



Source: Slide by Sylvie Barel (DG AGRI)

The outlook assumes a rising consumption of biofuels with the production of ethanol and biodiesel increasing by respectively 4 and 2% during the 2020-2030 period. This is due to the blending rates of biofuel increasing above the traditional blending wall of respectively 5% and 7%, increasing to 6.1% and 7.3% respectively for ethanol and biodiesel in 2030. At the same time it is expected that biofuel imports would decrease during the outlook period due to decreasing fuel consumption in the EU combined with increasing demand for advanced biofuels. Finally, Barel highlights the increased biofuel share in transport energy use, which amounted to 6.2% in 2030, still below the RED II target (**Figure 24**).

Figure 24: Share of biofuels in total transport energy

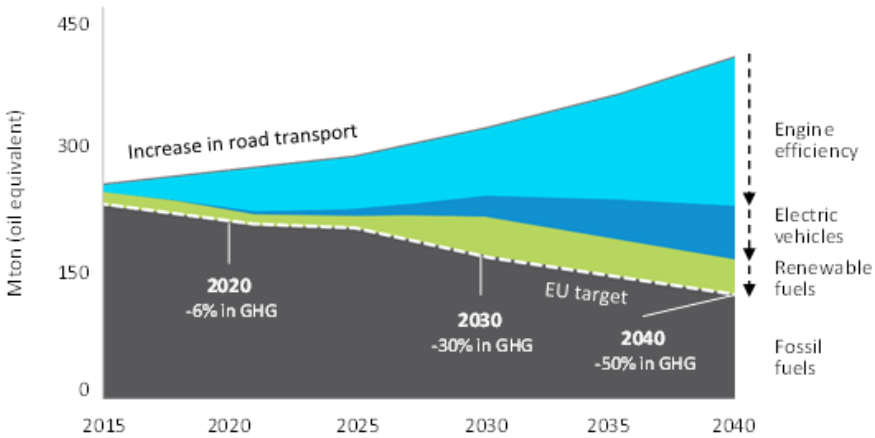


Source: Slide by Sylvie Barel (DG AGRI)

7.2 Presentations by invited experts and discussion

Marko Janhunen (UPM and Leaders of Sustainable Biofuels, LSB) presented the views of the advanced biofuel industry. He started out by presenting his firm UPM, a global bio-refining firm working with pulp, plantations, biofuels, sawmills, wood sourcing and forestry. UPM could see that renewable fuels have an important role to play in the reduction of GHG emission from road transport with engine efficiency playing an important role, electric vehicles but also renewable fuels which UPM are investing in (**Figure 25**).

Figure 25: Required fossil oil displacement in EU road transport to meet GHG targets



Source: Slide by Marko Janhunen (Leader of Sustainable Biofuels)

He stated that biofuel use is very much policy driven and, therefore, UPM is looking for biofuel feedstocks in global markets able to contribute to the decarbonisation of the transport sector. He pointed out that one of the key issues is aviation fuel and the role of advanced biofuels. He also mentioned that some companies are converting plants to Hydrotreated Vegetable Oils (HVO) production (i.e. "drop-in" biofuels), using palm oil as

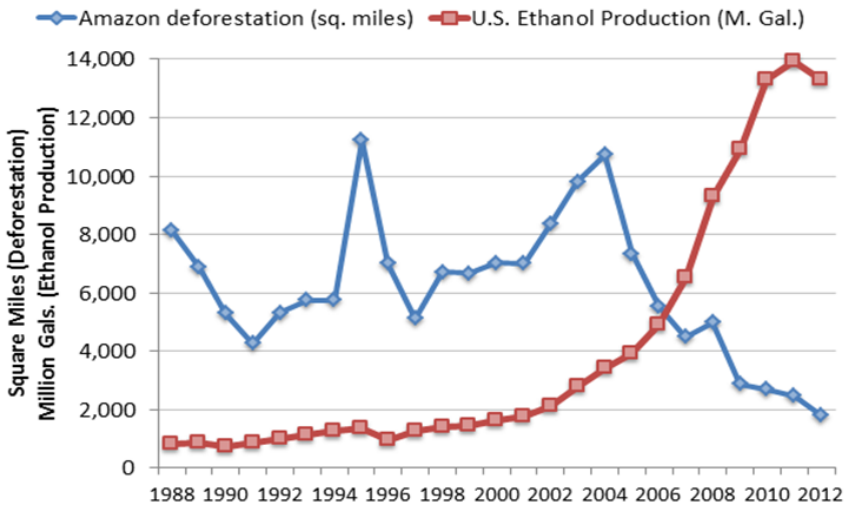
feedstock. This highlights the important role of palm oil for biofuels in the future, especially if there is a cap on imports due to high ILUC risk. He said that UPM is looking into a new crop (Brassica Carinata), which is a sustainable alternative for advanced biodiesel production in South America. This would be grown as an additional biomass generated through productive sequential cover cropping during the winter, providing an additional cash crop to the farmer producing 2200 kg/ha with 42% oil content. This is something that the company is testing with 10.000 ha last season and with substantial increased area this coming season. He pointed out that the biofuel industry needs sustainable solutions and alternative feedstocks, if it wants not to lose the opportunity of using advanced biofuels in a sustainable way. What the biofuel industry does not need is another food versus fuel debate. Therefore, UPM seeks for crops that are 100% sustainable.

William Hohenstein (USDA) presented the biofuels perspective from the US. He started by looking back at model projections. As of 2008, the Energy Information Administration (EIA) of the US projected motor gasoline consumption of 151 billion gallons by 2030. A decade later, that projection was lowered to 111 billion gallons. Fewer gallons of gasoline mean fewer opportunities to blend ethanol, so a similar pattern holds for ethanol consumption in gasoline. In 2008, the EIA projected ethanol use of 24 billion gallons in 2030 and by 2018 the projection was nearly cut by half to 13 billion gallons. He said this was due to better fuel efficiency and the changing driving patterns of young people.

The average ethanol content of U.S. gasoline has been 10% since 2016. Numerous tax and policy initiatives have played a role. US ethanol producers can now supply the entire domestic market for 10% blends, and have begun to export substantial volumes. The US is planning to allow E15 to be sold in the summer months, but E15 will likely be limited in the short run by infrastructure and consumer preference. With regard to biodiesel, he said that in August 2017 the US Department of Commerce (DOC) made a preliminary assessment that Argentina and Indonesia were subsidizing biodiesel exports and agreed with the petition of the US industry that "critical circumstances" existed, which allowed imposing countervailing duties on imports. Since then, imports from Argentina have dropped to zero and US has increased its biodiesel production using soybean oil.

With regard to sustainability, Hohenstein pointed to earlier studies neglecting the ILUC effect of US ethanol production, which had in fact provoked an intensification of production as cereal prices increased. He argued that while annual US corn-based ethanol production increased from 3 to just under 14 billion gallons between 2004 and 2010, the deforestation in Brazil's Amazon dropped from 10,200 square miles to just under 2,400 square miles per year (**Figure 26**), although direct causality between these two developments could be identified. Since the moment that Brazil started to pay attention to deforestation and enforced lower limits on deforestation, agricultural production on existing arable land intensified.

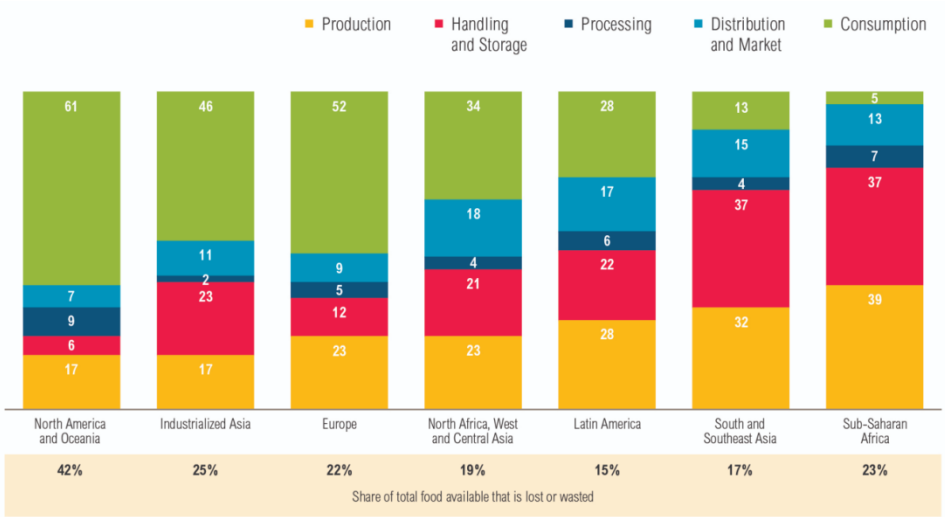
Figure 26: Amazon deforestation and U.S. Ethanol production



Source: Slide by William Hohenstein (USDA)

George Philippidis (DG JRC) examined the economic impacts arising from reductions in household food waste in the EU by using the MAGNET computable general equilibrium (CGE) simulation model. His presentation began with an overview of the international and European policy background with regards to food waste. In particular, goal 12 of the Sustainable Development Goals targeting sustainable production and consumption patterns was mentioned, as well as the Circular Economy action plan. The focus on household food waste in their study is largely driven by the fact that in the EU it is the main driver of waste in food supply chain (**Figure 27**), whilst the initiative to reduce household food waste is explicitly targeted within SDG goal 12.3.

Figure 27: Share of total food available that is lost or wasted

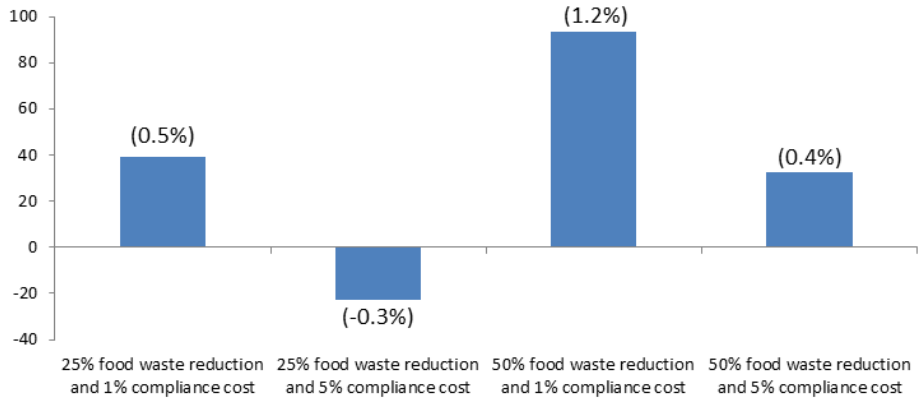


Source: Slide by George Philippidis (DG JRC)

In the study, the team focus on two drivers, resulting in four scenarios. Firstly, household demand reductions are implemented to characterise 25% and 50% reductions in food waste. These reductions are commodity specific based on data provided by colleagues at JRC Ispra on the proportion of total household consumption wasted, measured in tonnes of wet matter. Secondly, supply side effects account for the assumed 1% and 5% compliance costs of logistical, packaging and labelling costs in food supply chains which

motivate consumers to achieve said responsible household consumption reductions. The key points are that agriculture and food output is unambiguously reduced under these modelling assumptions, with falls as high as almost 5% and 7% in EU horticulture and meat sectors, respectively. The price effects were more uncertain given the conflicting market price effects arising from reducing household demands and rising supply (compliance) costs, although overall, food prices were estimated to rise by as much as 5%. Finally, savings of up to €93 per person per year, were expected, although, this result is also determined by the assumptions of the study (**Figure 28**)

Figure 28: Per capita household expenditure (%change versus baseline)



Source: Slide by George Philippidis (JRC)

Summing up, further research was suggested to improve the cost estimates associated with food waste, whilst alternative consumer behaviour with regards to food consumption could be contemplated to account for trading up. A further line of research was the inclusion of municipal waste management activities to more fully account for the implications of this complex issue.

Discussion

The discussion opened with questions regarding food waste. Is it possible to extend the analysis done with the MAGNET model to other countries? The answer was 'yes' but it was not done due to lack of data. Food waste is not uniform across commodities and countries and, therefore, difficult to model across many countries. Following on this it was also asked what the effect of a reduction in food waste was on farm income. In reply to this it was said that farm income was measured by changes in value added in the model, which fell between 8% and 9%.

Moving into the biofuel sector, it was asked if the forest industry would be able to supply wood to biofuel production in the future, given that it is already used to generate electricity and heat. It was said that it would be feasible at the right feedstock price. A wood to biofuel plant could be linked to saw mills with no other alternative use and sawdust with limited use. It was agreed that there is no unlimited supply of wood for biofuel use, but new technology is always on the move especially in the Nordic countries and North America with new investment opportunities.

A question about the new crop Carinata. Is it a cover crop and have the quality of meals from the crush been tested? The answer was that it is a winter crop now grown in Uruguay but plans have been made to test it in Europe. "We are not there yet" was the answer to the question of the quality of the meals.

8 Cereals, protein crops and oilseeds

This session was chaired by Hubertus Gay (OECD). The preliminary EU outlook for cereals and oilseeds was presented by Koen Mondelaers (DG AGRI). Hans Jensen (DG JRC) presented a scenario analysis of drivers for protein crop development in the EU and Martin Banse (Thünen Institute) provided an overview of cereal markets at MS level, focusing on industrial uses of cereals. Sandy Wilson (Cargill) and Nathalie Lecocq (FEDIOL) directly commented on the EU outlook respectively for cereals and oilseeds, and provided their expectations on major market drivers and developments.

8.1 Preliminary EU outlook, 2018-2030

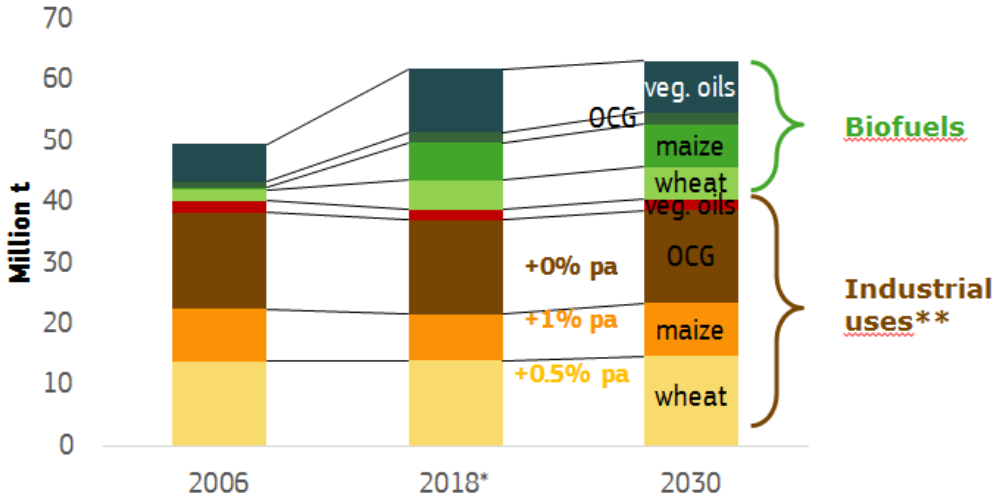
Koen Mondelaers (DG AGRI) presented the preliminary EU outlook projections for cereals, protein crops and oilseeds. Setting the scene, he emphasised the current turbulent times that cereals and oilseeds markets are experiencing. With the grains consumption at an all-time high and the trend of increasing stock-to-use ratio reversing, prices are stabilising for the first time after several years of decline. The EU, however, had a quite difficult year, with a production decline expected of about 7%, mainly caused by hot and dry weather conditions in northern Europe. Moreover, there is also increasing uncertainty brought into the markets by the escalating trade dispute between the US and China. Regarding the projections to 2030, competition from other uses will lead to a further decline in total EU agricultural area, but the outflow of Utilizable Agricultural Area (UAA) is expected to happen at a slower pace than in the previous decade, and cereals area is projected to remain rather stable. Mondelaers highlighted that yields in some Member States are close to their biophysical and agro-economic potential, but there is some catching-up especially in the EU-N13 projected. An increase in average EU cereal yields may be supported by the application of new technologies, like remote sensing and precision farming, but the increase will be restricted by regulatory, economic and agro-economic constraints. A large gap can currently be observed between organic and conventional yields, but the projected increase in demand for organic food and feedstocks may drive developments to narrow this gap over the projection period.

A sustained global demand for cereals will be an important market driver for EU exports, especially for wheat and barley, with the EU's share in world wheat exports increasing from about 12% in 2018 to 17% by the end of the projection period in 2030. EU food demand is not expected to be a major driver for increased EU cereals production as, for example, increases in processed food (cakes, pastries, cereal bars, pizzas) are faced with decreases in bread and flour consumption per capita.

EU oilseeds production will be driven by food and feed demand. Palm oil use is projected to be reduced due to health concerns and environmental image, but the reduction will be limited due to the specific features of palm oil that make it hard to replace (for example in chocolates). Rapeseed oil for food is increasing, and given its healthy image, a further increase is expected over the projection period. Maintenance of domestic rapeseed production is also stimulated by the RED II. Increasing food and feed demand is stimulating the production of pulses, supported by a favourable policy environment. EU soybean production is expected to increase especially due to increasing demand for domestic (non-GM) soybean.

A further driver for EU cereals and vegetable oils production are industrial uses (including biofuels). Bio-economy related industrial uses for cosmetics, pharmaceuticals, bio-based plastics, polymers and detergents, are still small, but increasing over the projection period. Biofuels induce some limited growth in domestic oilseeds production, and also an increase of maize use for ethanol is expected (**Figure 29**).

Figure 29: EU industrial use of cereals and vegetable oils.



* 2018 = average (2016, 2017, 2018)
** also incl. seeds and waste
OCG: other coarse grains

Source: Slide by Koen Mondelaers (DG AGRI)

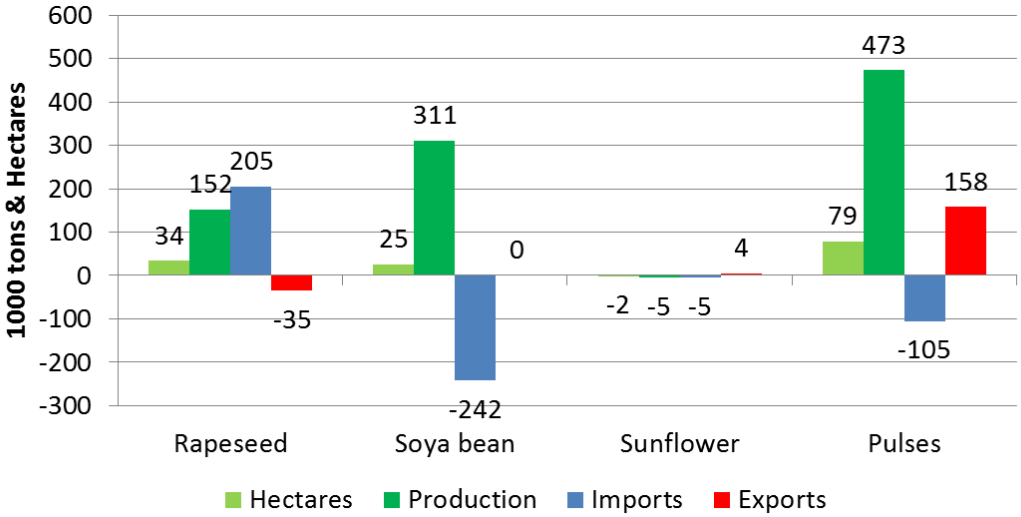
The production growth in world cereals and oilseeds markets puts downward pressure on prices, but uncertainties remain especially related to extreme weather events.

8.2 Drivers for protein rich crop development

Hans Jensen (DG JRC) presented a scenario analysis on drivers for protein rich crop development. Outlining the context of this "what if" scenario, Jensen pointed towards the deficit for concentrated sources of protein in the EU, leading to a supply dependency from a limited number of countries (USA, Brazil, and Argentina). The major EU plant protein deficit has gained momentum in the political discussion throughout 2017 and 2018, and the European Commission is currently working on a detailed assessment of the development of plant proteins in the EU. For the exploratory scenario, the following assumptions were taken: (i) inspired by RED2, an illustrative change in demand due to concerns about indirect land use change (ILUC) leads to a phasing out of imported high ILUC risk oils for biofuels production in the period 2023-2030; (ii) additional voluntary coupled support (VCS) of 84€/ha in the period 2020-2030 is provided to EU farmers for protein crops (soybeans and pulses); (iii) driven by additional research and development, protein crop yields further increase over the period 2020-2030, with annual growth rates increasing from 0.6% to 1.1% for pulses and from 0.4% to 1.1% for soybean yields.

Results of this stylized scenario indicate that the phasing out of biofuel feedstock with high risk of ILUC has by itself a limited impact on protein meals produced from domestically sourced oilseeds. Conversely, the introduction of direct support for EU production of pulses and soybeans leads to increases in domestically produced proteins. Moreover, scenario results indicate that increasing the yields of protein crops and pulses through research and development has a large potential to increase domestically produced EU protein (**Figure 30**).

Figure 30: Changes in land use, production and trade (EU-28, 2030).



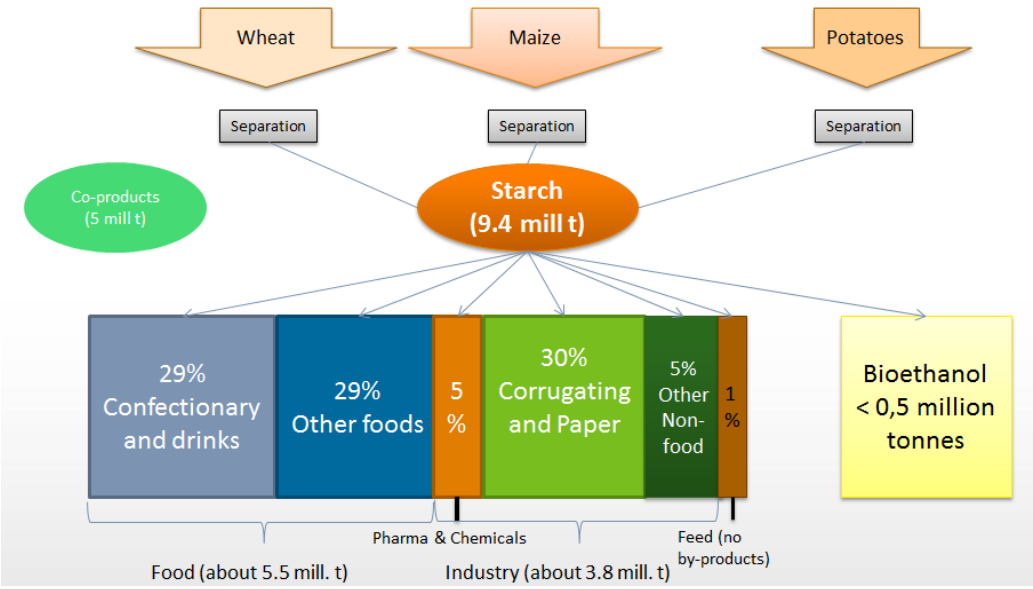
Source: Slide by Hans Jensen (JRC Seville)

8.3 Cereals production and use at member state level

Martin Banse (Thünen Institute) provided a closer look at cereals production and use at MS level, mainly focusing on industrial uses of wheat, barley and corn with the AGMEMOD model. Banse explained that while demand for food and feed in cereals is rather stagnating at EU level, the demand for industrial uses is expected to increase until 2030. Demand for starch and ethanol production play the most important role for industrial uses.

The EU starch production of about 9.4 million tonnes is mainly based on soft wheat, wheat and potatoes. A major part of the production going into industrial use is directed towards food purposes, with "confectionary and drinks" and "other foods" adding to about 5.5 million tonnes. Potato starch is mainly used in corrugating and paper industry (30% of total starch use), and around 10% of the EU starch production is used in non-food bio-based industries (**Figure 31**).

Figure 31: Starch production process and use in the EU, 2017.



Source: Slide by Martin Banse (Thünen Institute)

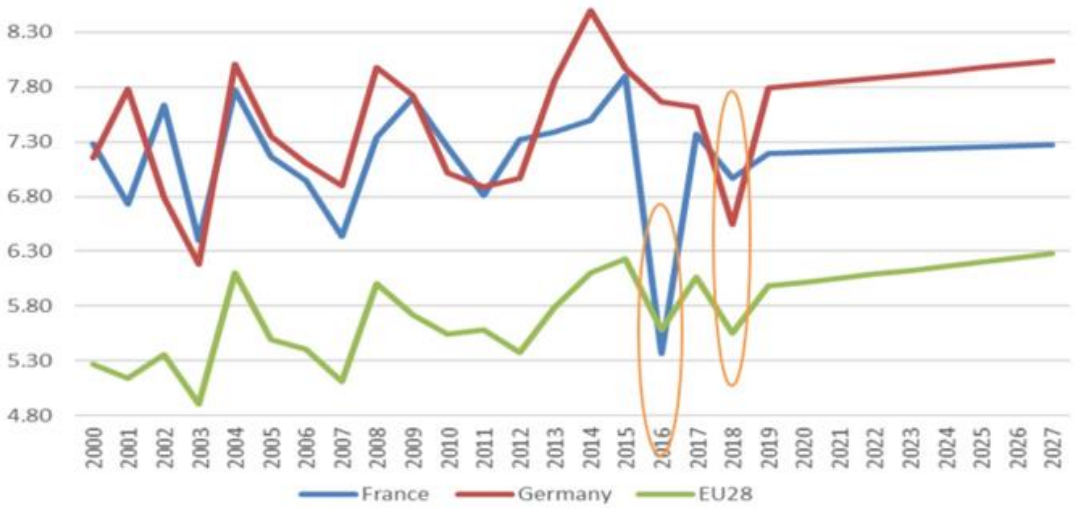
The future development of EU starch production will depend both on market drivers (e.g. future food demand and prices reducing expectations in iso-glucose demand) and policy drivers (e.g. the promotion of a transition towards bio-based economies and mandatory policies like the ban on plastic bags, etc). With the demand for food and feed use of cereals projected to increase only marginally, industrial use is expected to be the most dynamic category as an outlet for increasing cereal production in the EU-28.

The shares of the three crops (soft wheat, barley and maize) in "industrial use" differ considerably across the MS. These differences can partially be explained by different specialisation, as for example northern MS use soft wheat for starch processing, whereas southern MS use more maize. A detailed analysis of the industrial use is still limited due to a lack of data (often caused by rules of confidentiality in publications of statistical data), or due to different definitions of "other industries" used by MS, which complicates the comparability of data.

8.4 Presentations by invited experts and discussion

Sandy Wilson (Cargill) presented his expectations regarding major market drivers and the future development of cereals markets. He first emphasized the importance of changes in weather patterns for cereals production in the EU. Wilson showed that in France rainfall increased by 60% from April to June 2016, a new record that damaged grain filling and hence yields. Conversely, Germany experienced a decrease in precipitation of 45% from April to July 2018, and the dryness was still not ended in October. **Figure 32** depicts the past volatility in soft wheat yields in France, Germany and the aggregated EU-28, including the 2015 record high yields in France and the EU-28, the 2016 decrease of -32% in the yields of France and -10% in the EU-28, and a low average German yield in 2018 (such a low yield was not seen in Germany since 2003) and even worse in northern EU countries. From 2019 onwards, Wilson expects a strong trend in increasing yields in Eastern and Central EU, which will push average EU-28 yields. In the future, however, although not depicted in the **Figure 32**, more extreme weather events will likely lead to more volatile yields.

Figure 32: Soft wheat yields in France, Germany and EU-28 (t/ha).

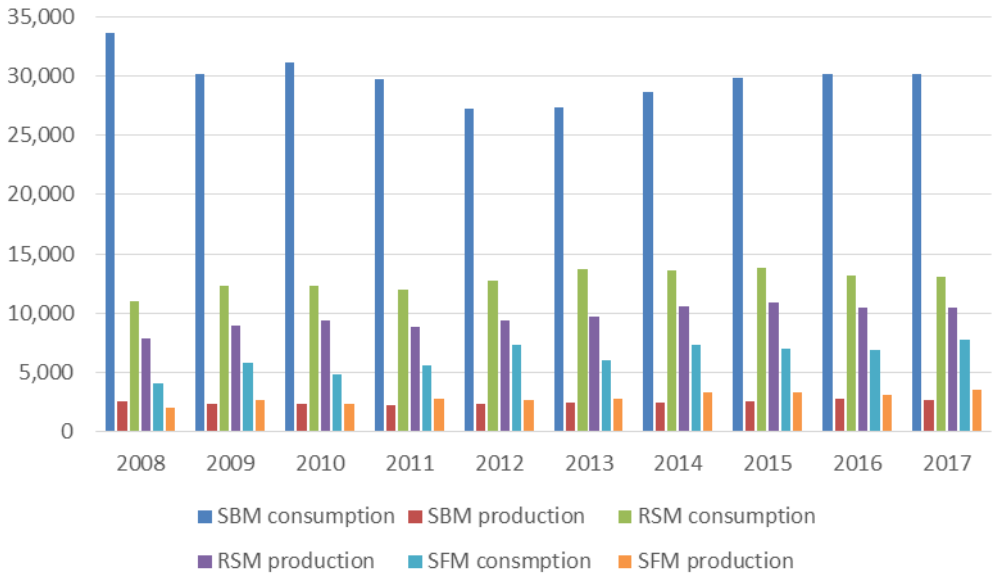


Source: Slide by Wilson (Cargill)

Regarding the prospects for cereal use in feed and industrial processes, Wilson foresees a stable EU food demand of around 100 million tonnes. Starch is also expected to be stable at around 19 million tonnes. With respect to bioethanol, the use of cereals will be stable at around 14 million tonnes, with expansion opportunities being unlikely. Increasing competition on international cereals markets can be especially expected due to growing exports from Russia and Ukraine, as in both countries further investments in infrastructure can be observed, including an increasing port capacity in the region.

Nathalie Lecocq (FEDIOL) outlined the prospects of the EU oilseeds markets as seen by the EU vegetable oil and protein meal industry association. Regarding rapeseed, a solid demand for rapeseed oil in food and a sustained demand for rapeseed-based biodiesel is expected, leading to a stable EU rapeseed crush of around 24 million tonnes by 2021. However, FEDIOL forecasts that the crushing will be done with slightly lower EU production and higher imports. Consumption of sunflower seed oil for the food market is increasing, and EU sunflower seed crush is expected to be rather stable around 8 million tonnes, which will require complementing imports of sunflower oil to meet EU demand. Total production of soybean oil is exceeding EU consumption and leads to exports of soybean oil. However, the soybean oil market is not a driver of soybean crushing, instead it is the stable demand of high-protein feed material. EU meal consumption is higher than production for all meal types (**Figure 33**). The price for rapeseed meal over soymeal is strengthening and is currently 20% above the +60% long-term average. More demand for non-GMO feed material may lead to increases in soybean crush based on EU production (+1 million tonnes by 2021) and stable soybean imports (leading to slightly less soybean meal imports).

Figure 33: EU Production and consumption of oilseed meals (1000 t).



Source: Slide by Nathalie Lecocq (FEDIOL)

Amongst major policy uncertainties that may impact the future development of EU rapeseed oil use in biodiesel, Lecocq mentioned countervailing import duties on soybean based biodiesel (SME) and palm-based biodiesel (PME), and the definition of high-ILUC risk crops. Policy uncertainties that may impact EU production and imports of oilseeds include the future EU policy on pesticides and pesticides residues, as well as on new breeding techniques, and the further development of the US-China trade dispute.

Discussion

In the open discussion it was asked whether volatility due to extreme weather events is actually considered in the market outlook. In the standard, deterministic outlook presented by the Commission this is not explicitly taken into account, but extreme weather events are implicitly covered by the stochastic analysis prepared by the DG JRC and is provided with the outlook. Moreover, last year an uncertainty scenario regarding extreme weather events was presented at the outlook workshop. This work is currently taken forward and further refined.

Regarding crushing capacity of oilseeds it was asked if there is the possibility of switching between crushes of oilseeds, for example from rapeseed to soybeans, and how this could help to reduce import dependency. Switching between crushes is possible in switch plants, but it is not a simple overnight processing decision. Instead, it requires further investment to adapt the plant. With respect to EU rapeseed imports, it was stated that the outlook projects stable area for rapeseed and marginal yield increases. Moreover, market experts pointed out that the EU will keep importing rapeseed because the domestic production is not profitable enough.

Another discussion point was the impact of possible bans of the use of certain pesticides on the productivity of EU cereals and oilseeds production. The effect was considered difficult to predict and it is hard to quantify the additional costs and effects on production. Moreover, it heavily depends on whether the phasing-out of specific pesticides would be gradual or not. Likewise, if pesticide use in the EU is controlled more strictly than in non-EU countries, it might indeed have adverse effects on EU production, at least until alternative pesticides are available. The open question would then be if any lost market shares could be regained after the transition period.

The demand for non-GM feed was also briefly discussed as market driver. Currently about 20% of poultry and 10% of dairy in the EU are GM-free feed. Accordingly there seems to be great potential for growth of non-GM feed production. Market experts, however, stressed that as long as the price for rapeseed meals is sustained, there will be solid demand for non-GM feed. Moreover, participants pointed out that there is heterogeneous political and societal opinions across MS regarding the topic of GMOs and GM food/feed products. In addition, a participant emphasized that substitutability of certain crops is very difficult, as for example high protein soybeans, and it can rather not be expected that all feed can be produced in Europe.

One participant asked what DG AGRI is doing to improve the availability of data on organic agriculture. Commission staff members highlighted that DG AGRI is carrying out considerable work to identify data sources for the organic industry, including work looking at the organic value chain[11]. Furthermore, improving the statistical database with respect to organic agriculture and the value chain is certainly necessary, but there seems to be also reluctance by MS to release data for organics.

Concerning international cereal markets, one participant emphasized the yield evolution in Russia. The audience agreed that increasing wheat yields and production in Russia could indeed put further downward pressure on world market prices, which would make it more difficult for France and other major EU exporters to compete at the world market.

[11] See, for example, the EU study report "Distribution of the added value of the organic food chain".

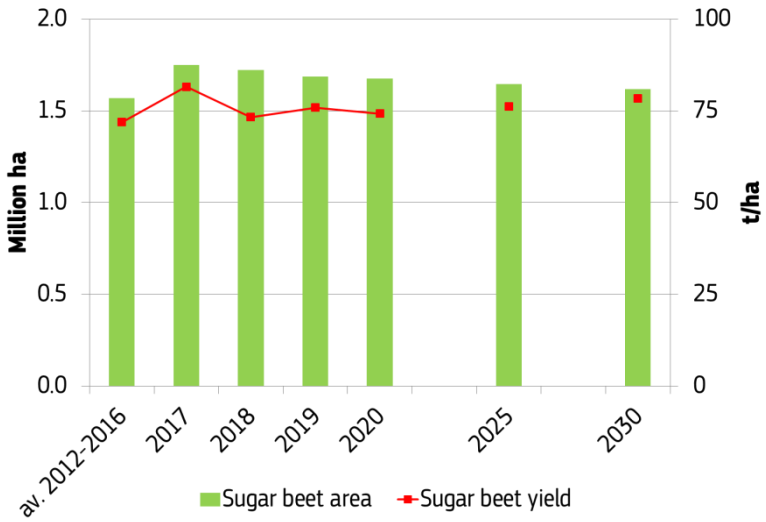
9 Sugar

The Sugar session was chaired by Stefan Uhlenbrock (F.O. Licht) and Sylvie Barel (DG AGRI) presented the preliminary EU outlook for sugar. Jérôme Bignon (Cristal Union) and Julian Price (independent consultant) commented on the EU outlook and provided also their view and expectations on major market drivers and developments for the EU sugar market.

9.1 Preliminary EU outlook, 2018-2030

The preliminary EU outlook for sugar was presented by Sylvie Barel (DG AGRI). Following the quota abolition, EU-28 sugar beet production experienced record levels in the campaign 2017/2018, which was due to both an increase in area and exceptionally high yields. For the projection period a small decrease in area and a short–term break in the yield trend are expected. The break in yield is assumed over 2019 and 2020 due to the ban on seed treatment with neonicotinoids. Following this adjustment period, a steady increase in sugar beet yields is projected over the rest of the outlook period, resulting in an EU average yield of about 78.4 t/ha in 2030 (**Figure 34**).

Figure 34: Sugar beet area and sugar beet yield (EU-28).



Source: Slide by Sylvie Barel (DG AGRI)

The production of sugar is expected to be rather stable in the EU, with sugar production projected at around 19.5 million tonnes in 2030, which is 13% above the quota production. World sugar production increases to 216 million tonnes by 2030, especially with sugarcane production increasing in Brazil. Regarding white sugar prices, a slightly increasing trend for world and EU white sugar prices is projected, with world prices of about 363 EUR/t and EU prices of about 401 EUR/t by 2030. Lower sugar availability in the short term will impact trade, as EU exports of white sugar are expected to decrease, but imports of raw and white sugar remain below 1.5 million tonnes. For consumption, the preliminary outlook projects decreasing sugar and only limited isoglucose consumption. By 2030, sugar consumption is expected to decrease by 4% to 17.8 million tonnes, with further pressure on sugar consumption due to health concerns, mainly translating in (possible) taxes and some reformulation. Isoglucose consumption is expected to remain under 1 million tonnes of white sugar equivalent, mainly due to low sugar prices. There may be, however, scope for increase in the demand for non-caloric sweeteners. Moreover, the outlook shows a 6% increase in industrial use of sugar, including biofuels. With respect to human consumption, a 6% increase of sugar in exported EU processed products is contrasted with a 7% decrease in domestic human consumption.

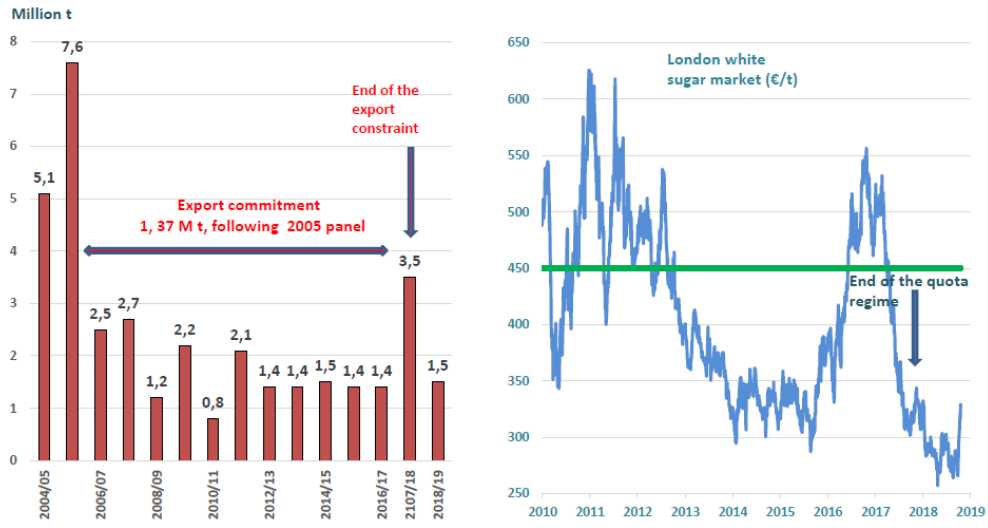
9.2 Presentations by invited experts and discussion

Jérôme Bignon (Cristal Union) first outlined major challenges for EU sugar (beet) production. He highlighted that especially the end of the EU sugar quota regime has a major impact on the production outlook. As the EU sugar market is now more closely linked with the world market, this means more volatility and increased competition on the EU market, but also more opportunities for exports to third countries. With respect to the former, Bignon sees a lack of available tools to cope with a (price) crisis situation. For sugar beet growers, the end of the beet delivery rights and minimum beet prices puts sugar beet production in competition with growing other crops. This implies the need to get a minimum level of gross margin compared with other crops in the rotation based on (i) the sugar beet price (but there is no correlation between sugar and cereals prices), (ii) improvement of production costs (but new regulations on plant protection and new breeding techniques (NBTs) might threaten productivity), and (iii) the need to secure a minimum delivery to the sugar plant (because without minimum delivery there is the risk of a permanent plant closure). Due to the new market situation, sugar producers (companies) face competition in sourcing sugar beets when supply zones overlap, but companies also have the freedom to give contracts to new growers. For the sugar companies this implies a need to improve competitiveness, for example by optimizing logistics, energy efficiency, finding new markets and outlets, etc.

Turning to the topic of plant protection and neonicotinoids, Bignon stressed that three active substances used in pelleted beet seed will be effectively banned in the EU as from 2019/2020. As he sees no sustainable alternative in the short-term, this ban might have a negative impact on average yields, which according to estimates shown by Bignon may affect yields differently across MS: in France by -12% (up to -50% in most affected plots), Belgium -20% (up to 40%), Netherlands between -5% and -20% (-50% in specific sugar beet areas), Austria between -10% and -20%, and the UK up to -20%. Moreover, Bignon highlighted that the ban on Thiram, a fungicide used in pelleted beet seed against early attacks of soil borne fungi, effective as from 2020/2021, may potentially increase pathogen pressure by an estimated 15%. Furthermore, with respect to NBTs, Bignon underlined that the ruling of the Court of Justice of the European Union (ECJ) on mutagenesis and the EU GMO directive may also negatively affect EU sugar beet production.

Regarding the actual and future EU sugar production, Bignon explained that the EU export opportunities will impact and determine the level of production (**Figure 35**). He foresees that the EU will remain a net sugar exporter over the next decade, based on a production of around 19 million tonnes. If the world market prices are attractive before the sowing season, production is likely to be expanded, but the main risk may be the lack of resilience of sugar beet growers (debited to, among others, non-attractive beet prices and the absence of safety nets).

Figure 35: EU export opportunities will impact the level of production.



Source: Slide by Jérôme Bignon (Cristal Union)

With respect to organic sugar in the EU-28, Bignon pointed out that this is a small niche market and that it will not be an alternative for EU beet growers or sugar producers in the short- and medium-term. Close to 80% of organic sugar is imported from third countries like Brazil, Cuba, Paraguay, Colombia, India and Thailand. Bignon highlighted that organic sugar from sugarcane is more competitive, as sugar beet is a highly demanding crop, with pest control and mechanical/manual weed control being the main drivers for production cost above 1000 €/t.

Bignon concluded his presentation by stressing the increased pressure on human sugar consumption in the EU. In France, for example, for beverages with added sugar or sweeteners, taxes in 2012 were 7.5 EUR/hl, but in 2018 a new system was introduced with differentiation between taxes for beverages with sweeteners (3 EUR/hl) and beverages with added sugar (+ sweeteners), where taxes for the latter are put in proportion to the added sugar, leading to a tax increase of around 40%.

Julian Price (independent consultant) presented his view on EU and global sugar markets, first showing that by mid-October 2018 the global raw sugar future market prices have increased by 42% compared to the end of September. This indicates the reaction of speculators to positive market signals, mainly based on lower production forecasts in the EU and Brazil, and India‘s and Brazil‘s role in supporting ethanol prices. Global sugar supply and demand is expected to move from a surplus of around 10 million tonnes towards balance in 2018/2019 (Oct/Sep), following a drop in global production. Owing to lower population growth and health concerns, future global sugar consumption is expected to grow by just 1% per year.

Concerning sugar production in Brazil, Julian Price stressed that both cane and sugar production are predicted to be substantially lower in 2018/2019 compared to 2017/2018. This lower production forecast is partly due to millers switching from sugar to ethanol production in 2018/19, as ethanol pays more than sugar. The 2019/20 campaign, beginning in April 2019, is also expected to be low due to a lack of replanting, i.e. the higher average age of cane implies lower yields.

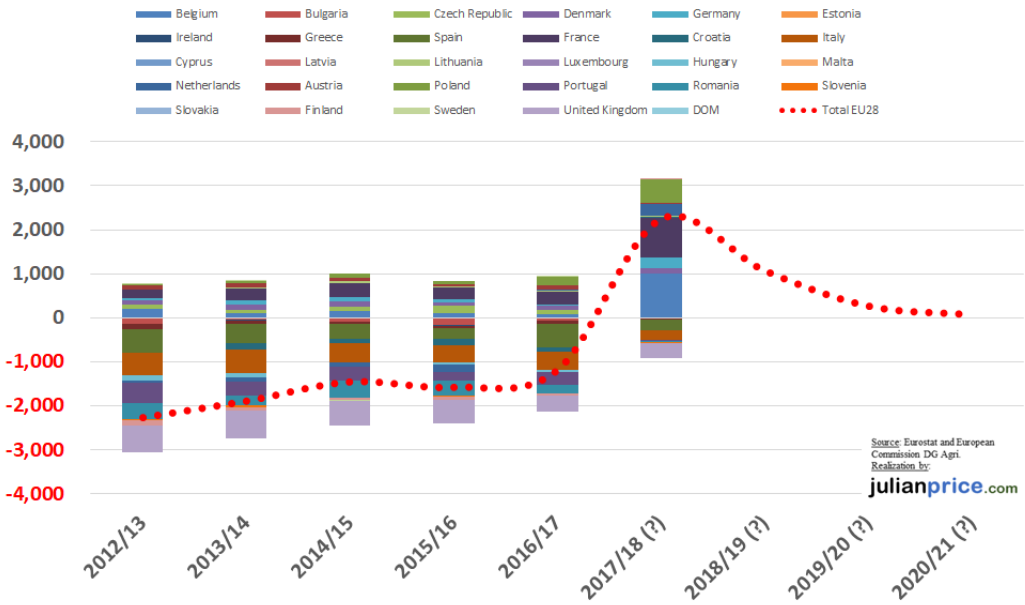
Commenting on the sugar market in Thailand, Price sees the sugar production to drop from 14.7 million tonnes in 2017/2018 to 13.8 million tonnes in 2018/2019, which is due to lack of rainfall, diversion of 500,000 tonnes sugar equivalent to ethanol, and some diversion to fragrant rice and possibly some additional diversion to biochemicals. Thai sugar consumption is expected to decline by about 2% owing to a new sugar tax. Sugar exports from Thailand are forecasted to be lower than the 10.5 million tonnes recorded in 2017/18, of which much was exported under ASEAN preferences. However, with China

importing less, and India subsidising 5 million tonnes of exports, the South East Asian markets are nevertheless expected to remain much contested.

With regard to India and Pakistan, Price commented that government support policies and favourable seasonal conditions in the two countries drove local sugar production to record levels in 2017/18. These record levels are expected to continue in 2018/19, even if weather has been less favourable this year in the Indian state of Maharashtra. Due to the high production, stocks have built up in both India and Pakistan, implying that exports eventually have to come out in large volumes. Accordingly, India will resume exports after a 3-year break (with export subsidies available for 5 million tonnes) and Pakistan will become a net exporter for the first time, with exports of 1.6 million tonnes in 2017/2018 and 1 million tonnes in 2018/2019. As a consequence, both countries will displace exports from Australia and Brazil in the Indian Ocean and Asian sugar markets.

Commenting on the EU trade position in the global context, Price showed that the EU's net trade position changed from being a net importer to a net exporter of around 2.3 million tonnes in 2017/18 (comprising imports of 1.3 million tonnes and exports of 3.6 million tonnes). However, with the lower production forecast for 2018/19 and a gradual erosion of stocks, the EU's net trade position may gradually move towards balance (**Figure 36**).

Figure 36: Net extra-EU sugar trade balance (´000 million tonnes)



Source: Slide by Julian Price (independent consultant)

Discussion

In the open discussion, it was asked how sugar consumption is measured in the EU outlook. It was clarified that sugar consumption is a residual, i.e. the current situation is calculated with data on stocks, exports and imports and the use for ethanol production.

Discussing isoglucose and sugar perspectives, participants pointed towards decreasing sales on the one hand and the bioeconomy as opportunity on the other hand. It was highlighted that the EU is not always competitive and would probably need a market pull, public procurement, standards and labelling to help developing the markets. Moreover, it was also underlined that as long as sugar prices remain low, there is not much potential for an increase in EU sugar production.

A participant commented on the potentially damaging effects of decreasing prices on farm incomes in the wake of the sugar quota abolition. Ways need to be found to

improve resilience of sugar beet growers, but the question on how to achieve this did not bring a clear answer. In addition to necessary market (safety) measures for EU farmers, another participant pointed out that it was clearly not a surprise that sugar production increased after the sugar quota removal, but the current pressure on EU sugar production due to the export subsidies granted in India was not expected.

It was asked why consumption data in the Commission's outlook is different from the balance sheets of the sugar market observatory. This issue could not be clarified completely in the session. However, when looked at more in detail, the difference could be explained by the separation of sugar data in exported processed products in the balance sheets.

A participant asked if the imports of sugar have a downward effect on the EU price and how the elimination of import tariffs (particularly for sugar cane imports with a so called "CXL" import duty of 98 EUR/tonne) would impact EU prices in the short- to medium-term. It was clarified that it is actually the other way around, as the decreasing EU prices have a downward effect on imports, although the mentioned import duty for cane sugar actually makes the cane imports less competitive compared to domestically produced sugar from sugar beet.

List of abbreviations and definitions

AGMEMOD	Agricultural Member State Modelling
CAP	Common Agricultural Policy of the EU
CAPRI	Common Agricultural Policy Regionalised Impact Modelling System
CO2	Carbon dioxide
cwe	Carcass weight equivalent
DG AGRI	Directorate-General for Agriculture and Rural Development
EU	European Union
EU-N13	EU member states that joined in 2004 or later
EU-15	EU member states before 2004
EU-28	EU member states (2018)
EUR	Euro (currency of the Eurozone)
FAO	Food and Agriculture Organization of the United Nations
FTA	Free trade agreement
GDP	Gross domestic product
GHG	Greenhouse gas
GM	Genetically modified
HVO	Hydrotreated Vegetable Oil
ILUC	Indirect land use change
DG JRC	Joint Research Centre
MS	EU member state
OECD	Organization for Economic Co-operation and Development
RED	Renewable Energy Directive
SMP	Skimmed milk powder
SSA	Sub-Saharan Africa
UAA	Utilized agricultural area
UK	United Kingdom
US	United States of America
USD	US dollar
VCS	Voluntary coupled support
WMP	Whey milk powder
WTO	World Trade Organization

List of figures

Annexes

Annex 1. Workshop Agenda

DAY 1 – 22 OCTOBER 2018		
08:30-09:00	Registration and welcome coffee	
09:00-09:30	**Session 1: BACKGROUND OF THE WORKSHOP**	
09:00-09:15	Welcome and background	Giampiero Genovese, DG JRC
09:15-09:30	CAP post-2020	Tassos Haniotis, DG AGRI
09:30-11:00	**Session 2: MACROECONOMIC CONTEXT** **Chair: Hans van Meijl, Wageningen Economic Research**	
09:30-09:45	Baseline macro and policy assumptions	Pierluigi Londero, DG AGRI
09:45-09:55	Presentation	Sonsoles Castillo, BBVA Research
09:55-10:10	Scenario on the possible market impacts of Chinese retaliatory tariffs on US soybean and pigmeat imports	Thomas Chatzopoulos, DG JRC
10:10-10:20	Presentation	Tom Scott, Informa Agra
10:20-11:00	Open discussion	All participants
11:00-11:30	**Coffee break**	
11:30-13:00	**Session 3: FRUIT and VEGETABLES** **Chair: Philippe Binard, Freshfel**	
11:30-11:45	EU agricultural outlook	Marijke van Schagen, DG AGRI
11:45-12:15	Presentations	Jacques Dasque, AREFLH Jan van der Blom, COEXPHAL -EUCOFEL Matthieu Lovery, Groupe Carrefour
12:15-13:00	Open discussion	All participants
13:00-14:30	**Networking lunch**	
14:30-16:00	**Session 4: MEAT MARKETS** **Chair: Phil Bicknell, AHDB**	
14:30-14:45	EU agricultural outlook	Magdalena Grzegorzewska, DG AGRI
14:45-15:15	Presentations	Philippe Chotteau, IDELE Tadeusz Blicharski, POLSUS Raphaël Moreau, Euromonitor
15:15-16:00	Open discussion	All participants
16:00-16:30	**Coffee break**	
16:30-17:45	**Session 5: MILK AND DAIRY MARKETS** **Chair: Jukka Likitalo, Eucolait**	
16:30-16:45	EU agricultural outlook	Andrea Capkovicova, DG AGRI
16:45-17:05	Presentations	Wim Kloosterboer, FrieslandCampina Peter Paul Coppes, Rabobank
17:05-17:45	Open discussion	All participants

DAY 2 – 23 OCTOBER 2018		
08:30-09:00	Registration and welcome coffee	
09:00-09:15	Warm-up	Ignacio Pérez-Domínguez, DG JRC Fabien Santini, DG AGRI
09:15 – 10:45	**Session 6: AGRICULTURE AND THE ENVIRONMENT** **Chair: Doris Marquardt, EEA**	
09:15-09:35	EU agricultural outlook	Maria Bielza, Seidor - external consultant for the JRC Panos Panagos, DG JRC
09:35-09:55	Presentation	Thais Leray, DG CLIMA Petr Havlik, IIASA
09:55-10:45	Open discussion	All participants
10:45-11:15	**Coffee break**	
11:15-12:30	**Session 7 BIOFUELS** **Chair: Holger Matthey, FAO**	
11:15-11:25	EU agricultural outlook	Sylvie Barel, DG AGRI
11:25-11:40	Scenario on Food waste	George Philippidis, DG JRC
11:40-12:00	Presentations	Marko Janhunen, Leaders of Sustainable Biofuels William Hohenstein, USDA
12:00-12:30	Open discussion	All participants
12:30-13:50	**Networking lunch**	
13:50-15:30	**Session 8 CEREALS, PROTEIN CROPS AND OILSEEDS** **Chair: Hubertus Gay, OECD**	
13:50-14:05	EU agricultural outlook	Koen Mondelaers, DG AGRI
14:05-14:20	Scenario on drivers for protein crop development	Hans Jensen, DG JRC
14:20-14:35	Member States outlook with focus on cereal industrial uses	Martin Banse, Agmemod
14:35-14:55	Presentations	Sandy Wilson, Cargill Nathalie Lecocq, FEDIOL
14:55-15:30	Open discussion	All participants
15:30-16:00	**Coffee break**	
16:00-17:00	**Session 9 SUGAR** **Chair: Stefan Uhlenbrock, F.O. Licht**	
16:00-16:10	EU agricultural outlook	Sylvie Barel, DG AGRI
16:10-16:30	Presentations	Jérôme Bignon, Cristal Union Julian Price, sugar analyst and consultant
16:30-17:00	Open discussion	All participants
17:00	**Closure by Tassos Haniotis (DG AGRI) and Giampiero Genovese (DG JRC)**	

Annex 2. Previous workshop proceedings

Proceedings of previous workshops are available from the JRC Science Hub website (https://ec.europa.eu/jrc/en):

Bartova, L., M'barek, R. (eds) (2008). Commodity Modelling in an Enlarged Europe. November 2006 Workshop Proceedings. AGMEMOD Report V. JRC Scientific and Technical Reports, European Commission, EUR 22940 EN/5. http://ftp.jrc.es/EURdoc/JRC42096.pdf

Bartova, L., Gay, S.H., M'barek, R. (eds) (2008). Commodity Market Development in Europe - Outlook. November 2007 Workshop Proceedings. JRC Technical Notes, European Commission, EUR 23377EN. http://ftp.jrc.es/EURdoc/JRC44305.pdf

Fellmann, T., M'barek, R., Gay, S.H. (2009). Commodity Market Development in Europe - Outlook. November 2008 Workshop Proceedings. JRC Technical Notes, European Commission, JRC 51276. http://dx.doi.org/10.2791/47044

Fellmann, T., Van Doorslaer, B., M'barek, R., Gay, S.H. (2010). Commodity Market Development in Europe - Outlook. November 2009 Workshop Proceedings. JRC Technical Notes, European Commission, JRC 60425. http://dx.doi.org/10.2791/60616

Fellmann, T., M'barek, R., Gay, S.H. (2011). Commodity Market Development in Europe - Outlook. October 2010 Workshop Proceedings. JRC Scientific and Technical Reports, European Commission, JRC 65170. http://dx.doi.org/10.2791/70290

Fellmann, T., Hélaine, S. (2011). Commodity Market Development in Europe - Outlook. October 2011 Workshop Proceedings. JRC Scientific and Technical Reports, European Commission, JRC 67918. http://dx.doi.org/10.2791/38411

Fellmann, T., Hélaine, S. (2012). Commodity Market Development in Europe - Outlook. October 2012 Workshop Proceedings. JRC Scientific and Policy Reports, European Commission, JRC 76028. http://dx.doi.org/10.2791/38411

Fellmann, T., Santini, F. (2014). Commodity Market Development in Europe - Outlook. October 2013 Workshop Proceedings. JRC Scientific and Policy Reports, European Commission, JRC 85607. http://dx.doi.org/10.2791/78384

Şuta, C-M., Araujo Enciso, S.R., Pérez Domínguez, I., Fellmann, T., Santini, F. (2014). Commodity Market Development in Europe - Outlook Workshop 2014. Proceedings. JRC Scientific and Policy Reports, European Commission, JRC 92558. http://dx.doi.org/10.2791/669705

Ronzon, T., Santini, F., Araujo Enciso, S.R., Fellmann, T., Pérez Domínguez, I. (2015). Medium-term outlook for the EU agricultural commodity market - Proceedings of the October 2015 workshop. JRC Scientific and Policy Reports, European Commission, JRC 98329. http://dx.doi.org/10.2791/478085

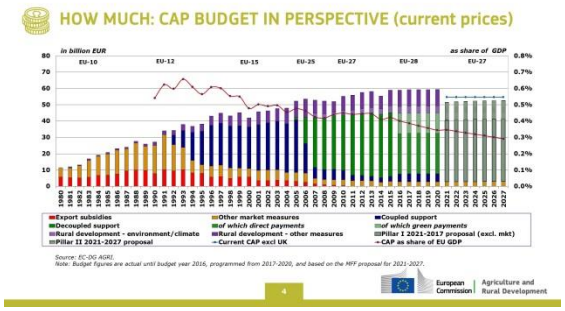
Chatzopoulos, T., Fellmann, T., Jensen, H. (2016): EU commodity market development: Medium-term agricultural outlook. Proceedings of the October 2016 workshop. JRC Conference and Workshop Reports, European Commission, JRC104101, http://dx.doi.org/10.2791/157002

Pérez Domínguez, I., Fellmann, T., Chatzopoulos, T., Pieralli, S., Jensen, H., Barreiro-Hurle, J., Micale, F. (2017): EU commodity market development: Medium-term agricultural outlook. Proceedings of the October 2017 workshop. JRC Conference and Workshop Reports, European Commission, JRC109451, doi:10.2760/847534

Annex 3. Presentations

Session 1: Background of the Workshop

Tassos Haniotis (DG AGRI)



WHAT FOR: PRIORITIES OF THE FUTURE CAP

Strengthening environment and climate action

- *EU sets wide objectives and list of available types of intervention on air, water, soil, biodiversity*
- *MS Strategic plans define the pertinent actions to meet EU objectives based on MS specific needs*
- *Farmers apply for schemes and comply with stringent environmental criteria defined by EU/MS*

Better targeting of support

- *DPs provide an important safety net for farm income lagging behind the rest of the economy*
- *Better targeting of income support improved with internal convergence and redistributive payments*
- *Fairer distribution is improved with digressive cuts above 60 000 € and capping at 100 000 €*

Relying more on knowledge, innovation and technology

- *A better link of what we know to what we grow is promoted by the use of smart agriculture*
- *Anticipating future knowledge needs promoted with more funding for research to address them*
- *Exchange and knowledge transfer relies more on improved functioning of the FAS/EIP Systems*

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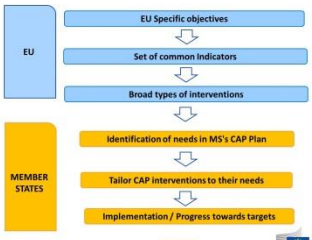
HOW: THE NEW DELIVERY MODEL OF THE CAP



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HOW: FOCUS ON PERFORMANCE

Multi-annual programming approach for the whole CAP

COMMON OBJECTIVES INDICATORS TYPES OF INTERVENTIONS

Assurance	***Annual Performance Clearance*** Linking expenditure to output	Common Output Indicators
Monitoring	***Annual Performance Review*** Checking progress towards targets	Common Result Indicators
Policy performance	***Interim Evaluation*** Assessing performance towards objectives	Common Impact Indicators

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IMPACT ASSESSMENT: ITS CONCLUSIONS AT A GLANCE

Redistribution and better targeting of support: income effects

- *Income effects are asymmetric with respect to farm size and sector affected*
- *Both cuts and the distribution of support matter, negatively impacting short-run competitiveness*
- *Flexibility in redistribution of support crucial in mitigating potentially negative income impacts*

The dilemma of raising environmental ambition: mandatory or voluntary?

- *Voluntary measures increase flexibility and improve targeting, but introduce uncertainty in ambition*
- *Mandatory measures increase area coverage and improve ambition, but are by design less targeted*
- *The right balance, based on needs and evidence, requires appropriate administrative capacity*

Risks and mitigating factors: impact on modernisation and simplification

- *Challenges at the EU level: Simplification of legislation and approval procedures of Strategic Plans*
- *Challenges at the MS level: Evidence supporting a needs-based approach for Strategic Plans*
- *Challenges at the farm level: Better link to advice and faster integration into Farming 4.0 realities*

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REPORTS AND MORE INFORMATION

On MFF Material

https://ec.europa.eu/commission/publications/factsheets-long-term-budget-proposals_en
http://ec.europa.eu/budget/mff/index_en.cfm

On CAP legislative proposals, Impact Assessment and Background

https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/future-cap_en
https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/future-cap_en#documents

Thank you for your attention!

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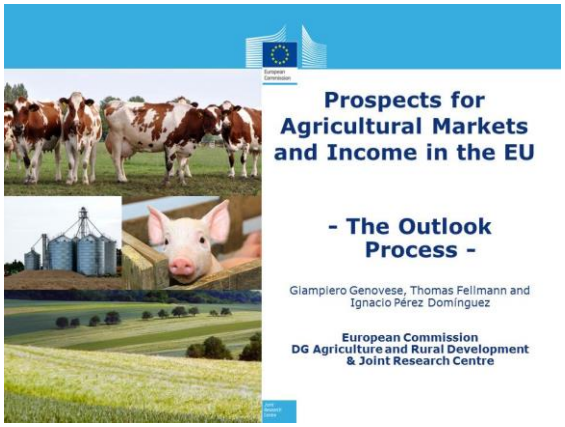
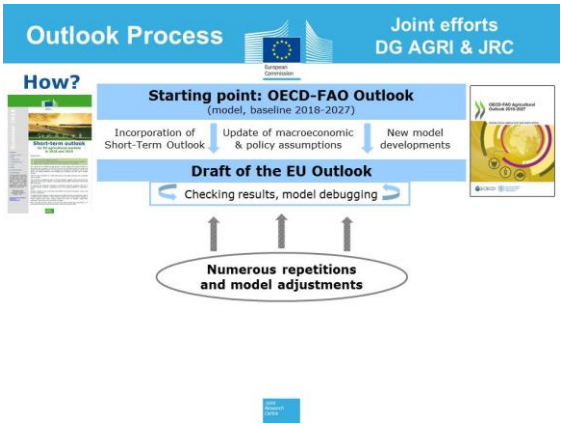
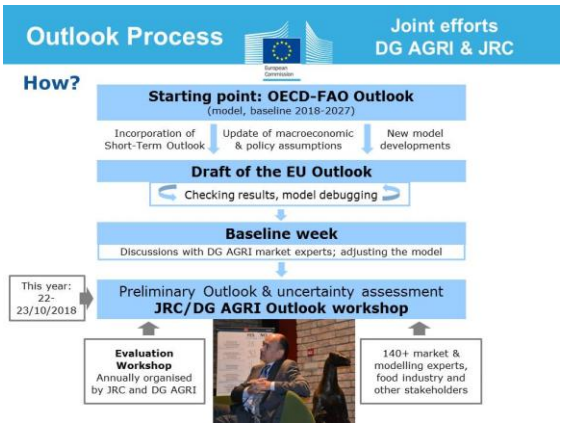
Giampiero Genovese (DG JRC)







Outlook Process

Joint efforts DG AGRI & JRC

How?

Starting point: OECD-FAO Outlook
(model, baseline 2018-2027)

Incorporation of Short-Term Outlook | Update of macroeconomic & policy assumptions | New model developments

Draft of the EU Outlook
Checking results, model debugging

Baseline week
Discussions with DG AGRI market experts; adjusting the model

Preliminary Outlook & uncertainty assessment
JRC/DG AGRI Outlook workshop

Incorporation of comments, final model adjustments

This year: 06-07/12/2018

Final EU Agricultural Outlook
Publication & DG AGRI Outlook Conference

EU Agricultural Outlook

Uncertainty analysis to accompany the Outlook

- Apart from the stochastic subsets, also deterministic **scenarios**

This year's planned scenarios:

- Possible effects of US/China trade disruptions (Aglink-Cosimo)
- Increased EU plant protein self-sufficiency (Aglink-Cosimo)
- Reduction of households' food waste (MAGNET)

Additional analysis to accompany the Outlook

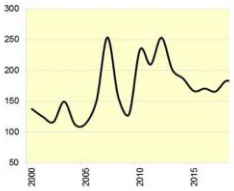
- EU Member State results for a specific sector (AGMEMOD)
- Environmental indicators (CAPRI), including soil erosion (RUSLE)

EU Agricultural Outlook

Does uncertainty matter in agricultural commodity markets outlook?

- **Partial Stochastic Analysis**: yield and macroeconomic uncertainties taken into account –> implemented by JRC, DG AGRI, OECD, FAO

Possible price paths for soft wheat in the EU (€/t)



?

EU Agricultural Outlook

Does uncertainty matter in agricultural commodity markets outlook?

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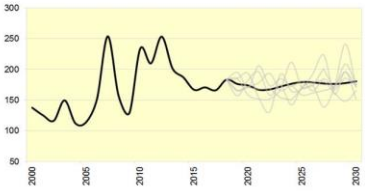

US/China trade dispute scenario

- Since January 2018 the US and China have duelled in an escalating trade dispute.
- US tariffs target non-agricultural products, but Chinese tariffs include US agricultural commodities.
- Modest effects and trade diversion are frequently theorized but barely quantified.
- We examine the potential impacts on agricultural markets in the case of an unresolved US/China trade dispute.
- ***How would markets react if the Chinese tariffs on US soybean (+25%) and pigmeat (+50%) were to stick around?***

EU Agricultural Outlook

Does uncertainty matter in agricultural commodity markets outlook?

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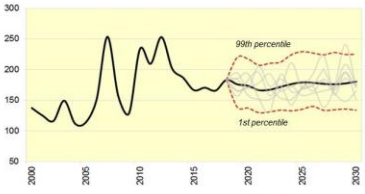
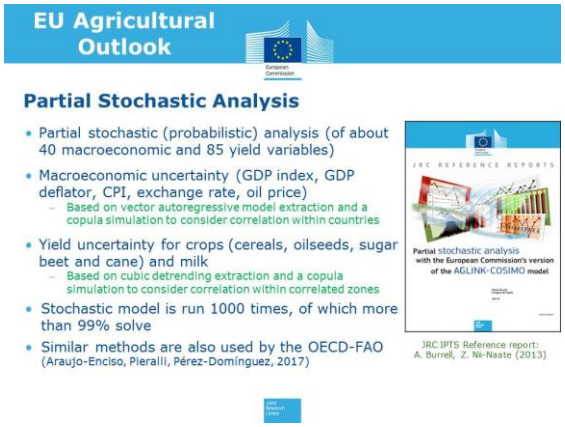


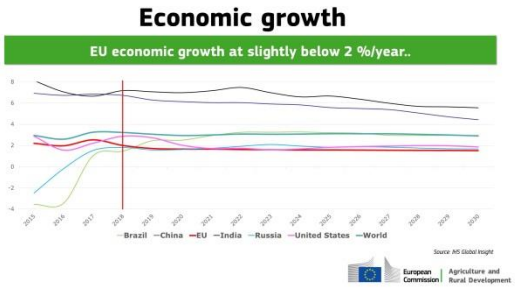
Increased EU plant protein self-sufficiency

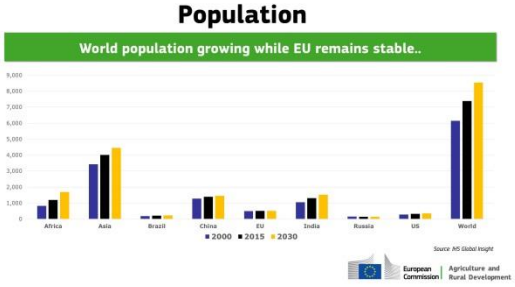
- The EU has a deficit for concentrated sources of protein (EU protein balance sheet)
- The EU is dependant on a limited number of supplying countries (USA, Brazil, Argentina)
- Already in 2013 the European Commission launched a Focus Group on protein crops
- In here we use a model to analyse the potential impacts on EU agricultural markets of a protein plan to reduce the high dependency from protein imports.
- For this we incorporate 3 drivers to the analysis: reduction of palm oil imports, introduction of voluntary coupled support to protein crops and the in protein crop yields.

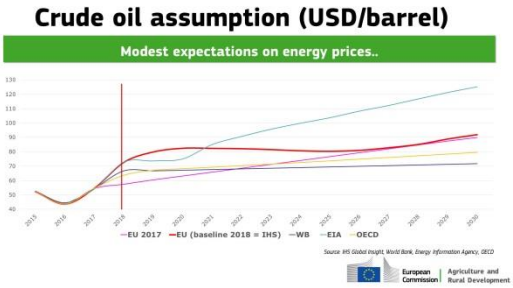


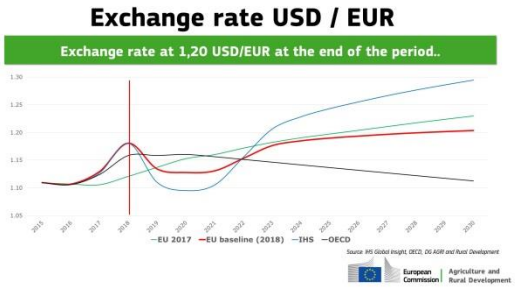
Session 2: Macroeconomic context

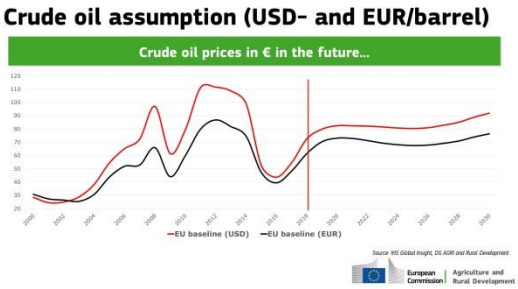
Pierluigi Londero (DG AGRI)



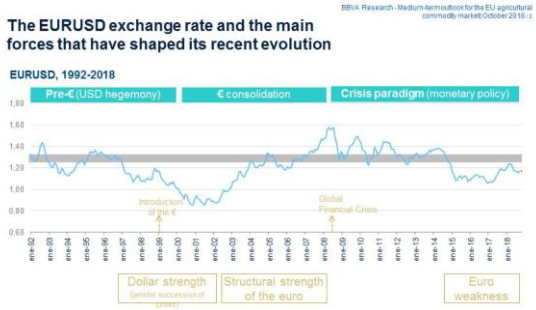


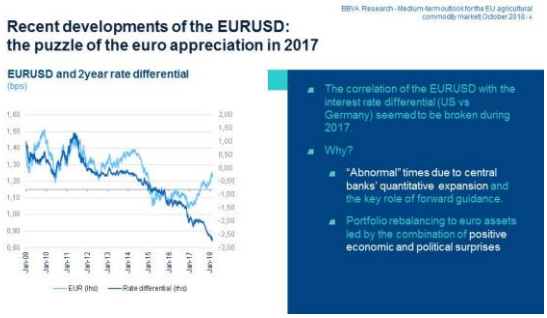


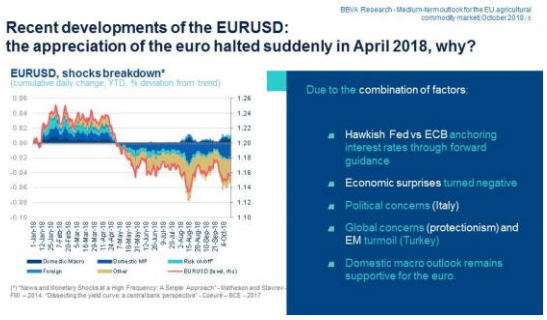


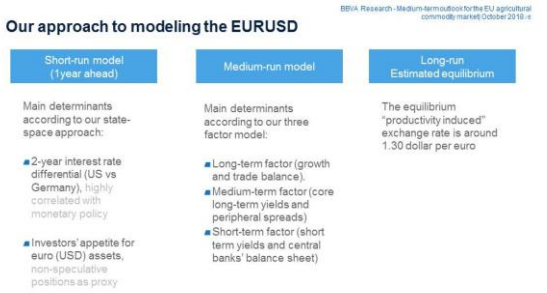


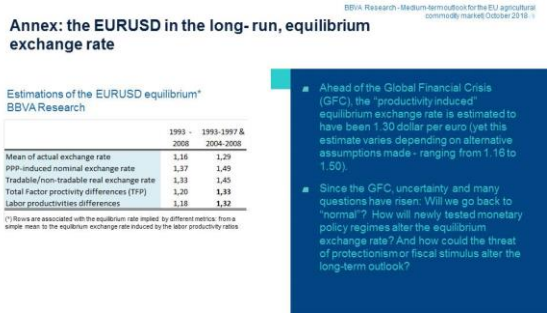
Sonsoles Castillo (BBVA Research)





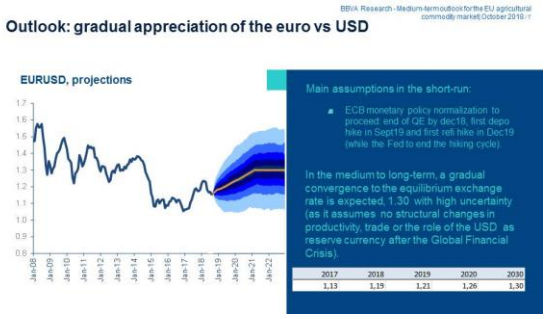






	1993 - 2008	1993-1997 & 2004-2008
Mean of actual exchange rate	1,16	1,29
PPP-induced nominal exchange rate	1,37	1,49
Tradable/non-tradable real exchange rate	1,33	1,45
Total Factor proctivity differences (TFP)	1,20	1,33
Labor productivities differences	1,18	1,32

(*) Rows are associated with the equilibrium rate implied by different metrics: from a simple mean to the equilibrium exchange rate induced by the labor productivity ratios



2017	2018	2019	2020	2030
1,13	1,19	1,21	1,26	1,30

Thomas Chatzopoulos (DG JRC)

Major drivers of soybean and pigmeat trade

3/10

Chinese import demand	US export demand
▪ Population and income growth lead to more diversified diets ▪ Domestic feed and livestock industries develop further ▪ Domestic policies for self-sufficiency favour grains over soybean ▪ Border policies favour the domestic crushing industry ▪ Currency and price competitiveness (US, South America, EU, Canada)	▪ Biodiesel production ▪ Strong crushing industries and prioritization of feed for domestic production limit the quantity of soybeans available for export ▪ Rising world import demand ▪ Price competitiveness (China, South America, EU, Canada)
▪ Top importer of soybean	▪ Leading exporter of soybean
▪ Top importer of pigmeat	▪ Leading exporter of pigmeat

Model and scenario assumptions

4/10

- Simulation model of global agricultural markets (Aglink-Cosimo)
  - Generates the EU Medium-Term Outlook projections
  - Domestic and world market clearing
  - Built-in bilateral trade module for this scenario
    - Trade flows = *f* (price ratios, exchange rates, domestic policies)
- Chinese tariffs (ad val.) are maintained over the medium term

Commodity	Baseline tariffs	Scenario tariffs	
Origin	*World*	*US*	*RoW*
Soybean	2.4%	27.4%	2.4%
Pigmeat	12%	62%	12%

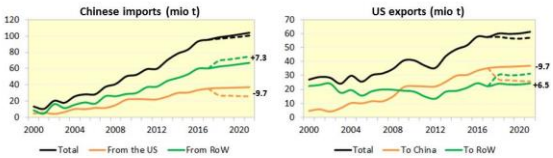
Note: RoW – 'Rest of the World'

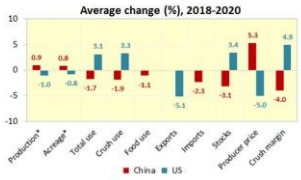
- Sensitivity analysis: tariffs + macroeconomic 'distortion'*
  - US: CPI ↑ 1.0%, GDPD ↑ 0.5%, GDPI ↓ 0.5%
  - China: CPI ↑ 1.0%, GDPD ↑ 0.7%, GDPI ↓ 0.9%

**Source: Inspired by IHS (https://ihsmarkit.com/solutions/us-china-trade-war-impacts.html)*

Results: soybean markets

5/10





**2019-2020 average*

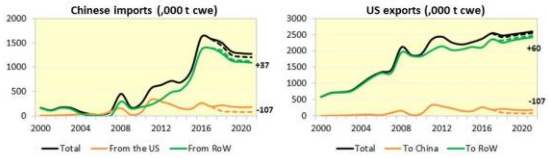
Results: soybean markets

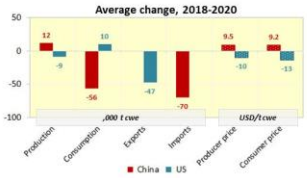
6/10

- Chinese imports from the US: 36% → 27%
- US exports to China: 60% → 47%
- Trade diversion
  - Total US exports drop, exports from the usual suspects rise (<1%)
    - Brazil, Argentina, Canada, Paraguay, Ukraine
  - Global imports decline (2%) and world prices go up (<1%)
  - Increased plantings in China, Brazil, and Argentina (2019f, <1%)
- What about the EU?
  - Near-zero effect (lower imports of soybean, higher domestic prices; <1%)

Results: pigmeat markets

7/10





Results: pigmeat markets

8/10

- Bilateral trade-flow shares halve
  - Chinese imports from the US: 14% → 7%
  - US exports to China: 8% → 4%
- Trade diversion
  - US redirects exports to RoW (mainly Asia and Africa) while other key exporters (EU, Brazil, Canada) lose some market share (<1%)
  - World prices drop (<1%)
- What about the EU?
  - Near-zero effect (lower exports of pigmeat, lower domestic prices; <1%)

Caveats

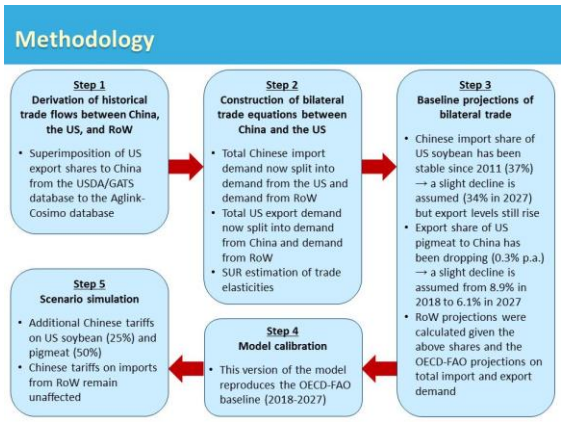
9/10

- Non-spatial modelling framework
  - No transport costs
- Heterogeneous qualities not considered (no Armington)
  - Different soybean protein levels
  - Different types or cuts of meat
- Bilateral trade sub-module covers only China and the US
  - US soybean may still make it to China via South America

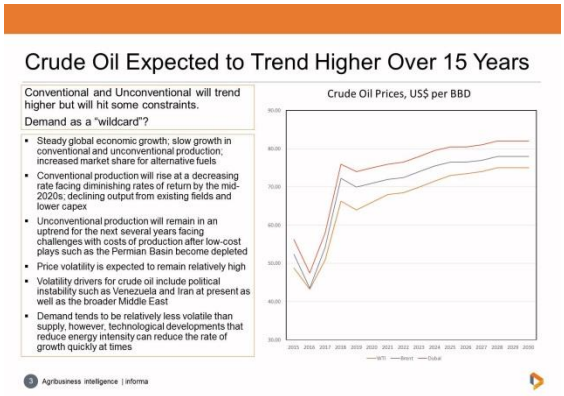
Takeaways

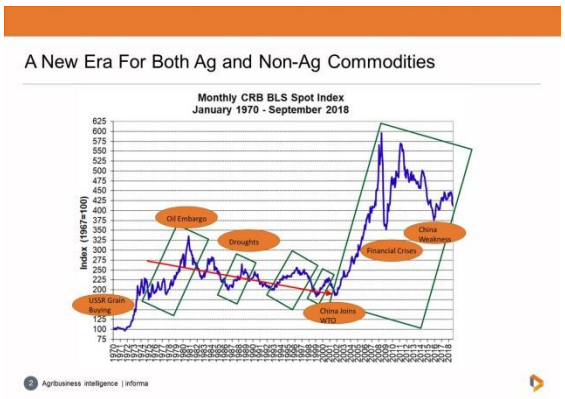
10/10

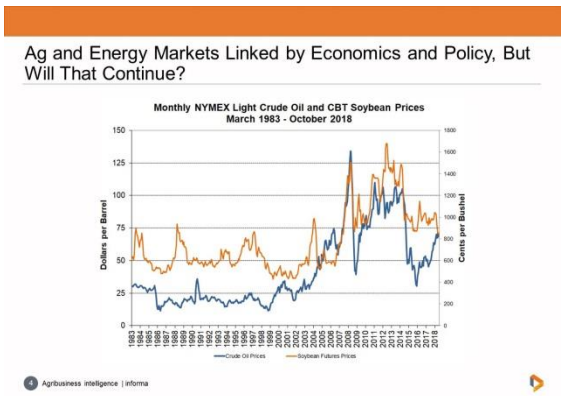
- The potential impacts of the US/China trade dispute are visible on agricultural market fundamentals
- **The trade dispute is a lose-lose proposition**
  - Producer prices in China: ↑ 5.3% (soybean), ↑ 0.5% (pigmeat)
  - Producer prices in the US: ↓ 5.0% (soybean), ↓ 0.7% (pigmeat)
  - Inflation would worsen mainly consumer prices
- **Trade diversion leads to modest world impacts**
  - Non-discretionary demand, highly tradable products
  - Other protein meals gain importance
- **Chinese and US agriculture: what does the future hold?**
  - Can China stop importing soybean? ***No.***
  - Can China stop importing soybean from the US? ***There is no escape.***
  - So, what will China do? ***Minimize dependency on US imports.***
  - Will the US revise its export marketing strategy? ***Yes.***



Tom Scott (Informa Agra)







Session 3: Fruit and vegetables

Marijke van Schangen (DG AGRI)

Main drivers of apples market development

Less processed and more fresh

→ Fresh: stable consumption and more exports

→ Processing down

→ Lower imports

→ Lower waste

→ Stable production

Main drivers of tomato market development

Demand !

→ Fresh:
- →Domestic: diversity, convenience, organic, local…: smaller but more value
- →Trade: seasonality, competition

→ Processed:
- →Domestic: Mediterranean lifestyle, processed food
- →Trade: competition, exports = imports by 2030

Main drivers of peaches and nectarines market development

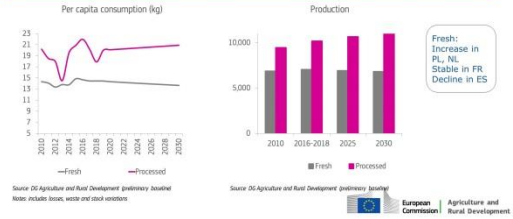
Restructuration and competition

→ Competition on the consumption side

→ Restructuration: lower area and higher yield, towards more quality

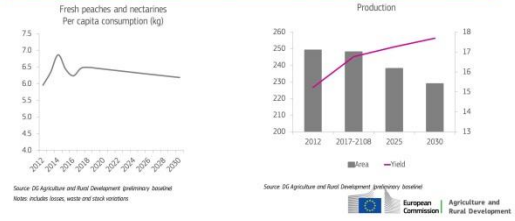
Tomatoe consumption and production

Down mainly because of the change towards smaller varieties



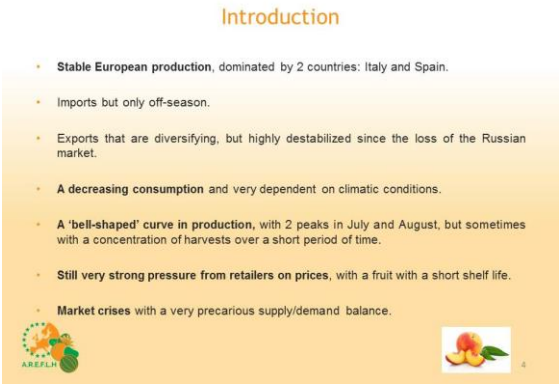
Peaches consumption and production

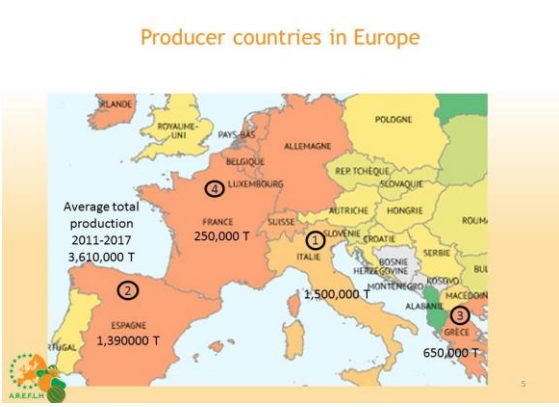
Slightly down

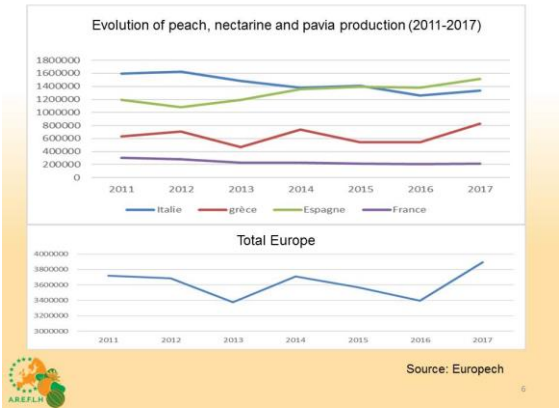


Questions for panel discussion

Jacques Dasque (AREFLH)







Situation of the main European exporting countries of peaches and nectarines

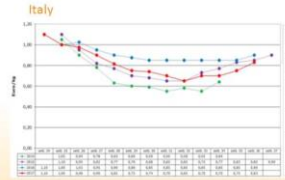
Source: Datacomex

Apples, Production and Markets

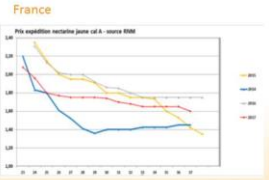
- **The European apple orchard has been stable for 5 years** after a significant decrease
- **Poland, European leader in apple production**, is looking for new markets
- Significant intra-European trade
- Third-country imports are down

- **2018: one of the most important harvests, comparable to 2014**
- The largest harvest for Cripps Pink, Gala, Jonagored, Red Jonaprince, Champion Pinova
- Poland reaches its highest level
- **Good quality overall, sizes and colouring to be monitored**
- Significant supply potential for the industry
- Low harvest in China opens up prospects?
- Earliness, particularly in northern Europe

Italy

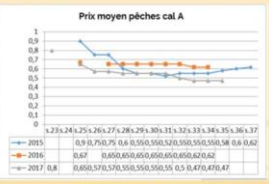


France



Spain-Catalonia

Greece

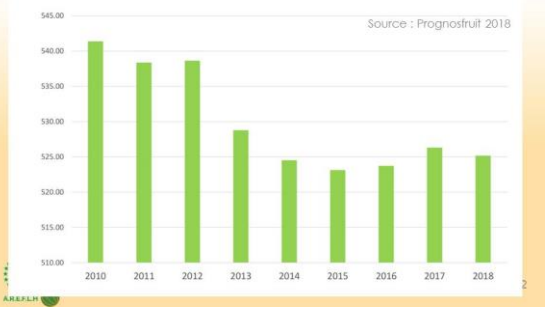


Sources: AOP nationales

A sharp drop in surface area and relative stability since 2014

Prognosfruit

EU Apple orchard ('000 HA)



Conclusions

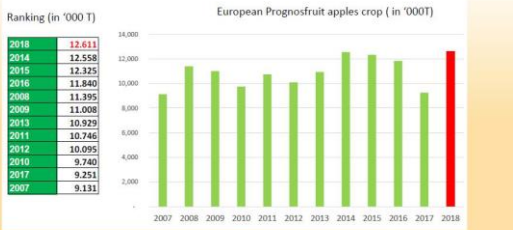
- A production of peaches and nectarines that allows a **satisfactory supply** to the EU market.
- But also a **great fragility**, and the permanent risk of supply/demand imbalance if the climatic conditions are not favorable to production as for consumption.
- **Strong pressure from large retailers** on prices, which no longer allows the market to rebalance itself when supply decreases.
- The industrial market, which is not very profitable, does not allow supply to be regulated.
- Export is a key factor in **market management**.

Prognosfruit

After an historically low crop, an historically high crop

Ranking (in '000 T)

2018	12.611
2014	12.558
2015	12.325
2016	11.840
2008	11.395
2009	11.008
2013	10.929
2011	10.746
2012	10.095
2010	9.740
2017	9.251
2007	9.131



Source : Prognosfruit 2018

Situation in 2018

- European production of peaches, nectarines and pavia was lower in 2018 than in 2017.
- **2.8 million tonnes of peaches and nectarines are expected,** a decrease of 11% compared to 2017 and 4% compared to the 2012/2016 average.

	Pêche	Pêche plate	Nectarine	Pavie	TOTAL *Pêche R + Pf+ Nectarine*
TOTAL EUROPE 2018	**1 154 421**	**312 599**	**1 369 441**	**835 167**	**2 836 461**
RAPPEL 2017	1 260 816	354 741	1 577 548	777 037	3 193 105
MOYENNE 2012-2016	1 216 198	234 328	1 519 518	697 202	2 970 044
VARIATION 2018/2017	**- 106 395**	**- 42 142**	**- 208 107**	**+ 58 130**	**- 356 644**
	- 8%	*- 12%*	*- 13%*	*+ 7%*	*- 11%*
VARIATION 2018 / Moyenne 2012-2016	**- 61 777**	**+ 78 271**	**- 150077**	**+ 137 965**	**- 133 583**
	- 5%	*+ 33%*	*- 10%*	*+ 20%*	*- 4%*

Unité : tonnes

Top 5: golden declines, gala continues to grow

Prognosfruit

TOP 5 VARIETIES TRENDS

Organic production is progressing but remains marginal

Prognosfruit

Organic apples

380.000 T , corresponding to 3,5% of the crop

in 000 T	2016 CROP	% ORGANIC	ORGANIC CROP	CROP 2017	% ORGANIC	ORGANIC CROP	2018	% ORGANIC	ORGANIC CROP
AT	40.000	0,15	6.000	67.000	0,15	10.050	184.000	0,15	27.600
DE	1.033.000	0,07	72.310	597.000	0,08	47.760	990.000	0,09	89.100
FR	1.515.000	0,05	75.750	1.424.000	0,05	71.200	1.502.000	0,05	75.100
RO	327.000	0,05	16.350	230.000	0,05	11.500	320.000	0,05	16.000
IT	2.272.000	0,04	90.880	1.704.000	0,04	68.160	2.200.000	0,04	132.000
NL	317.000	0,04	12.680	228.000	0,06	13.680	259.000	0,06	15.540
UK	183.000	0,04	7.320	206.000	0,04	8.240	220.000	0,04	8.800
SLO	12.000	0,03	360	6.000	0,02	120	65.000	0,02	1.300
BE	234.000	0,02	4.680	88.000	0,022	1.936	217.000	0,025	5.425
CZ	139.000	0,02	2.780	102.000	0,02	2.040	150.000	0,02	3.000
EL	259.000	0,01	2.590	231.000	0,02	4.620	286.000	0,02	5.720
PL	4.035.000	0,01	40.350	2.870.000	0,01	28.700	4.480.000	0,01	44.800
IRI	35.000	0,01	350	66.000	0,02	1.320	108.000	0,02	2.160
TOTAL	10.401.000	0,032	332.400	7.819.000	0,034	269.326	10.983.018	0,035	426.545

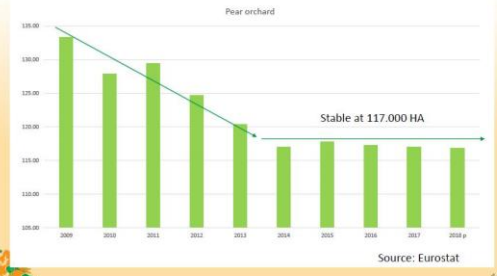
Source : Prognosfruit 2018

15

After a sharp drop in surfaces, stability is restored

Pear total EU: Area (1000 HA)

Prognosfruit



19

Fresh market: 2/3 - Industry: 1/3

Prognosfruit

Apples supply balance 2018

Total production of 14 MS in previous slide

SUPPLY BALANCE	2015	2016	2017	2018
PRODUCTION	11.244	10.970	8.364	11.579
PROCESSING	3.820	3.536	2.652	3.916
FRESH	7.424	7.434	5.712	7.663
RATIO FRESH	66%	68%	68%	66%
RATIO PROCESSING	34%	32%	32%	34%

Source : Prognosfruit 2018

16

2018, world production

EU-28 crop in perspective

Prognosfruit

Ranking	Year	'000 T
1	2011	2.652
2	2014	2.425
3	2015	2.394
4	2013	2.330
5	F2018	2.327
6	2010	2.276
7	2017	2.239
7	2016	2.173
8	2008	2.168
10	2012	1.888

Y2018 in perpective		
2.331	AV10Y	-0,2%
2.312	AV5Y	0,6%
2.246	AV3Y	2,6%
2.283	2017	3,9%

Source : Prognosfruit 2018

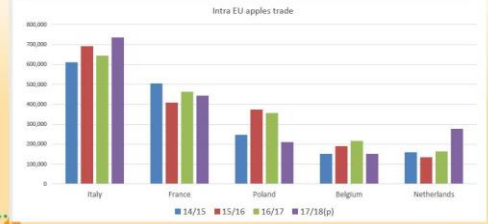
20

Europe, first client

Prognosfruit

Intra EU trade

Intra EU trade : 2,15 to 2,3 Mio T , worth ca 2,2 billion €



Source : Prognosfruit 2018

17

The Netherlands and Belgium dominate European trade

Main intra EU players

Prognosfruit

Top 10 in T	13/14	14/15	15/16	16/17	17/18
Netherlands	210.128	238.251	272.019	336.019	310.339
Belgium	165.633	275.909	315.322	284.605	255.172
Italy	130.236	143.167	144.067	124.374	146.706
Spain	79.416	67.844	48.988	63.725	82.163
Portugal	71.205	80.378	45.846	43.829	64.399
France	21.165	20.531	18.389	12.921	24.961
Germany	13.832	13.564	9.997	10.738	17.243
Greece	2.475	2.144	2.895	3.082	4.975
Poland	2.242	7.188	13.276	8.037	3.042
Austria	1.224	1.436	1.669	1.616	2.264

Source : Prognosfruit 2018

21

Pears, production and markets

- Production potential declined sharply and then **remained stable at around 177,000 hectares**
- **Italy is the leading producer**, followed by the Netherlands, Belgium and Spain
- Conference Pear: each country has its own specificity (Abbate - Italy, Rocha -Portugal, Guyot and Comice - France…)
- **Exports dominated by the Netherlands and Belgium**
- Off-season imports from the Southern Hemisphere
- The pear is looking for a second wind

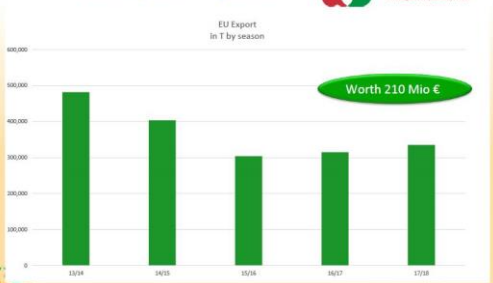
- 2018: 100,000 tonnes more than in 2015 and 2016?
- Quality: lower sizes and large price differences between sizes by conference
- Start of campaign on the basis of 2017 conference prices,
- Exports should be profitable

18

Export stability

EU export of pears

Prognosfruit



Source : Prognosfruit 2018

22

The balance of power between upstream and downstream actors is lop sided: 15 central purchasing bodies control nearly 60% of fruit and vegetable distribution compared to 1500 producer organisations representing 60% of European production

This results in:

1.. **strong and continuous pressure on producer prices,** whatever the volumes involved
2. **abusive and unfair practices** allowed by the dominant position of downstream actors
3. **large price falls in the event of a crisis** and which undermine the producers' capacity for modernisation

It is thus necessary to:

- **establish EU legislation that regulates these practices and avoids abuses** (payment deadlines, discounts, sales below cost, supervised promotions, etc.)

- **strengthen the bargaining power of producer organisations** and their associations through a CMO

- **clarify the application of competition rules** in order to enable POs/APOs to exchange information on volumes and prices

23

Short Supply Chains

The fruit and vegetable market is diverse and requires different responses for each niche. All of them are important and should not be opposed. They are complementary.

Short supply chains: reinforce farmers' markets, direct sales on the farm, cover markets in large metropolitan areas, etc.

- Response: producer stores, producer/consumer organizations e.g. AMAP France)
- Necessary organization to guarantee quality, origin (traceability) and identification

National and European markets dominated by large retailers:

- Large retail requires high volumes, quality continuity and logistics services
- **The answer: producer organisations**

Far market Export:

- Necessary strong logistical organization, adaptation to the specific requirements of each country
- **The answer: large producer organizations and trading groups**

Titre de la présentation 24

Plant Protection Products

Critical situation of fruits and vegetables regularly questioned by certain NGOs and the media and classified as dangerous to health

The reality:

1. a significant evolution over the past 30 years of production methods towards sustainable agriculture

- more than 60% of crops under integrated production (e.g. eco-responsible orchards in France) and organic production between 5 and 8%.
- Extensive compliance with European legislation (EFSA 2015 97.2% of samples are within legal limits, 53.3% of which are free of any residue)
- European and global research mobilized on non-chemical alternatives

2. high pressure of diseases and pests on crops with new invasive diseases (globalisation of trade) and the need for new control strategies due to climate change

3. markets demand products of high quality (absence of internal and external defects)

4. urgency of having economically acceptable biological alternatives

5. the need to communicate on a scientific and regulatory basis

Titre de la présentation 25

Titre de la présentation 26

Thank you for your attention!

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33000 Bordeaux, France

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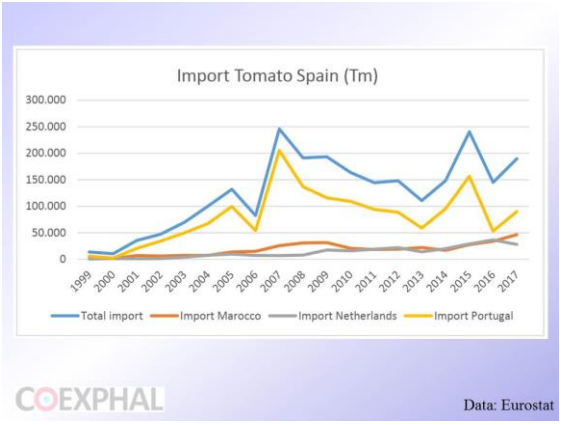
contact@areflh.org

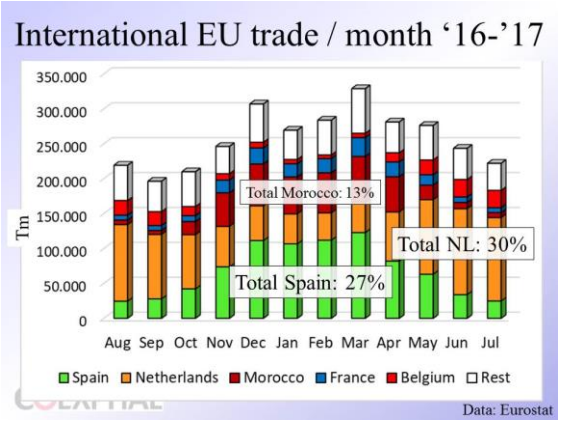
www.areflh.org

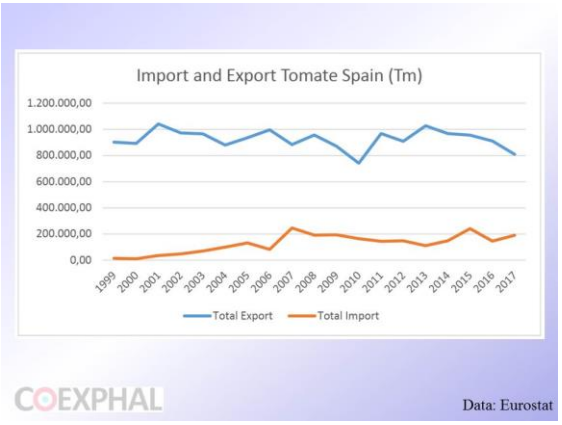
@areflh

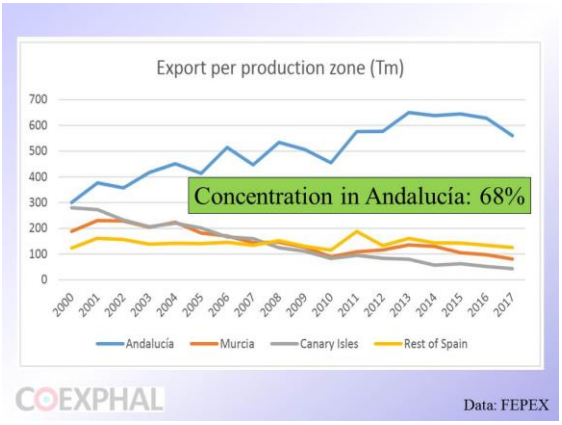
27

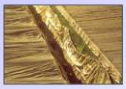
Jan van der Blom (COEXPHAL, EUCOFEL)







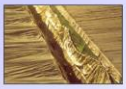




Greenhouse horticulture

- Extremely high production on small surface:
- 3,4% of the surface of Almería…
- …generating 40% of the GDP;
- 49% of the province is protected area;
- No artificial heating, using purely solar energy:
- Absorbing CO_2…
- 2018: 10% greenhouse surface certified organic

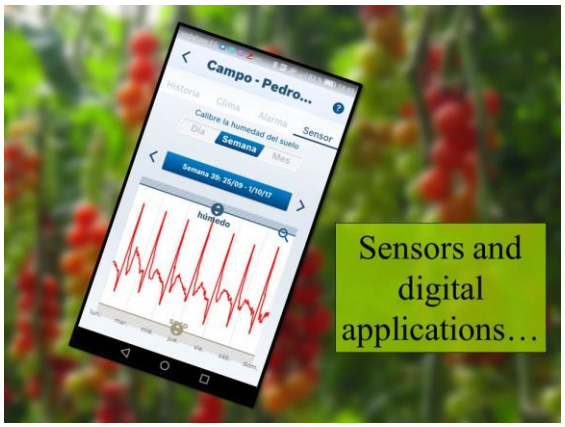
COEXPHAL



Sustainability: Technical challenges

- Optimization water and fertiliser use;
- Maintain biological control;
- Reach 100% recycling of residues;
- Focus on 'Agro-Ecology'

COEXPHAL


Campo - Pedro...
Sensor
Semana
Sensors and digital applications…


Tuta absoluta


Control on pesticide use

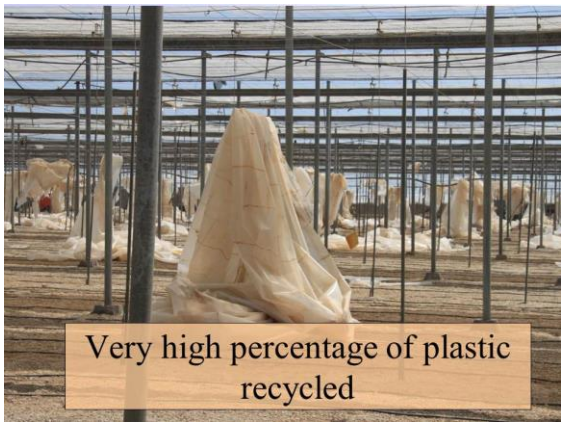

Samples


Important progress: no more burning of residues


Compost

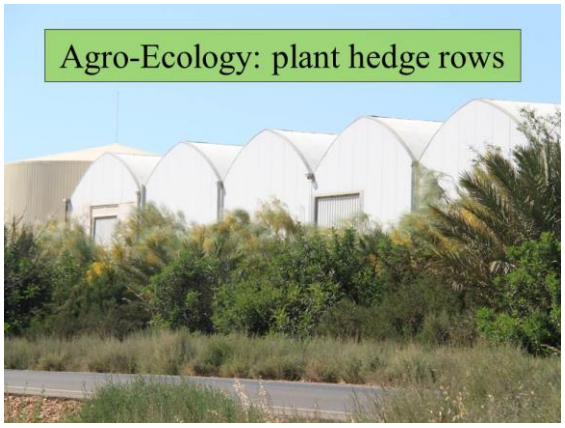

Appears in all greenhouses…


Residue recycling


Very high percentage of plastic recycled


Timon lepidus (=Lacerta lepida)

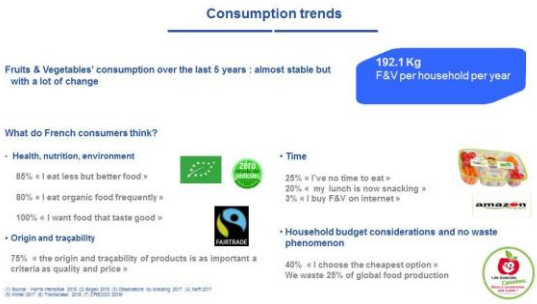

Agro-Ecology:
add flowering plants...

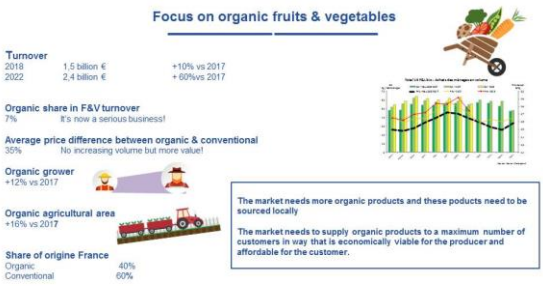

Agro-Ecology: plant hedge rows


Visible results...


CULTIVOS DE
INVERNADERO
We are doing well

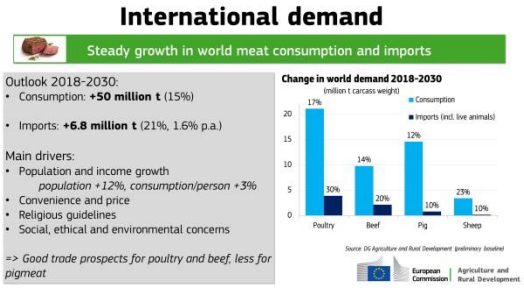
Matthieu Lovery (Group Carrefour)

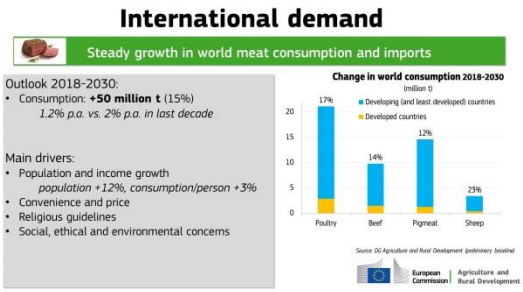


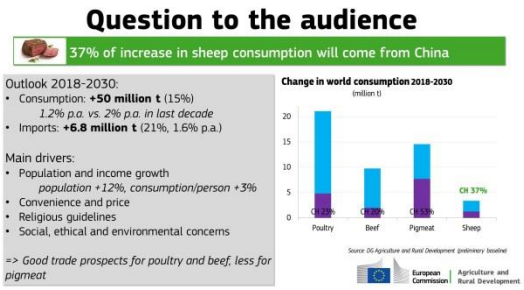


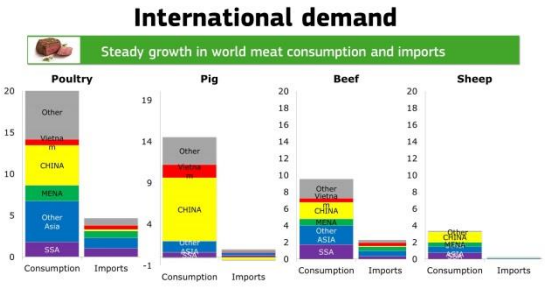
Session 4: Meat markets

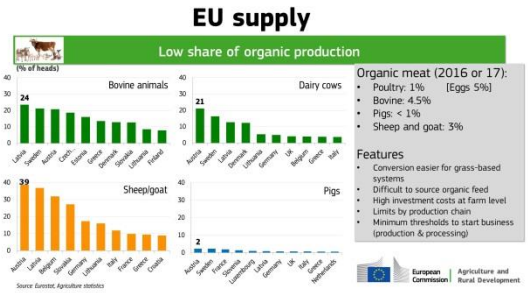
Magdalena Grzegorzewska (DG AGRI)

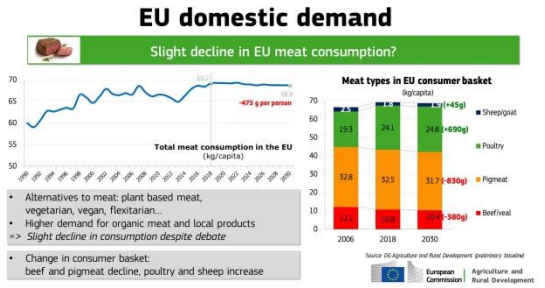


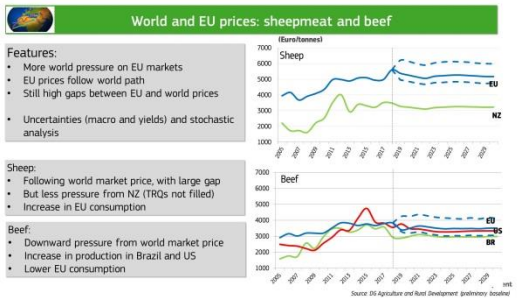


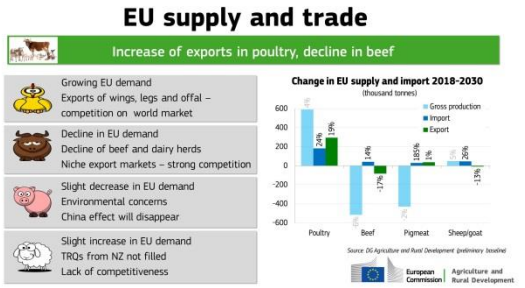


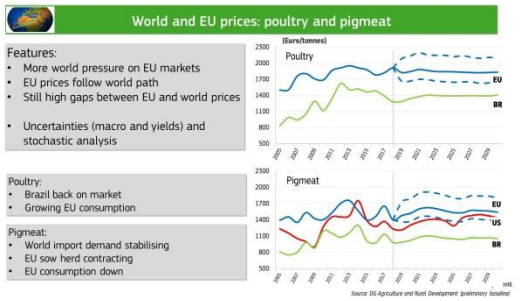

International demand
Steady growth in world meat consumption and imports
Poultry
Pig
Beef
Sheep
Other
Vietnam
CHINA
MENA
Other Asia
SSA
Other ASIA
Consumption
Imports

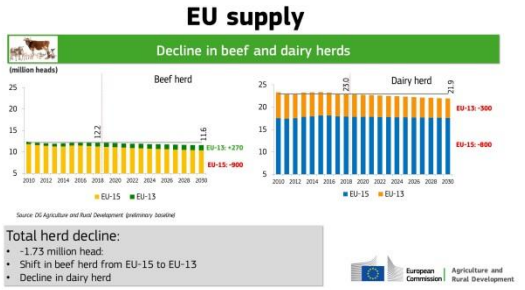

EU supply
Low share of organic production
(% of heads)
Bovine animals
Dairy cows
Sheep/goat
Pigs
Organic meat (2016 or 17):
Poultry: 1% [Eggs 5%]
Bovine: 4.5%
Pigs: < 1%
Sheep and goat: 3%
Features
Conversion easier for grass-based systems
Difficult to source organic feed
High investment costs at farm level
Limits by production chain
Minimum thresholds to start business (production & processing)
Source: Eurostat, Agriculture statistics
European Commission | Agriculture and Rural Development


EU domestic demand
Slight decline in EU meat consumption?
Total meat consumption in the EU (kg/capita)
-475 g per person
Meat types in EU consumer basket (kg/capita)
Sheep/goat
Poultry
Pigmeat
Beef/veal
2006
2018
2030
Alternatives to meat: plant based meat, vegetarian, vegan, flexitarian...
Higher demand for organic meat and local products
=> Slight decline in consumption despite debate
Change in consumer basket: beef and pigmeat decline, poultry and sheep increase
Source: DG Agriculture and Rural Development (preliminary baseline)
European Commission | Agriculture and Rural Development


World and EU prices: sheepmeat and beef
Features:
More world pressure on EU markets
EU prices follow world path
Still high gaps between EU and world prices
Uncertainties (macro and yields) and stochastic analysis
Sheep:
Following world market price, with large gap
But less pressure from NZ (TRQs not filled)
Increase in EU consumption
Beef:
Downward pressure from world market price
Increase in production in Brazil and US
Lower EU consumption
(Euro/tonnes)
Sheep
Beef
EU
NZ
US
BR
Source: DG Agriculture and Rural Development (preliminary baseline)


EU supply and trade
Increase of exports in poultry, decline in beef
Growing EU demand
Exports of wings, legs and offal – competition on world market
Decline in EU demand
Decline of beef and dairy herds
Niche export markets – strong competition
Slight decrease in EU demand
Environmental concerns
China effect will disappear
Slight increase in EU demand
TRQs from NZ not filled
Lack of competitiveness
Change in EU supply and import 2018-2030
(thousand tonnes)
Gross production
Import
Export
Poultry
Beef
Pigmeat
Sheep/goat
Source: DG Agriculture and Rural Development (preliminary baseline)
European Commission | Agriculture and Rural Development


World and EU prices: poultry and pigmeat
Features:
More world pressure on EU markets
EU prices follow world path
Still high gaps between EU and world prices
Uncertainties (macro and yields) and stochastic analysis
Poultry:
Brazil back on market
Growing EU consumption
Pigmeat:
World import demand stabilising
EU sow herd contracting
EU consumption down
(Euro/tonnes)
Poultry
Pigmeat
EU
US
BR
Source: DG Agriculture and Rural Development (preliminary baseline)


EU supply
Decline in beef and dairy herds
(million heads)
Beef herd
Dairy herd
EU-13: +270
EU-15: -900
EU-13: -300
EU-15: -800
EU-15
EU-13
Source: DG Agriculture and Rural Development (preliminary baseline)
Total herd decline:
-1.73 million head:
Shift in beef herd from EU-15 to EU-13
Decline in dairy herd
European Commission | Agriculture and Rural Development


Questions for panel discussion
How will demand for organic meat evolve by 2030?
What are potential effects of meat substitutes, i.e. laboratory meat, but also veganism, vegetarianism, flexitarianism on consumption?
What other uses are there for meat than human consumption?
How will organic production develop for each type of meat?
How will the production of poultry and pork develop, taking into account environmental conditions?
Impact of new technologies or practices in the meat sector?
Is the recent decline a sign of changes in the pigmeat sector in the EU?
What will happen if self-sufficiency in China increases?
European Commission | Agriculture and Rural Development

Philippe Chotteau (IDELE)

★ Some comments about the preliminary outlook for beef.

★ Insight about Organic beef in France & in the EU

★ Environmental constraints on beef

Philippe Chotteau – Head of Economics Dpt- IDELE

22th October 2018 Mid-term Outlook Workshop - Brussels

Comments about the preliminary 2030 outlook for beef

- A breaking point for Suckler Cows number in 2016 ?
  - There were no « *normal* » climatic year since 2011 in France.
  - Global warming will mean more forage stocks in Spring and less possibility of Summer grazing.
  - => **Forage area** and **building capacities** are the main constraints to design the future resilient suckler farming systems.
  - => Globally speaking, less livestock per ha of forage area
  - Environmental constraints : **extensification awaited**!
  - Animal welfare concerns + Vegan militants attacks => **feeling down among farmers** and all the industry chain

22th October 2018 Mid-term Outlook Workshop - Brussels

Comments about the preliminary 2030 outlook for beef

- Cows number and production erosion #-0,4/-0,5% per annum
- Why not?
- But it does **not** look **consistent with the farm-gate price evolution**:
  from 3,84 €/kg cw to **3.5 € in 2030**, with a sharp drop after 2021
- Especially for suckler cows number development:
  - **Cow-calf farms returns are already quite low** compared to other farm alternatives, even with current prices
  - Subsidies represent the main share of these returns: uncertainties about the future of the CAP
  - With the growing size of farms, more & more difficult to transfer (high capital level)
  - Questions about global warming & frequent climatic hazards

22th October 2018 Mid-term Outlook Workshop - Brussels

Comments about the preliminary 2030 outlook for beef & sheep meat consumption

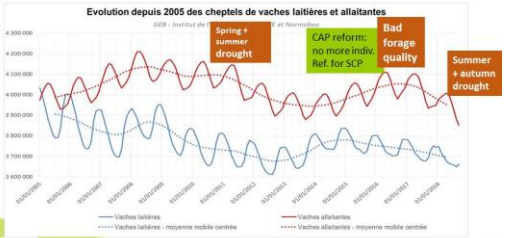
- You prospect an erosion for beef, and a rebond in sheep meat
- Future of meat consumption is partially determined by the image

Source: 2017 – ACCEPT project

rkshop - Brussels

Comments about the preliminary 2030 outlook for beef

- A breaking point for Suckler Cows number in 2016 ?



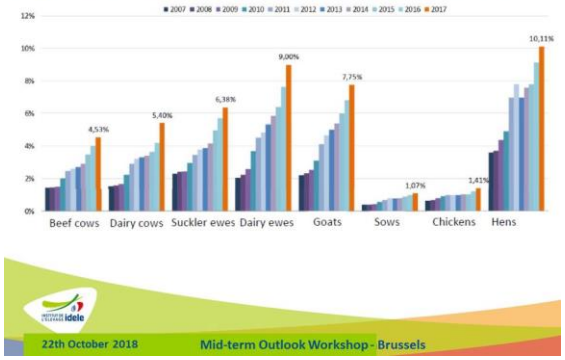
22th October 2018 Mid-term Outlook Workshop - Brussels

Comments about the preliminary 2030 outlook for beef & sheep meat consumption

- You prospect an erosion for beef, and a rebond in sheep meat
- Future of meat consumption is partially determined by the image
- But also by availabilities: **Offer -> Demand**, notably for sheep meat.
- Ex: France 2018: balance: +2.4% consumption, *but Kantar household panel: -2.6%.*
  Difference: more meat as an ingredient (no more sold as raw beef, more catering)
- Sheep meat: **mainly a pb of availabilities**. From **3rd countries (CN demand/UE demand)**. From the **UK post Brexit**.
- For me, the potential demand is there !

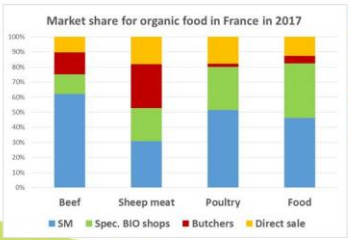
22th October 2018 Mid-term Outlook Workshop - Brussels

Organic animal production… in France



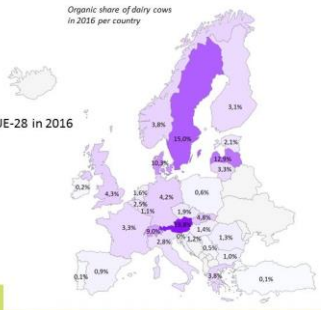
Organic beef: mainly sold in supermarkets

Source: GEB/Idele according to Agence Bio



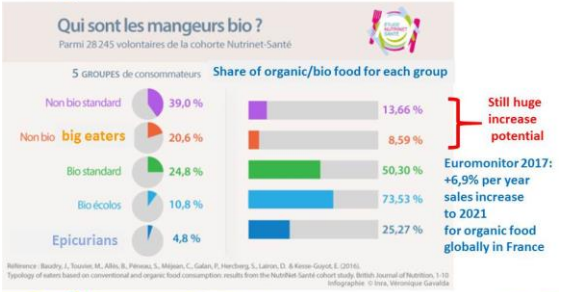
High increase potential : multiplication of specialized organic shops opening, **also in catering** (ex recent French law for canteens and collective restaurant supply: 20% BIO in 2022)

Organic dairy cows in Europe



- 860 000 organic dairy cows in UE-28 in 2016
- 3.7% of EU dairy cows

Sociology of French consumers/ Organic food in 2017



Main source for organic beef in the EU: from the dairy herd

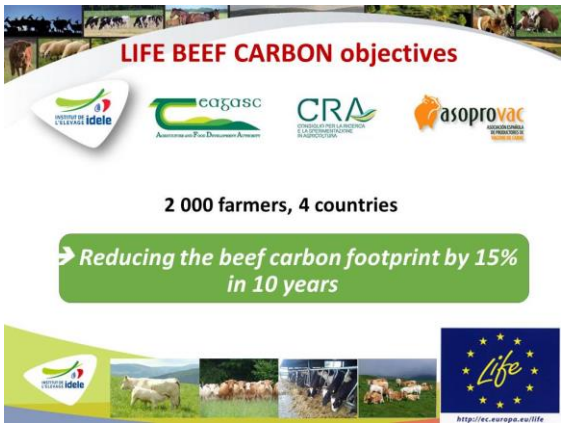
- 2/3 of EU cows are dairy
- **Dairy conversion rate is faster** compared to suckler systems (in France, but also in IE… what about SP ?)
- Dairy beef is a quite **suitable commodity for processing burgers** (now half of the consumption in France f.e.)
- BUT, there could be a problem with **males valorization** : long cycle steers is hardly profitable,and what about **castration**; More **veal** production ? Perhaps, but not in the current main stream.

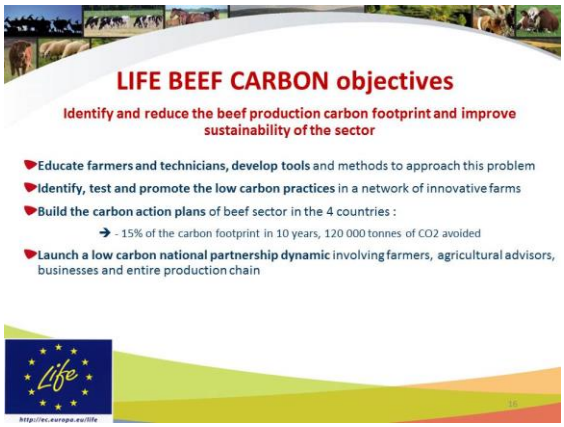
But different pictures in the EU

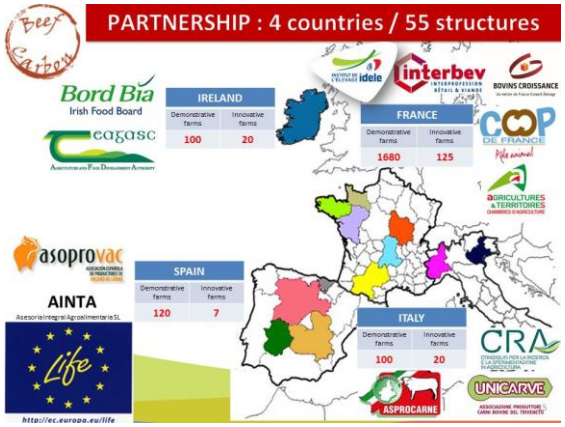
Source: Kantar conference in the SIAL yesterday

Perspective of organic beef from the suckler herd ?

- In France, brilliant perspectives for **female beef** (80% of the beef consumption): >+10% ytoy sales anticipated
- But a lot as burgers: further segmentation ?
- Same question about **males destiny**: nearly half of the suckler calves are sold as « broutards » (weanlings), and since now, virtually no market for organic broutards.
- Since now, mainly as suckling veal, but still a niche market, or « rosé veal » (as « Veaux d'Aveyron »)
- => new systems to grow steers ?


LIFE BEEF CARBON objectives
2 000 farmers, 4 countries
Reducing the beef carbon footprint by 15% in 10 years
http://ec.europa.eu/life


LIFE BEEF CARBON objectives
Identify and reduce the beef production carbon footprint and improve sustainability of the sector
Educate farmers and technicians, develop tools and methods to approach this problem
Identify, test and promote the low carbon practices in a network of innovative farms
Build the carbon action plans of beef sector in the 4 countries :
- 15% of the carbon footprint in 10 years, 120 000 tonnes of CO2 avoided
Launch a low carbon national partnership dynamic involving farmers, agricultural advisors, businesses and entire production chain
http://ec.europa.eu/life


PARTNERSHIP : 4 countries / 55 structures
Bord Bia
Irish Food Board
IRELAND
Demonstrative farms 100
Innovative farms 20
FRANCE
Demonstrative farms 1680
Innovative farms 125
SPAIN
Demonstrative farms 120
Innovative farms 7
ITALY
Demonstrative farms 100
Innovative farms 20
AINTA
http://ec.europa.eu/life

Tadeusz Blicharski (POLSUS)

Pig production in Poland

Tadeusz Blicharski, PhD
Managing director

PZHIPTCh „POLSUS", Ryzowa 90, 02-495 Warszawa, Polska

Polish Pig Breeders and Producers Association „POLSUS"

Brussels 22 October, 2018

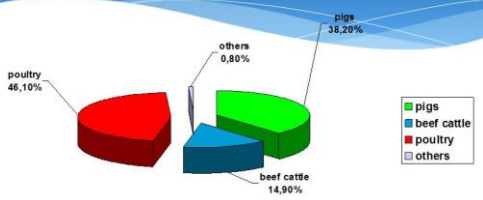
Pig meat statistics

	Lean meat (%)	Av. carcass weight (kg)	Self-sufficiency (%)	Pork production (mln tonnes)
2009	54,6	88,5	85	1,71
2010	54,8	88,7	93	1,86
2011	55,4	87,5	92	1,86
2016	57,1	92,3	80	1,60

510 slaughterhouses were slaughtering over 200 fatteners per day in Poland in 2016. The biggest one, Pini Polonia was bought this year by AgriPlus (Smithfield group). 15000 fatteners slaughtered per day.

Source: Ministry of Agriculture, www.eu-meat.eu

Structure of production – animals for slaughter according to specie 2016 (CSO)



717 500 farms are keeping animals in Poland and 24% are pig farms

Meat consumption in Poland

in kg/person/year

	Total	Beef	Poultry	Pork
2009	75	3,6	24	42,4
2010	74,3	2,4	25	42,6
2011	75	2,3	26	42
2016	73,9	1,6 (90% exported)	27,1	40

Pork	Fresh meat	Processed meat
2010	40%	60%
2016	60%	40%

Source: CSO and Gazeta Finansowa

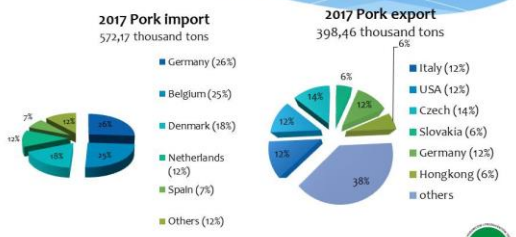
Polish pigs statistics

	No of pigs	No of sows	No of piglets	No of imported piglets	Fatteners slaughtered (no)
2010	14 781 600	1 383 500	4 299 700	2 500 000	19 700 000
2017/2018 (June)	11 827 500	870 800	2 852 900	5 750 000	18 000 000

	No of pig farms	No of farms producing piglets
2002	760 600	452 300
2012	359 730	207 960
2016	172 200	116 700
Change y/y	- 52,7%/-52,13%	- 54%/-43,88%

Source: CSO

Pork export and import according to volume in 2017



Source: Ministry of Agriculture,

Export of Polish pork meat

EKSPORT							
I-VIII 2017 r.				I-VIII 2018 r.*			
Kraj	Wartość [tys. EUR]	Wartość [tys. PLN]	Wolumen [tony]	Kraj	Wartość [tys. EUR]	Wartość [tys. PLN]	Wolumen [tony]
OGÓŁEM	**447 256**	**2 770 232**	**313 907**	**OGÓŁEM**	**569 021**	**2 406 074**	**319 310**
USA	121 215	517 989	39 310	USA	108 393	457 368	42 958
Włochy	71 594	305 865	41 585	Włochy	59 444	251 477	41 656
Niemcy	65 304	279 761	46 728	Niemcy	55 065	232 956	47 301
Republika Czeska	50 685	216 803	18 548	Republika Czeska	50 050	211 865	19 222
Słowacja	47 246	202 238	20 190	Słowacja	47 956	202 891	23 214
Wielka Brytania	31 515	134 804	11 724	Litwa	27 805	117 730	14 016
Hongkong	28 146	120 929	19 425	Wielka Brytania	24 832	104 914	10 234
Litwa	25 283	108 137	13 032	Węgry	23 435	98 980	11 883
Węgry	23 693	101 715	10 193	Rumunia	22 726	96 014	12 688
Rumunia	22 216	94 677	10 820	Holandia	17 766	75 242	10 368
Kanada	19 983	86 046	6 270	Hiszpania	15 855	67 002	8 094
Łotwa	19 225	82 363	8 626	Hongkong	12 796	53 920	12 645
Hiszpania	16 952	72 223	8 128	Kanada	11 173	47 043	4 067
Holandia	14 047	60 239	6 510	Łotwa	10 730	45 385	5 003
Estonia	9 470	40 544	4 278	Estonia	9 838	41 524	4 692
Chile	8 817	38 143	4 202	Irlandia	7 283	30 945	2 615
Austria	7 340	31 363	3 448	Ukraina	7 168	30 584	5 123
Chorwacja	7 140	30 689	3 096	Wietnam	6 895	29 392	7 774
Dania	6 732	28 820	3 236	Chorwacja	6 053	25 577	3 116
Wietnam	4 935	21 257	4 057	Dania	6 015	25 390	3 384
Szwecja	4 489	19 242	1 342	Bułgaria	4 086	17 276	2 369
Irlandia	4 350	18 612	1 388	Belgia	3 908	16 547	3 154
Francja	4 280	18 215	1 803	Chile	3 703	15 592	1 970
Belgia	4 263	18 218	4 788	Szwecja	3 062	13 043	963

Import of pork meat

IMPORT							
I-VIII 2017 r.				I-VIII 2018 r.*			
Kraj	Wartość [tys. EUR]	Wartość [tys. PLN]	Wolumen [tony]	Kraj	Wartość [tys. EUR]	Wartość [tys. PLN]	Wolumen [tony]
OGÓŁEM	**965 059**	**4 125 392**	**458 660**	**OGÓŁEM**	**938 727**	**3 970 945**	**498 024**
Niemcy	282 231	1 207 166	119 240	Niemcy	267 543	1 131 477	121 021
Belgia	216 056	924 115	114 547	Belgia	219 330	927 808	133 489
Dania	156 436	667 365	87 714	Dania	147 977	626 666	93 979
Hiszpania	104 560	447 011	38 842	Hiszpania	103 331	437 136	41 852
Holandia	95 153	406 729	53 929	Holandia	87 084	368 226	56 171
Wielka Brytania	48 187	206 334	18 154	Wielka Brytania	48 213	203 994	19 854
Francja	17 558	75 141	9 685	Francja	18 443	77 941	11 594
Węgry	14 663	62 335	6 003	Szwecja	14 035	59 290	4 065
Włochy	11 718	50 029	4 021	Węgry	9 776	41 336	5 372
Szwecja	6 927	29 841	1 960	Włochy	8 927	37 568	3 175
Finlandia	3 979	17 010	1 291	Finlandia	5 252	22 230	3 260
Litwa	2 563	10 988	1 130	Irlandia	4 297	18 208	1 737
Irlandia	1 846	7 820	663	Portugalia	1 062	4 521	434
Estonia	1 028	4 330	416	Republika Czeska	973	4 123	743
Portugalia	877	3 737	366	Litwa	727	3 062	362
Republika Czeska	704	2 981	376	Austria	622	2 626	365

WAYS OF SPREADING THE INFECTION

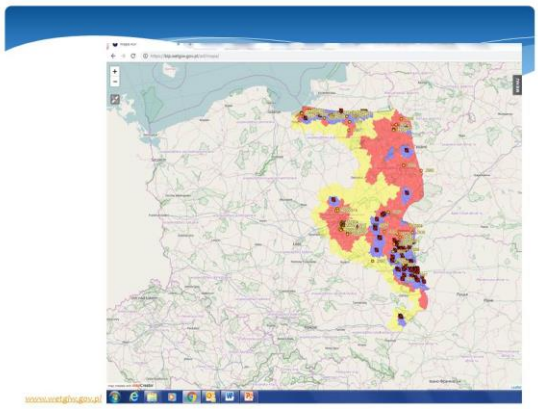
Internal issues

- The number of small, family farms keeping pigs is shrinking
- Their profitability and effectiveness is low
- Young people are not taking over pig farms from parents
- No investment capital
- Law regulations are strict and require time-consuming procedures to buy agricultural land, to get permission for building new piggeries (in Poland it takes approx. 3-4 years to complete the process of getting permission to build a piggery for 750 or more sows or 2000 fatteners, in Denmark it takes 9 weeks)

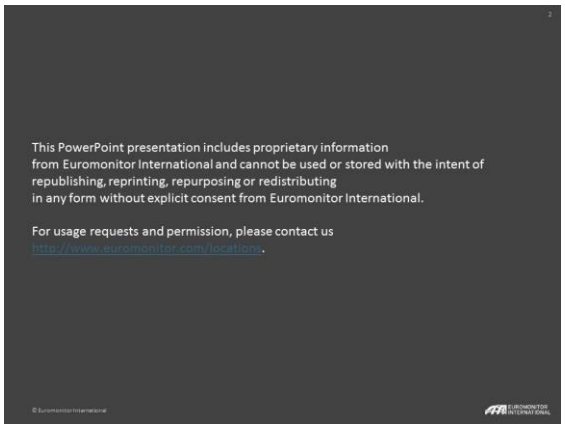
ASF african swine fever

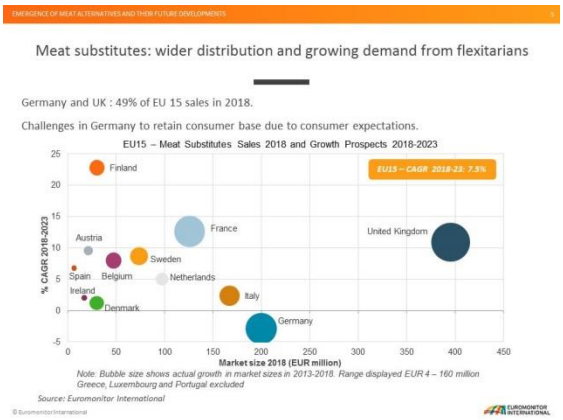
- Entered Poland in February 2014
- Since then 213 outbreaks on farms and 2904 cases in wildboars have been reported
- Prices are lower in the ASF zones
- Pigs and meat transport is regulated strictly
- According to scientific papers wildboars should die after contact with ASFV but it is not always the case

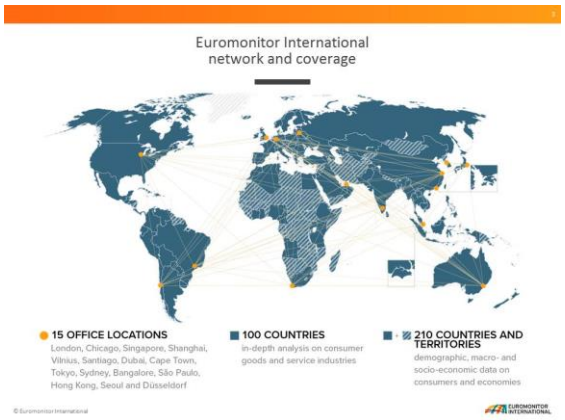
Thank You

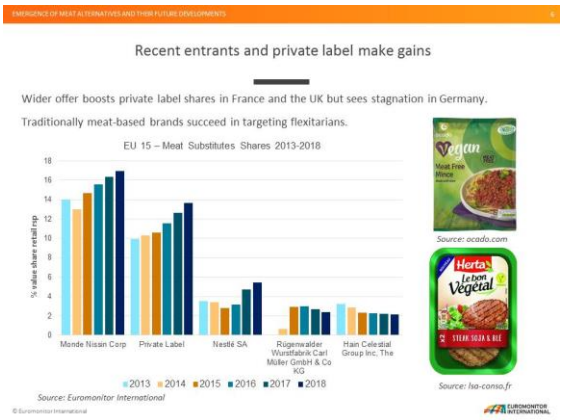


Raphaël Moreau (Euromonitor)










EMERGENCE OF MEAT ALTERNATIVES AND THEIR FUTURE DEVELOPMENTS
Product innovation trends to improve meat alternatives
Flexitarianism expected to be a long-lasting trend in Europe.
Improved taste, e.g. "bleeding" burgers.
Labelling legislation may also shape the evolution of the category.
BEYOND MEAT
THE BEYOND BURGER
PLANT-BASED BURGER PATTIES
Source: veganessentials.com
UMAMI BURGER
x IMPOSSIBLE
Source: umamiburger.com
© Euromonitor International
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TRENDS IN MEAT CONSUMPTION IN EUROPE
Processed meat sales undermined by food safety and traceability concerns
Chilled poultry the only category to achieve growth within processed meat in 2013-18.
Chilled meat outperforms shelf stable and frozen meat, which suffer from lack of trust from consumers.
EU15 – Processed Meat Sales 2018 and Growth Prospects 2018-2023
Processed Meat – CAGR 2018-23: -0.2%
Shows falling Sales 13-18
Shelf Stable Processed Poultry
Chilled Processed Poultry
Frozen Processed Poultry
Frozen Processed Red Meat
Chilled Processed Red Meat
Shelf Stable Processed Red Meat
% CAGR 2018-2023
Market size 2018 ('000s Tonnes)
Note: Bubble size shows actual growth in market sizes in 2013-2018. Range displayed -176 – 80,000 tonnes
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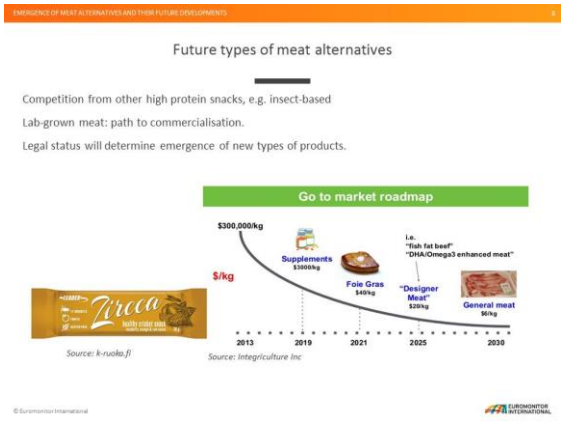
EMERGENCE OF MEAT ALTERNATIVES AND THEIR FUTURE DEVELOPMENTS
Future types of meat alternatives
Competition from other high protein snacks, e.g. insect-based
Lab-grown meat: path to commercialisation.
Legal status will determine emergence of new types of products.
Go to market roadmap
$300,000/kg
$/kg
Supplements
Foie Gras
"Designer Meat"
General meat
i.e. "fish fat beef" "DHA/Omega3 enhanced meat"
2013
2019
2021
2025
2030
Source: k-ruoka.fi
Source: Integriculture Inc
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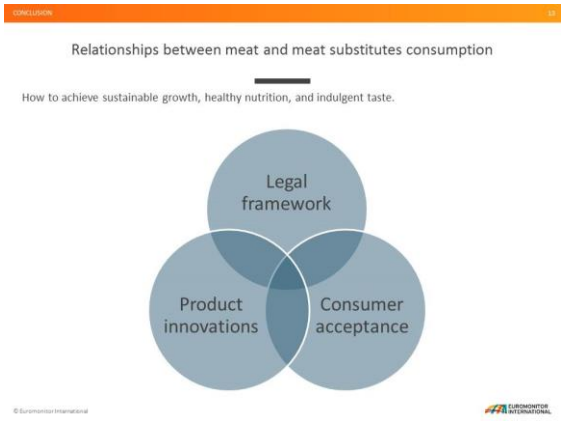
3
Conclusion


2
Trends in meat consumption in Europe


CONCLUSION
Relationships between meat and meat substitutes consumption
How to achieve sustainable growth, healthy nutrition, and indulgent taste.
Legal framework
Product innovations
Consumer acceptance
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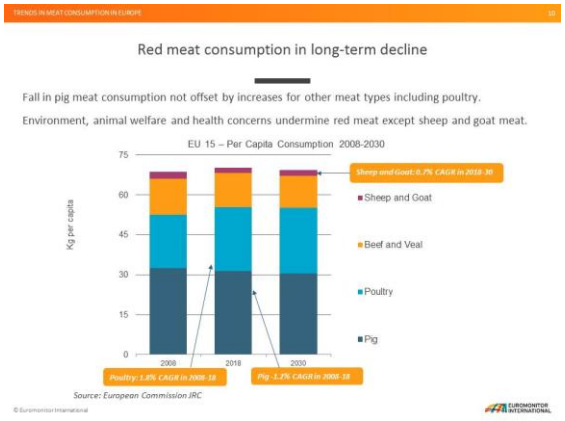
TRENDS IN MEAT CONSUMPTION IN EUROPE
Red meat consumption in long-term decline
Fall in pig meat consumption not offset by increases for other meat types including poultry.
Environment, animal welfare and health concerns undermine red meat except sheep and goat meat.
EU 15 – Per Capita Consumption 2008-2030
Kg per capita
Sheep and Goat: 0.7% CAGR in 2018-30
Sheep and Goat
Beef and Veal
Poultry
Pig
Poultry: 1.8% CAGR in 2008-18
Pig -1.7% CAGR in 2008-18
Source: European Commission JRC
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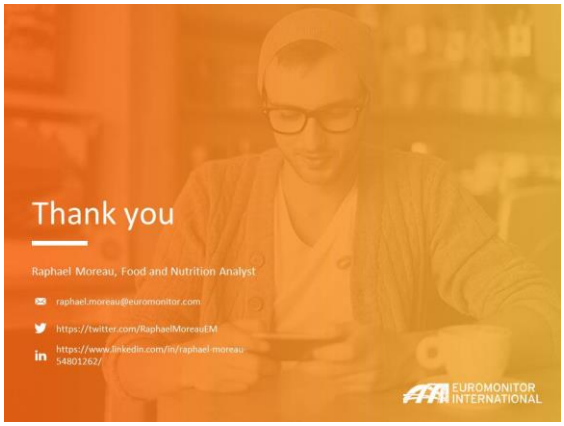
Thank you
Raphael Moreau, Food and Nutrition Analyst
raphael.moreau@euromonitor.com
https://twitter.com/RaphaelMoreauEM
https://www.linkedin.com/in/raphael-moreau-54801262/
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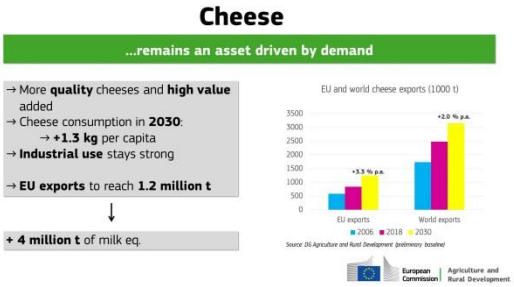
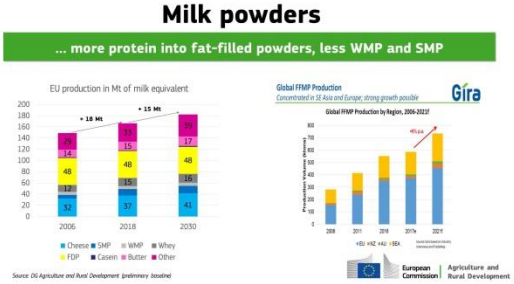
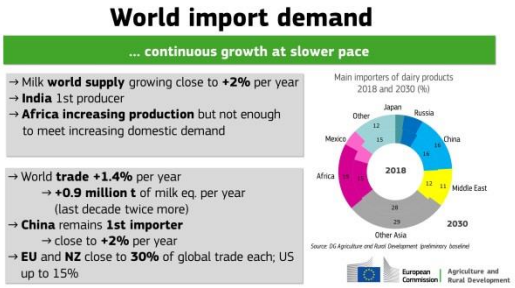
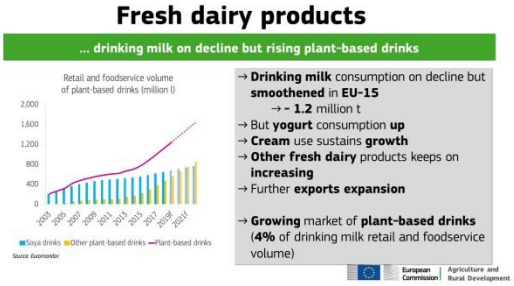
Session 5: Milk and dairy markets

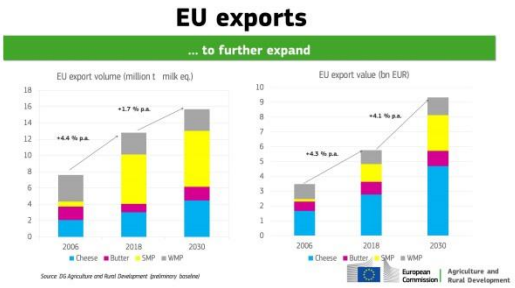
Andrea Capkovicova (DG AGRI)

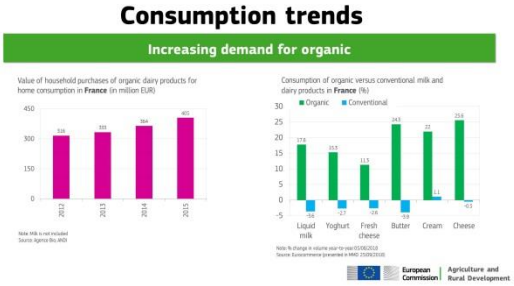






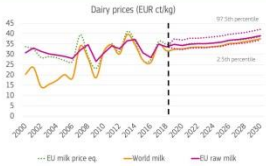






Butter

... the end of golden era?



- → Sustained but **slower growth** in domestic demand
- → **Price** relationship **butter/SMP**
  - → Back to **normal** with a delay **after stocks** are emptied
  - → **Gap** remains **larger** than in the past

European Commission | Agriculture and Rural Development

Question to the audience

Share of organic milk in EU-28 production by 2030

1. As currently around 3%
2. 5%
3. 10%
4. More than 10%

European Commission | Agriculture and Rural Development

Main drivers of dairy market development

2. Sustainability and societal demands

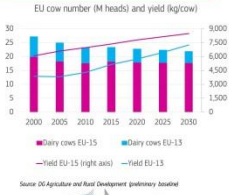
- → Milk **collection** expected to **further increase**
- → **Small decline** in EU dairy **herd**
- → **Demand** for products with a **lower environmental footprint, organic, non GM, local**
- → **Environmental constraints** to play an increasing role

European Commission | Agriculture and Rural Development

Dairy cow herd

... back to the level of 2010, and enhanced productivity

- → Slower-pace decline, back to **level** of **2010 by 2030** in EU-15
- → **Increasing organic** production
  - → 10% by 2030
  - → **Slowdown** in **yield** growth (+1.2% per year)
- → Further **challenges**
  - → Mitigation of **GHG** emission (focus on farm practices)
  - → **Sexing of semen** (potential impact on the number of dairy cows)



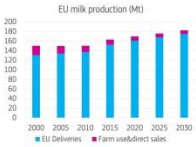
Source: DG Agriculture and Rural Development (preliminary baseline)

European Commission | Agriculture and Rural Development

Milk collection

... under environmental constraints

- → EU **milk production** up to **182 Mt** by 2030
  - → +1.3 Mt/year
- → EU **milk deliveries** up to **175 Mt** by 2030
  - → **Faster** growth rate in **EU-13**
- → **New** trends
  - → **Slowing down** the decline of **on-farm use** and **direct sales** in line with increase of locally-demanded products
  - → **Environmental** constraints might drive changes in production localisation



Source: DG Agriculture and Rural Development (preliminary baseline)

European Commission | Agriculture and Rural Development

Questions for panel discussion

Impact of change in lifestyle on consumption habits/trends?
The potential of Fat filled powder for a protein balanced market?
Domestic use of SMP to stabilise or expand more?
Which future butter/SMP price relationship

Development of alternatives to conventional milk production systems in Europe (organic, pasture-fed, GMO-free)
Impact of more sustainable management of natural resources?

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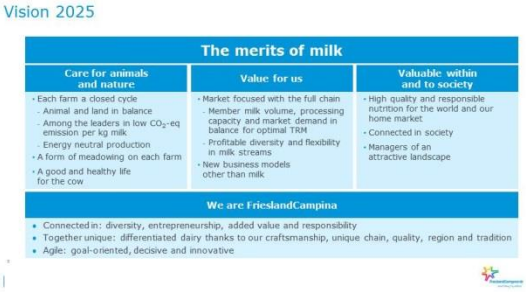
Wim Kloosterboer (Friesland Campina)




Leading in sustainability
Balanced growth
Market oriented business


The Merits of Milk is the basis of Nourishing by nature
Connection with the market and society requires us to be open-minded

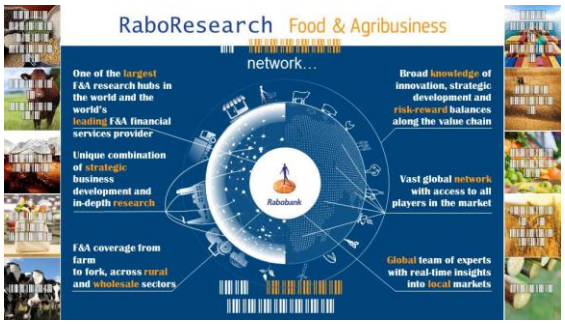

Balanced growth
Market conform growth: for 2019-2020: 1.5%/ yr (A); basis is flexible in ref periods or based on phosphate rights
Individual growth per farm is higher than market conform growth (B)
A and B: system is going to work:
Individual growth possible: = A + room created by other who quit delivery (C)
For an individual holding: delivers more, than a fine of 10 cts/ kg for max 5 years
FC member milk deliveries: 10 059 Mt (2015); 10 774 (2016); 10 766 mt (2017);
10 421 (2018); 2019 no increase expected; further environmental measures???
Further on some adaptation to phosphate measures: kringloopwijzer , efficiency gains
Let us assume 10,6 Mt in 2020

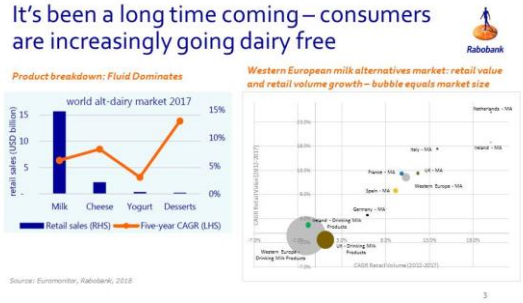

Nourishing by nature is in line with the Sustainable Development Goals of the United Nations
SUSTAINABLE DEVELOPMENT GOALS
Sustainable Development Goals
17 ambitious goals relating to topics such as responsible production and consumption, climate, sustainable communities, health and well-being and efforts to fight poverty and starvation

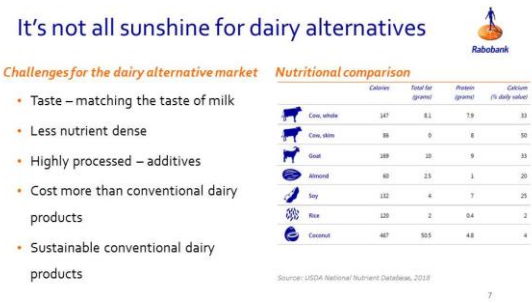

Top Dairy Line
A more sustainable dairy assortment
Why?
better nutrition for the world, a good living for our farmers, now and for generations to come
What?
Animal
Nature
Climate
+ reward for the farmer
How?
Dairy 'on the way to planet proof'
A single system
Transparent
Certified by a third party
PLANET PROOF


"It is our dream that our son will take over the farm"

Peter Paul Coppes (Rabobank)







Session 6: Agriculture and the environment

María Bielza (Seidor Consultant) and Panos Panagos (DG JRC)

Environmental analysis of the baseline

1- **GHG emissions:** The effect of GHGs are global – independent of emission location. Also emissions occurring outside Europe matter.

- Total emissions (total) important to understand the contribution of agriculture to climate change and potentials for mitigation
- Emission intensities (per unit of product) important for benchmarking production performance.

NOTE: CH_4 and N_2O from agriculture. Not included emissions from:
- Energy: fuel for tractors, electricity (irrigation, greenhouses, etc.)
- Land use and land use change (C sequestration)

EU Outlook: environmental analysis of the baseline

22-23 October, Outlook workshop, Brussels

CAPRI model baseline: JRC D.4

Mihaly Himics, Mariia Bogonos, Jordan Hristov

Environmental analysis: JRC D.3 and D.5

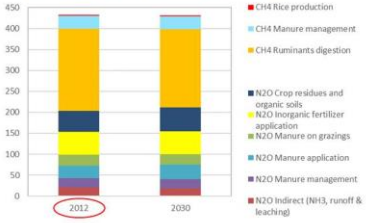
Maria Bielza (Seidor consultant), Adrian Leip, Panos Panagos, Maria Luisa Paracchini, Carlo Rega, Franz Weiss, Jean-Michel Terres

European Commission

1.1 GHG emissions (total)

Almost no decrease (-0.3%)

Expected GHG emissions 2012-2030 in the EU28 (million t CO2 eq)



Driving factors

- - 5% in methane emissions from ruminants digestion associated to decrease in cattle heads (mainly dairy cattle, -7% LSU, while dairy production is increasing)
- Partially compensated by increase in N_2O from crops and also from manure application on the field (poultry and changes in manure management).

Environmental analysis of the baseline

- Growing importance of environmental and climate ambition of the future CAP. Therefore, development of the agri-environmental baseline.
- Agro-economic model calibrated to the last AGRI baseline (for 2030).
- Analysis of the following indicators:
  1- GHG emissions
  2- N losses to the water and the air
  3- N pressure on plant species richness in grasslands (under development)
  4- Soil erosion

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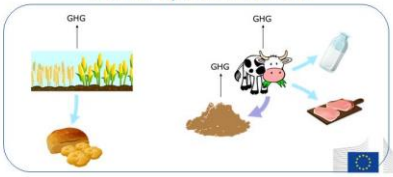
1.2 GHG emissions: activity comparison

- Production performance and comparison between sectors:
  - per production amount
  - use of the Life Cycle Assessment (LCA)

Non Life Cycle Assessment



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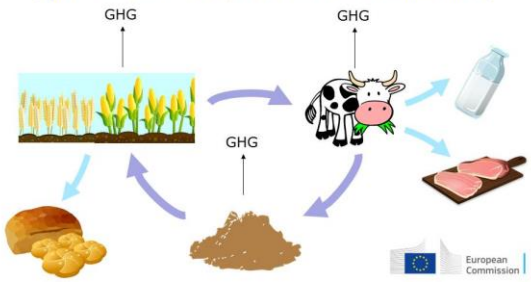
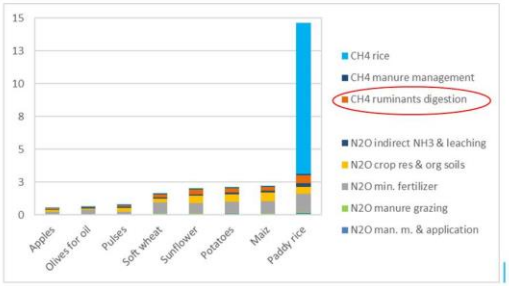
1.2 GHG emissions: activity comparison

- Life Cycle Assessment (LCA)
  (agricultural production only – for further information see annex)



1.2 Life-cycle (LCA) emission factors

Crops: Kg CO_2 eq. / kg protein in baseline 2030

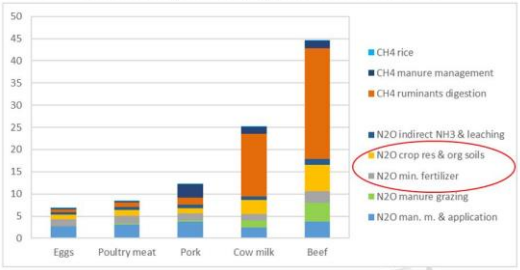


1.2 Life-cycle (LCA) GHG emission factors

- Methodology: Project funded by the European's Union's Horizon 2020 research and innovation program (Weiss and Jansson, 2015).
- Emissions allocation between products:
  - up to farm gate (e.g. beef and milk) function of crude protein content;
  - processing activities (e.g. cheese and butter) and manure, function of economic value

1.2 Life-cycle (LCA) emission factors

Animal products: Kg CO2 eq. / kg protein in baseline 2030



1.2 Life-cycle (LCA) GHG emission factors

- LCA CAPRI approach – caveats to take into account:
  - Not included emissions from:
    - the production of non-agricultural inputs (mineral fertilizes, pesticides, etc.)
    - energy (electricity, fuel for tractors, transformation of feed in animal concentrates, etc.)
    - LULUCF: land use and land use change (C sequestration).
  - Production approach: imports of final products not taken into account, only EU production

1.2 LCA emission factors in kg CO_2 eq / kg or Mcal (2030): Comparing different metrics

- **Per kg of product:** Most arable crops <0.5.
- **Per kg protein:** Comparative increase for rice and milk values
- **Per Mcal:** Allows comparing non-protein products

1.2 Life-cycle (LCA) GHG emission factors

- Units used:
  - Protein content: source Capri. It includes all protein, not only human edible (for crops it is animal edible, for animal products it includes all live weight)
  - Calories: from USDA, human edible calories.
  - Euros: Capri price UVAG (EAA gross producer price).

2- N losses to the air and the water

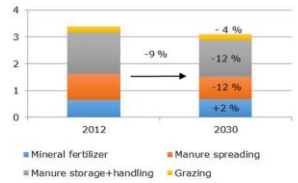
2- N losses to the air and the water: due to more localized impacts:

- air pollution
  - health effects
  - ecosystems (biodiversity, soil acidification, terrestrial eutrophication)
- water pollution:
  - groundwater nitrates
  - coastal eutrophication

it is relevant to assess the *pressure* in its geographic distribution and show values relative to the area (per ha).

2.1 Ammonia emissions to the air

NH_3 emissions 2012-2030 in the EU28 (million t NH3) (CAPRI model)



Driving factors

Animal numbers (LSU)	- 3%
Production:	
- Milk+dairy	+20%
- Meat	+ 9%
Manure excretion	- 2%
Area arable	-3%
Yield arable	+14%
Mineral N fertilizer:	
- Total	+ 1%
- Arable	+ 4%

- Overall increase in production efficiency of animal products ⟶ decrease in manure
- Changes in manure management

} More efficient N use and less NH_3 losses

3. N pressure on grassland species richness

Describing biodiversity is a complex process. In the CAPRI modelling context it is important to be able to highlight increasing or decreasing pressures on biodiversity driven by the agricultural global trends. Solutions are being sought, able to couple literature findings with available data. Such solutions can only address very specific aspects.

Scientific literature provides a consolidated view on nitrogen pressure on grassland species richness, which offers a basis for the implementation of an indicator in CAPRI.

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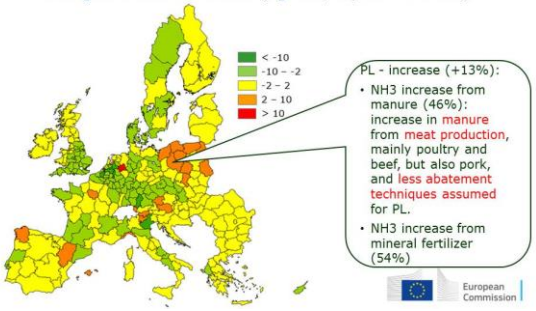
2.1 Ammonia emissions to the air

Change in NH3 2030-2012 (kg NH3/ha, CAPRI model)



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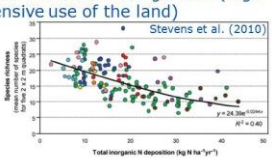
3. N pressure on grassland species richness

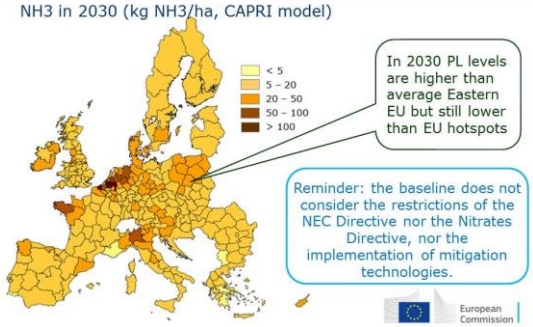
- N pressure is affecting biodiversity in agricultural areas:
  - Directly: soil acidification, eutrophication, direct toxicity, ecological simplification
  - Indirectly, as it is indicative of intensive management (high livestock density, more intensive use of the land)
- There is a substantial literature corpus on the impact of N on biodiversity, being widely analysed the impact of N pressure on plant species richness in grasslands



- Relevance: plant species richness is associated to species richness in other taxa (e.g. soil microorganisms, insects)

2.1 Ammonia emissions to the air

NH3 in 2030 (kg NH3/ha, CAPRI model)



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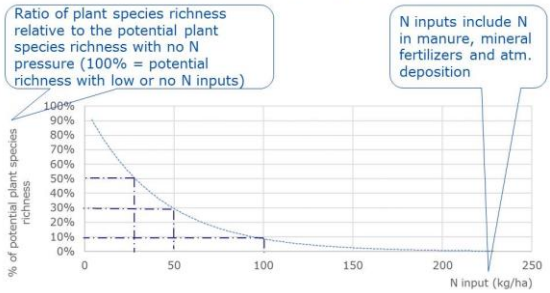
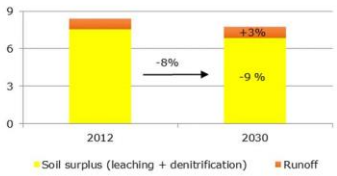
3. Metrics to assess N pressure on plant diversity on grasslands

The indicator N pressure on plant species richness



2.2 Potential N emissions to the water

N soil surplus and runoff in EU28 (2012-2030, million t, CAPRI model)



- N losses to the water decrease (-8%) due to decrease in N from manure.
- But runoff is increasing (+2%) due to increase in use of mineral fertilizers.

3. Metrics to assess N pressure on plant diversity on grasslands

- Caveats:
  - Model projections are at NUTS2 region level but the indicator should not be calculated at NUTS2 level
  - Sources of uncertainty:
    - Distribution of N intensity levels in permanent grasslands within the region
    - Where (forecasted) changes in N and areas will take place (in intensive or extensive permanent grasslands)

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3. Metrics to assess N pressure on plant diversity on grasslands

- Current results address two extreme scenarios of N changes allocation, to show the range of possible impacts:
  - differentiating intensive and extensive grasslands, with relative area and N input levels from simplified model assumptions
  - Scenarios on the allocation of N changes:
    - **2030_I:** allocating all N increases to intensive grasslands and decreases to extensive grasslands
    - **2030_D:** allocating all N increases to extensive grasslands and decreases to intensive grasslands

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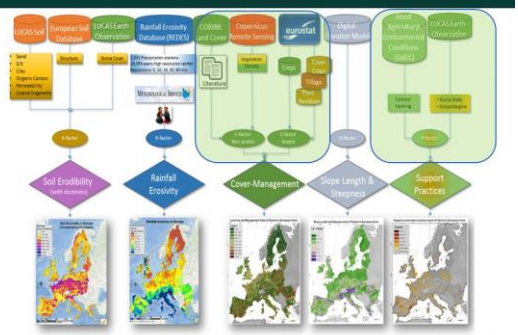
RUSLE2015: New soil erosion model



Panagos et al (2015) – Environmental Science & Policy

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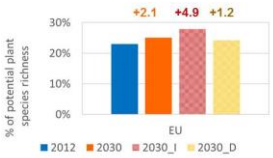
3. N pressure on grassland species richness

Results:

- On average decreased pressure with a small increase (+2.1%) in plant species richness. Depending on N allocation scenarios, change ranges from +5% to +1.2%, showing a generalised decrease of the pressure

Plant species richness



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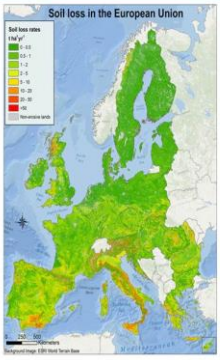
Soil loss by water erosion



Average EU-28: **2.46 t ha^{-1} yr^{-1}** (in the erosive prone areas: 91% of EU)

Total Soil loss: 970 Mt annually

Spatial resolution: 100m

Data produced for years: 2000 – 2010 – 2012 (in progress the 2015)

Mean erosion rate in agricultural areas: 3.2 t ha^{-1} yr^{-1}

Soil formation rate: 1.4-2.0 t ha^{-1} yr^{-1}

24% of EU lands have rates >2 t ha^{-1} yr^{-1}

11% of total area contributes to almost 70% of total Soil Loss

2000-2012: decrease by 9% in erosion rates

- 1/3 due to increase of forestlands (decrease of croplands)
- 2/3 due to change of management practices (proposed by *GAEC, Soil Thematic Strategy)*

Thanks

Questions?

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European Commission

Crop management factor

Low erosive		Medium erosive				High erosive
0.05	0.15	0.20	0.22-0.25	0.30 -0.32	0.35	0.38 0.50
Permanent Grasslands	Other fodder areas (Alfa,etc)	Wheat, Barley	Olives, other Fruits..	Energy crop, sunflower	Sugar beets, Potatoes	Maize, Tobacco

- Crop factor depends on the crop type and crop share
- 37 crops
- Crop distribution from CAPRI
- Two time-steps: 2012 and 30
- Crop dynamics influence

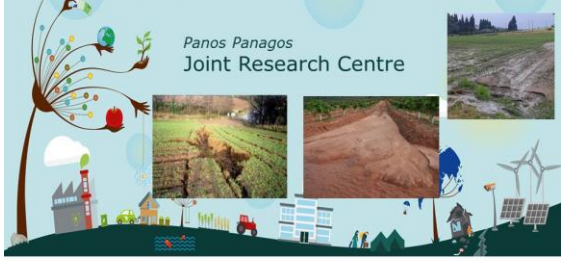
$$Cfactor_{NUTS2} = \sum_{n=1}^{37} Cfactor_{crop,n} * \%NUTS2_{crop,n}$$

Crop factor	Change 2012-2030
0.05-0.1	-0.4%
0.15	-0.3%
0.20-0.21	0.0%
0.22-0.25	+0.4%
0.3-0.32	+1.0%
0.34-0.35	-0.8%
>=0.38	0.0%

Soil Erosion projections for 2030

Soil erosion by water occurs through rills as a result of rainfall when vegetation protection is limited. Human activities may accelerate this process due to application of inappropriate management practices

Panos Panagos
Joint Research Centre



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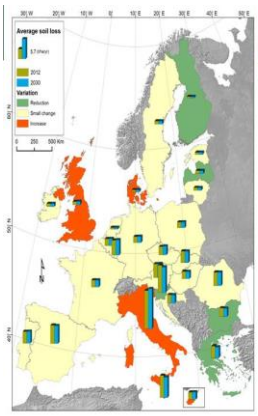

Erosion trend

Insignificant change: **+0.5%**

Mean soil erosion in **Agricultural lands**

2012 : 3.25 t ha^{-1} yr^{-1}

2030 : 3.27 t ha^{-1} yr^{-1}

Mean soil erosion in **Arable lands**

2012 : 2.64 t ha^{-1} yr^{-1}

2030 : 2.66 t ha^{-1} yr^{-1}

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Changes 2012-2030 - Where & Why?

- BG: **Decrease** of soil erosion by **5.6%** as the rapeseed and flowers will replace highly erosive areas
- EL **Highest decrease** by **11.7%** : Important increase of fodder crops which will replace tobacco, cotton and fallow lands
- SI is a country with high erosion risk and the **decrease of 3%** by 2030 in soil erosion is significant.
- DK Increase of soil erosion by 4.6% :The country is at low erosion risk (0.59 t ha^{-1} yr^{-1}) because of the smooth topography, soil properties and the low intense rainfalls.
- IT Increase of soil erosion by 3.9% (11.02 → 11.46 t $ha^{-1}yr^{-1}$): decrease in less erosive agricultural areas by 1.5% (other fodder crops, barley, and wheat) and increase of fallow land
- UK Increase of soil erosion by 4.5% (0.91 t ha^{-1} → 0.96 t ha^{-1}) : new energy crops and rapeseed will increase replacing soft wheat and barley

Thanks

Questions?

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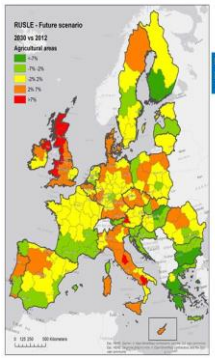
http://esdac.jrc.ec.europa.eu

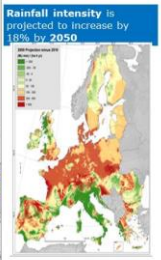
@PanosPanagos33

Spatial distribution & uncertainties



Two "unknown" factors:

Rainfall intensity is projected to increase by 18% by **2050**



Impact of **policies** in changing Agricultural Management practices

- Cover Crops
- Reduced Tillage
- Plant residues
- Grass margins
- Contour farming
- Stone walls
- Agroforestry, etc.....

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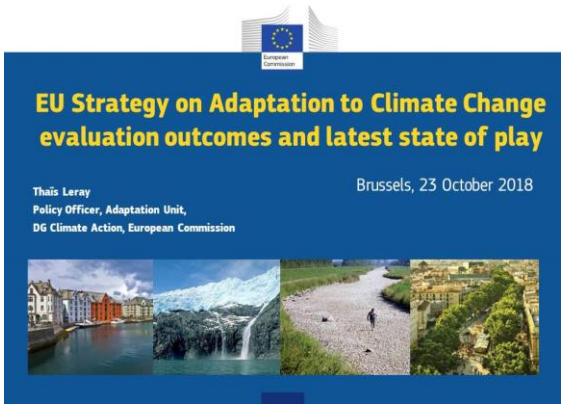
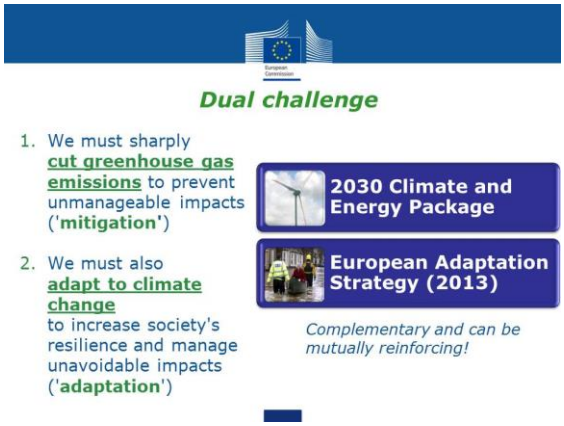
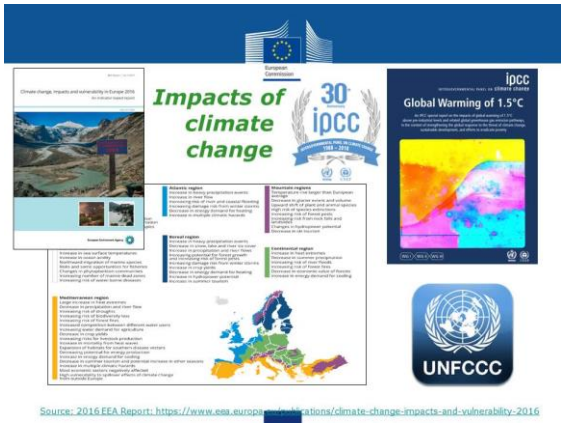
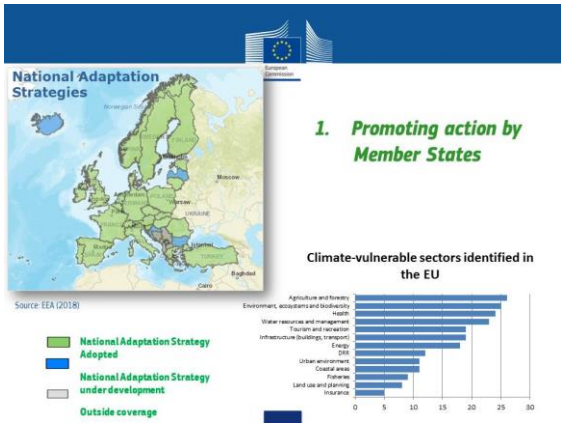
Thais Leray (DG CLIMA)









Main findings of the evaluation of the EU's strategy on adaptation to climate change

Evaluation criteria

✓relevant ✓effective ✓efficient ✓coherent ✓EU added value

More work needed to:

- implement and monitor national strategies
- bridge newly emerging knowledge gaps
- address territorial and social differences in vulnerability to climate change

Also, new developments since 2013:

- More extreme events (e.g. heatwaves, droughts, storms, wildfires 2x, floods 4x compared to 1980) – likelihood increased by climate change
- Higher future damage estimates (e.g. 10-fold increase for critical infrastructure by the end of the century)
- International context: Paris Agreement's provisions on adaptation

2. Mainstreaming adaptation across policies

- **Agriculture**
  - Common Agriculture Policy (CAP)
  - Measures to support climate adaptation – many related to water: natural water retention; water efficient crops/varieties; efficient irrigation systems; insurance,…
- **Forests**
  - EU Forest Strategy
  - EU Biodiversity strategy
  - LULUCF
- **Water policies**
  - Water Framework Directive
  - Floods directive
  - Proposal for Water Reuse
- **Urban**
  - Urban agenda for the EU
  - Covenant of Mayors for Climate and Energy
  - Climate resilient infrastructure
  - Climate proofing of (major) projects:

Relevant action already foreseen:

- Integrate adaptation into the implementation of the Energy Union Governance and the National Energy and Climate Plans (NECPs)
- in the next MFF, channel public and private funding to adaptation
- making cohesion funding conditional to disaster risk management plans consistent with national adaptation strategies, and to NECPs

For future consideration:

- further mainstreaming into disaster risk reduction, trade, maritime policy, fisheries and public health
- increase coherence between adaptation and sustainable development, biodiversity and disaster risk reduction
- increase the use of technical standards, taxonomies and Copernicus Climate services in insurance and in climate-proofing of private investments
- MS to encourage/require local authorities to adopt adaptation plans

Article in EAFRD	Rural Development Measures	Examples for climate change mitigation and adaptation	
Art. 17	Investments in physical assets	Actions which reduce input intensity, energy demand and emissions, such as energy efficiency installations in buildings, use of renewable energy sources, manure storage facilities and biogas digesters.	Actions which reduce the exposure of holdings to climate change impacts, such as on-farm water installations for drought periods, highly efficient irrigation systems, investments in farm buildings installations to cope with heat and water stress.
Art. 18	Restoring agricultural production potential damaged by natural disasters and catastrophic events and introduction of appropriate prevention actions	Actions preventing soil degradation, low tillage, and winter green cover. Establishing agro-forestry systems can also provide synergies to improve soil management, including on soil carbon stock depletion.	Investments in hard and soft infrastructure to m climate hazards (e.g. flood risk and volatility in w supply). Introduction of climate-resilient crops an potentially including local crop varieties a breeds.
Art. 19	Farm and business development	Support to young farmers to introduce efficiency-oriented measures to optimize production processes. These may relate to on-farm or off-farm non-agricultural activities (e.g. land cultivation, energy consumption, and use of fertiliser and forage)	Business plans including climate adaptat considerations and cost estimations. This to Articles 38, 39, 40 (see below).
Art. 22	Afforestation and creation of woodland	In general, all afforestation measures are beneficial to mitigation. Where possible, attention should be given to measures with an optimal input/output ratio (i.e. investments in relation to carbon capture) taking in account location, soil quality, repidness of tree growth etc.	Forest management actions ecosystem services provide climate resilience (e.g. reduc protection and soil buffering
Art. 23	Establishment of agroforestry systems	Actions which reduce input intensity, energy demand and GHG emissions, because of improved efficiency of resource use through tree cover.	Mixture of agriculture and f protection, prevent erosion, quality, lessen water demar shaded areas for livestock a
Art. 24	Prevention and restoration of damage to forests from forest fires and natural disasters and catastrophic events	Actions that prevent forest fires and mitigate impacts from fires and natural disasters.	Protective infrastructure sup forest roads, water reservo forest maintenance and fire remote sensing, post-fire pr (fascines) and forest protection belts.

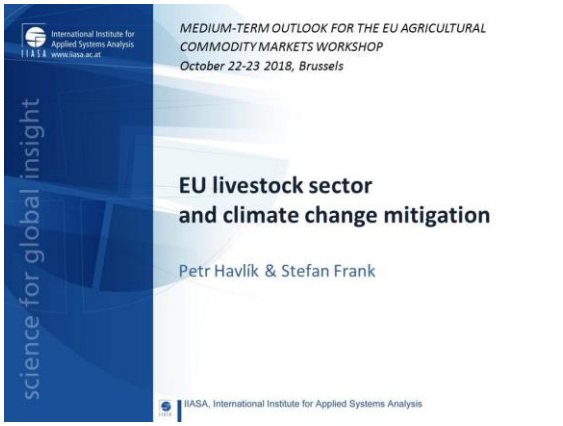
3. Bridge the knowledge gap

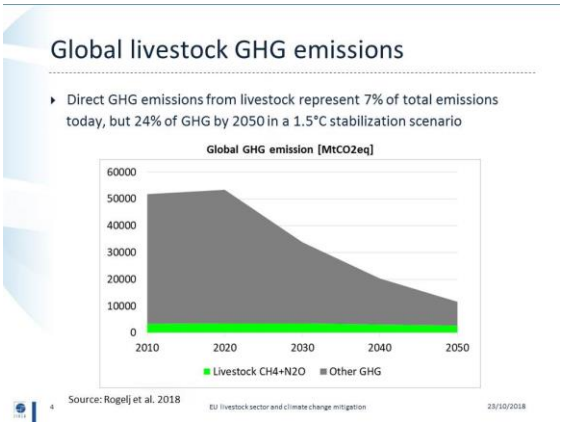
- EEA Climate change impact and vulnerability assessment
- JRC Modelling
- Climate ADAPT

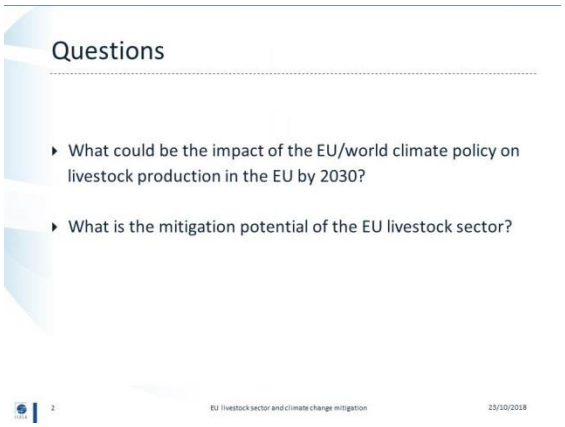
https://www.eea.europa.eu/publications/climate-change-impacts-and-vulnerability-2016

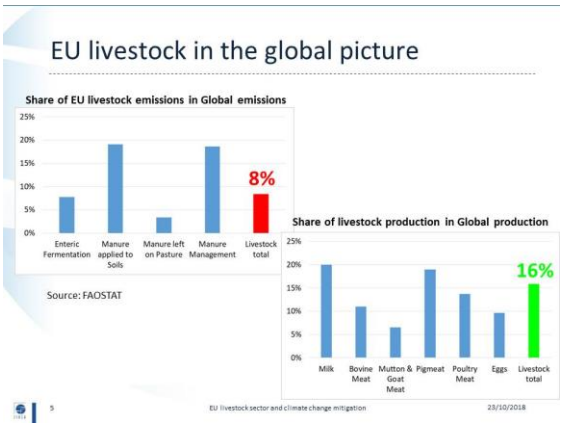
http://climate-adapt.eea.europa.eu/

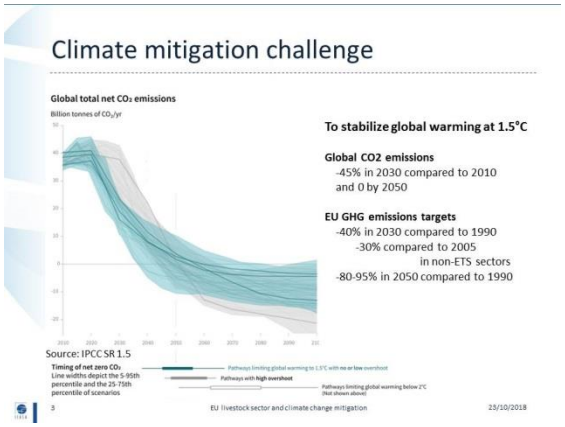
Petr Havlik (IIASA)

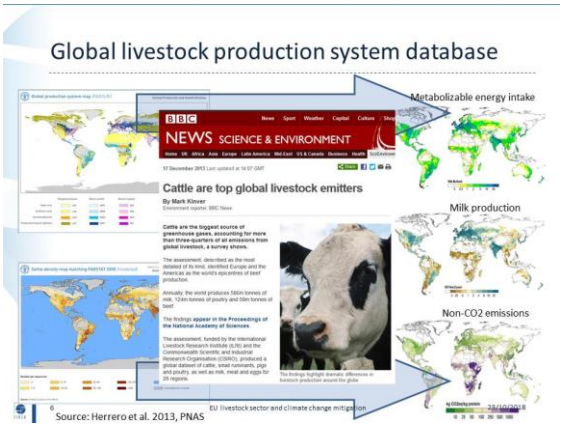






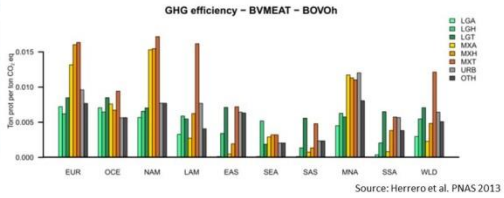






Livestock systems heterogeneity

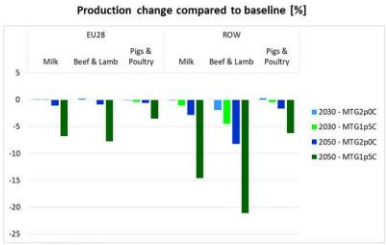
- Large efficiency gaps prevail between production systems and regions



7 EU livestock sector and climate change mitigation 23/10/2018

Climate policy impact on EU livestock sector

- Climate policy compatible with the Paris Agreement targets implemented through a carbon price (USD 3/10 in 2030, USD 50/250 in 2050)



8 EU livestock sector and climate change mitigation 23/10/2018

Climate policy impact on EU livestock sector

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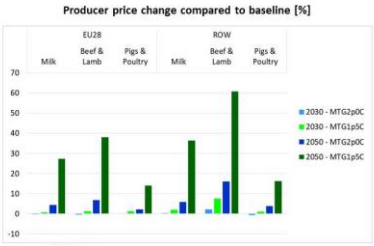
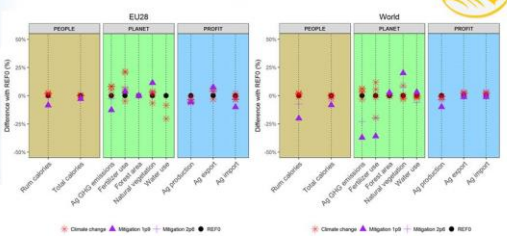


9 EU livestock sector and climate change mitigation 23/10/2018

Climate policy impact on EU food system

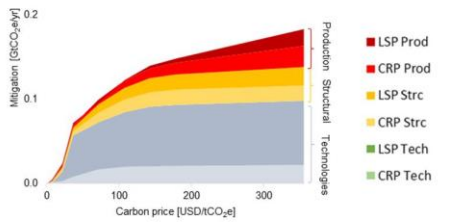
- SUSFANS sustainability metrics (preliminary)



10 EU livestock sector and climate change mitigation 23/10/2018

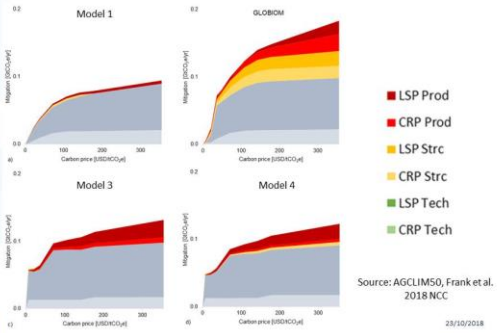
EU agricultural sector mitigation potential

- EU non- CO_2 Abatement potential by 2030 by wedges



11 EU livestock sector and climate change mitigation 23/10/2018

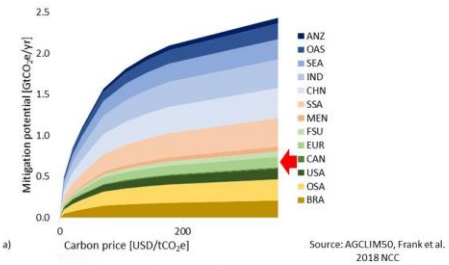
EU agricultural sector mitigation potential



12 EU livestock sector and climate change mitigation 23/10/2018

GHG mitigation effort across regions

- EU contributes about 5% of the global effort



13 EU livestock sector and climate change mitigation 23/10/2018

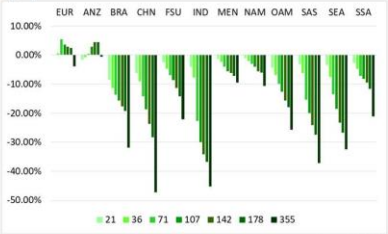
EU agricultural sector mitigation potential

- EU Livestock production change compared to baseline by 2030 [%]

Source: AGCLIM50, Frank et al. 2018 NCC

EU agricultural sector mitigation potential

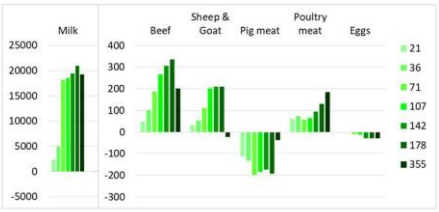
- Global livestock production change compared to baseline by 2030 [%]



Source: AGCLIM50, Frank et al. 2018 NCC

EU agricultural sector mitigation potential

- EU net trade absolute difference compared to baseline by 2030 [1000 tonnes]



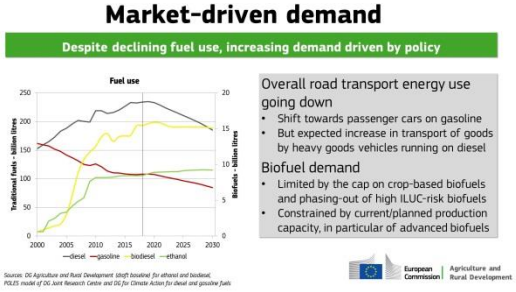
Source: AGCLIM50, Frank et al. 2018 NCC

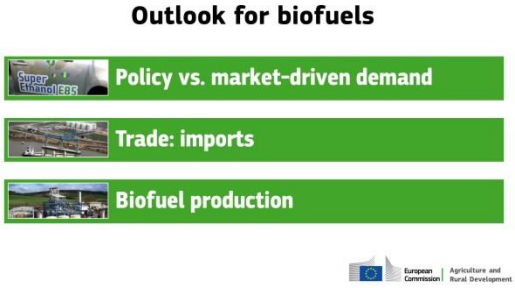
Thank you!

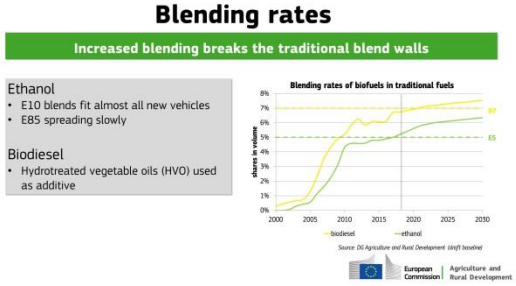
havlikpt@iiasa.ac.at
www.globiom.org

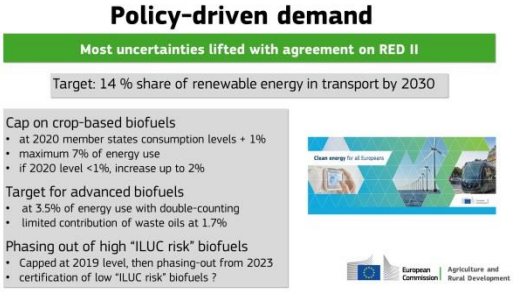
Session 7: Biofuels

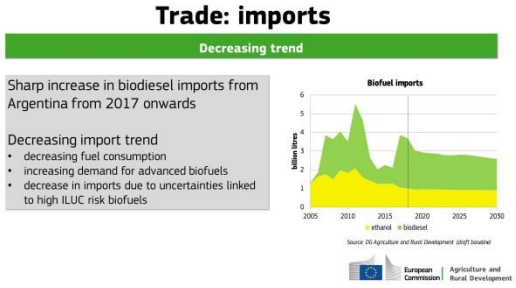
Sylvie Barel (DG AGRI)

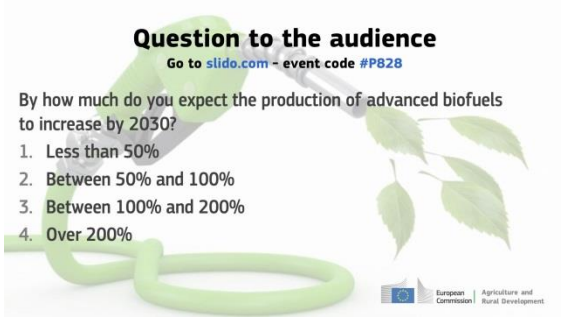


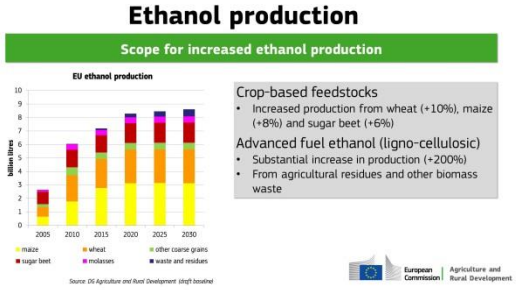


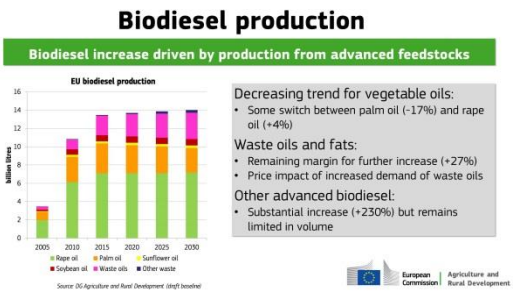


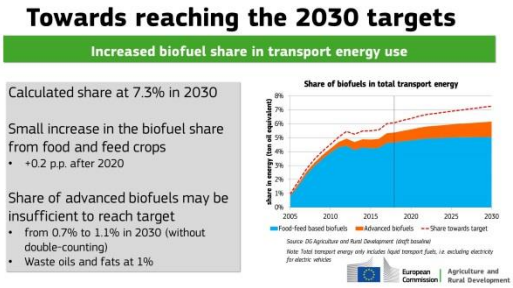


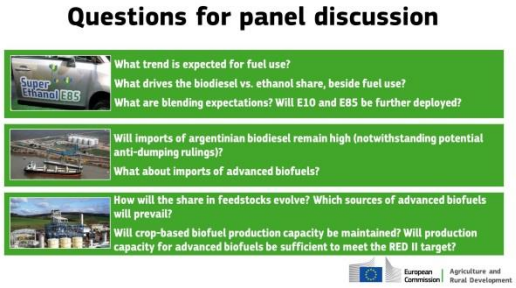




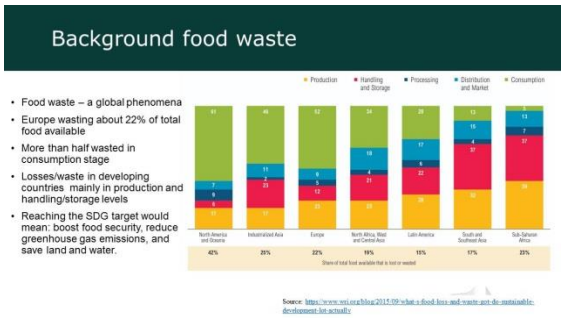






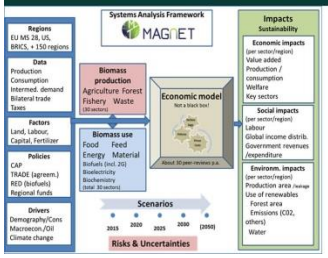


George Philippidis (DG JRC)



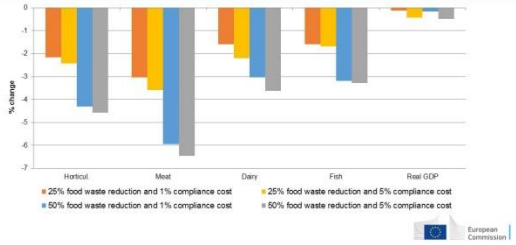
Model framework for coherent policy scenarios

Modular Applied GeNeral Equilibrium Tool (**MAGNET**)



- Simulation model with global coverage (143 countries) and economy-wide (80+ sectors) tool based on economic theory
- Intersector and interregional coverage ideal basis for policy coherence analysis (ripple effects of policy A on indicators B and C)
- Use to analyse CAP reform, trade liberalisation, biomass and sustainability, fisheries, GHG emissions reductions etc. Focus on food-energy-climate-water-health nexus
- SDG indicators 1, 2, 6, 7, 8, 9, 10, 12, 14, 17 (60+ measures and growing)
- Objective and scope of the scenario study: estimate the impact of reduction of household food waste within the EU28 and the associated market and non-market impacts.

EU production trends vs. baseline



Model approach – assumptions and scenarios

Baseline:

- see publication JRC (2018), also quoted in Bioeconomy COM/SWD
- macroeconomic, energy, policy, technology drivers to 2030

Scenarios: (2020-2030)

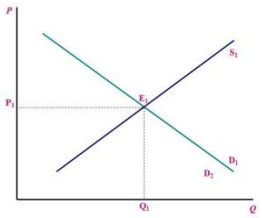
- 25% and 50% of available food waste modelled through budget share shifters - costless to the consumer
- Logistical, packaging (microbial risk, re-sealable packaging reduce water loss, interactive films, oxygen scavengers), labelling (best before, eat by?).
- Compliance cost: assume 1% and 5% of internal EU market sales.
- Imposed on intra-EU purchases and extra-EU imports. Extra-EU exports maintained at baseline levels (no reciprocal food waste measures on extra-EU exports).

COMMODITIES	% HH food waste
Fruits	19%
Vegetables	26%
Sugar	12%
Cereals	12%
Fish	12%
Meat	19%
Dairy	8%

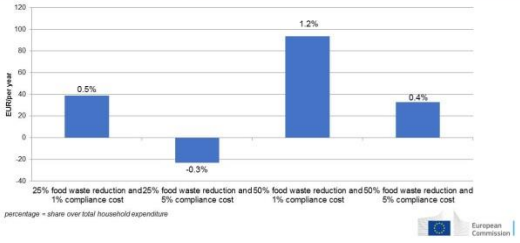
Source: JRC Ispra

EU market prices change vs. baseline

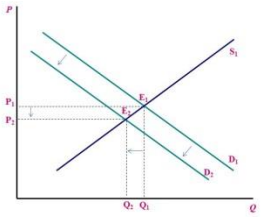
Demand vs supply effects



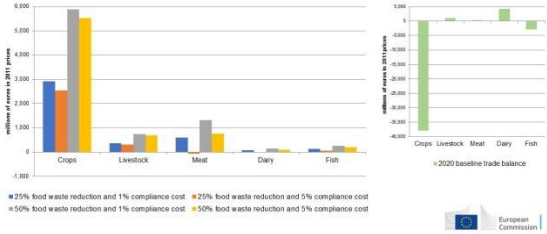
Per capita household expenditure change vs. baseline



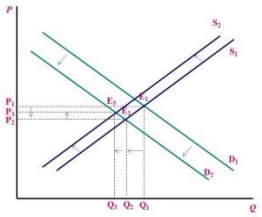
Some basic microeconomics



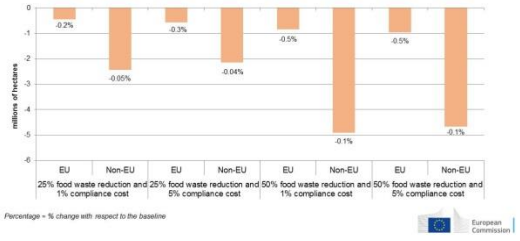
EU trade balance changes vs. baseline



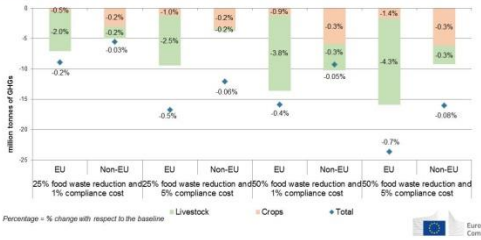
Some basic microeconomics



Environmental impacts: land use change vs. baseline



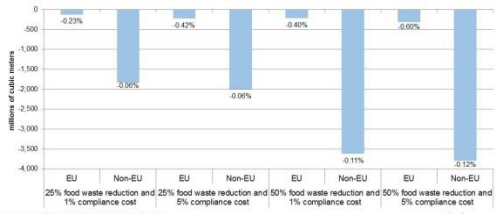
Environmental impacts: GHG change vs. baseline



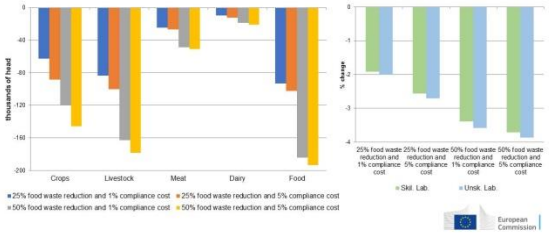
Any questions?

You can find me at george.philippidis@ec.europa.eu

Environmental impacts: Irrigated water abstraction change vs. baseline



EU employment in agriculture vs. baseline



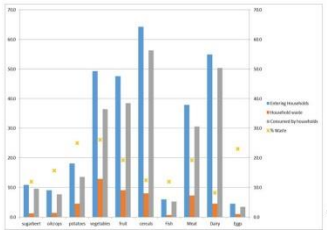
Take away messages:

Mixed impacts
- ✓ Savings per person of up to 93 Euros per year

Mixed impacts
- Agri-food production falls
- Small losses in real GDP

Reduction of land and resource in the in EU and outside
- ✓ Reduction of land usage
- ✓ Reduction of GHG emissions
- ✓ Reduction of water abstraction

EU Food flows in 2011 (data in Mt wet matter)



EU Food flows, year 2011, data in Mt wet matter

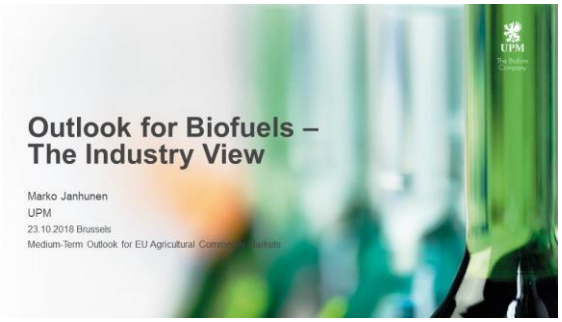
	Entering Households	Household waste	Consumed by households	% Waste
Total	302.5	50.8	251.6	16.8

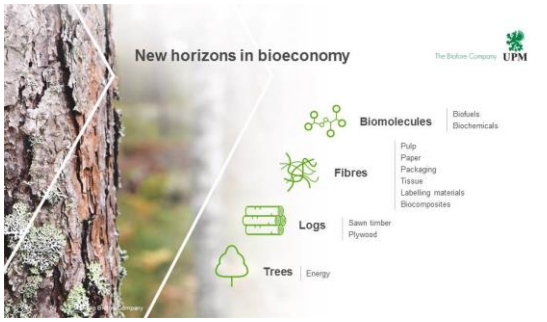
Source: JRC - D1

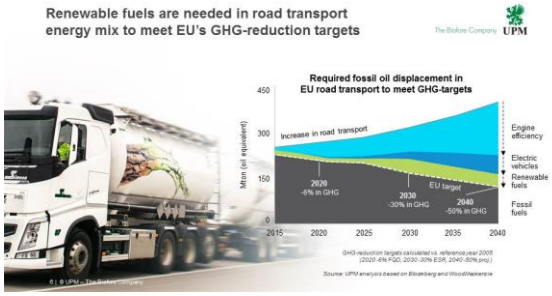
Caveats and next steps

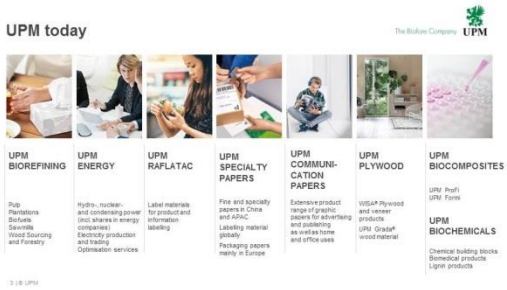
Caveats:
- The assumptions on the compliance costs are rough estimates. Look to possibly refine. Also, consumers are 'forced' to adjust budget shares to food waste reductions. Ignores possibility of consumers trading up to higher value foods.
- Saved water probably a lot higher given that we do not have data on water usage for animal husbandry
- The notion that improvements in logistical, packaging, labelling could have a payoff (less wastage, more efficiency). Dampen/reverse production and price effects
  - Food prices may be relatively lower -> even higher per capita savings
  - Greater efficiency promotes greater competitiveness (lower per unit costs) so production improves
- Do not contemplate the role of food waste in municipal waste management (soil compositing, anaerobic digestion for methane (biogas, electricity etc.)). Priority for further research.
- The role of public policy on food waste awareness campaigns is not contemplated, but could be considered within an economy-wide modelling framework.

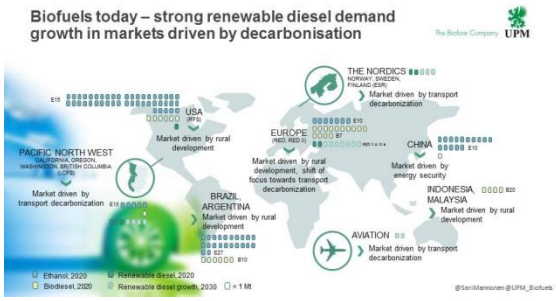
Marko Janhunen (Leaders of Sustainable Biofuels)

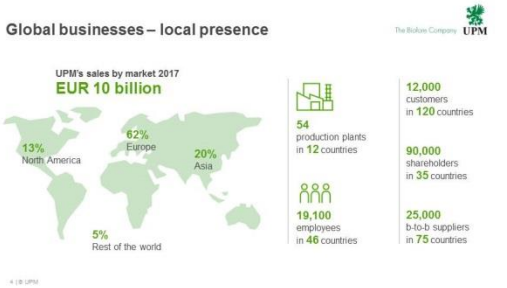


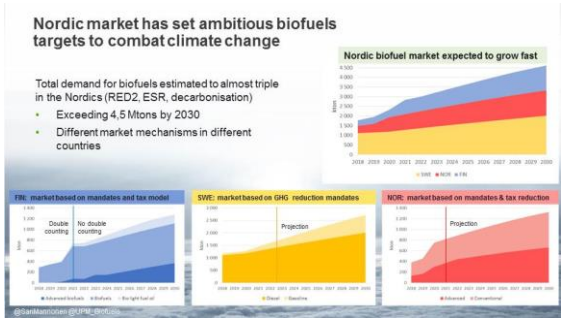


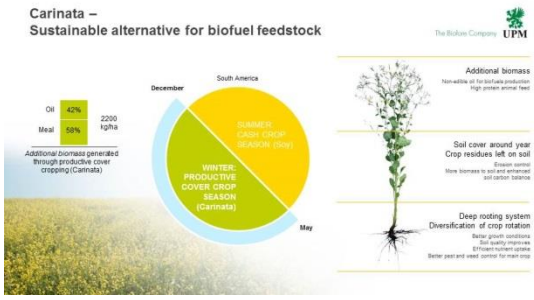


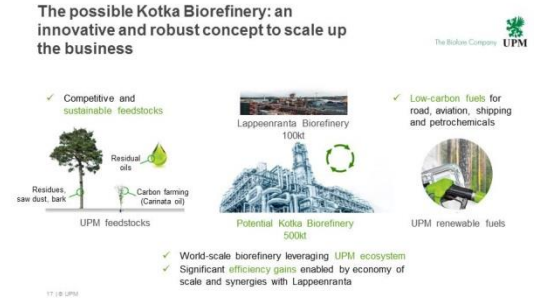


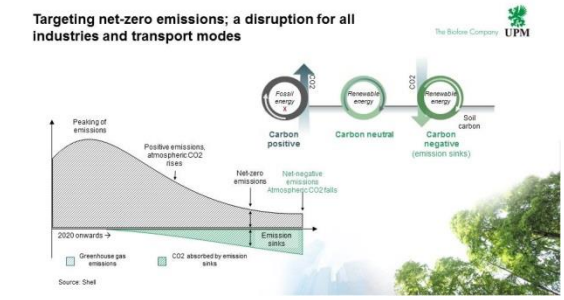


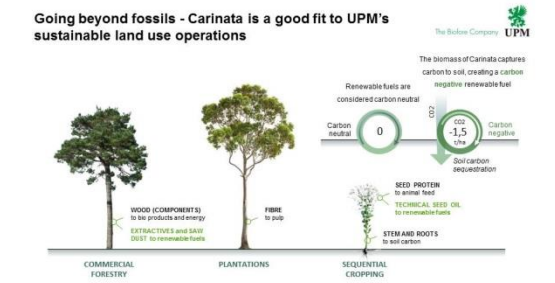






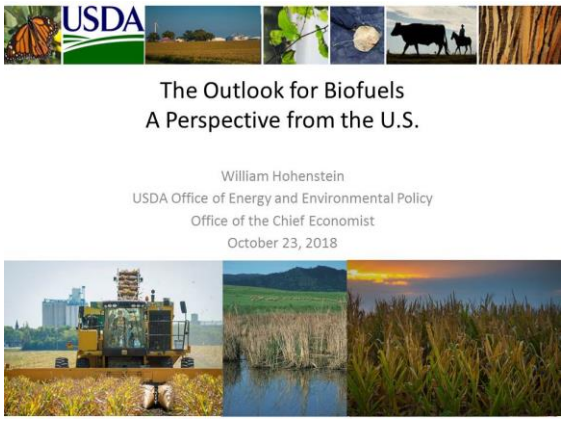


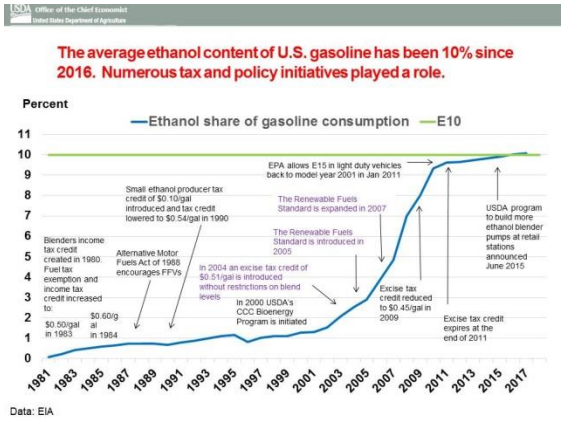


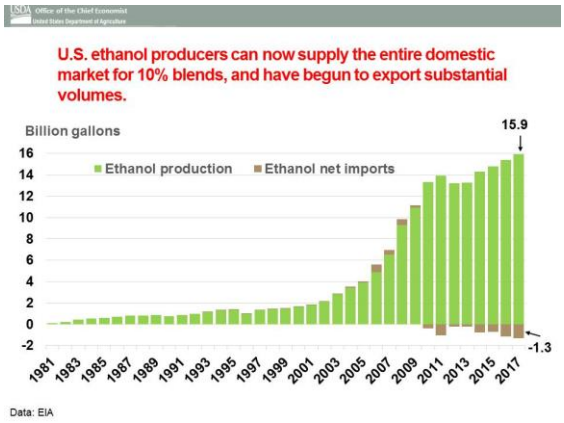


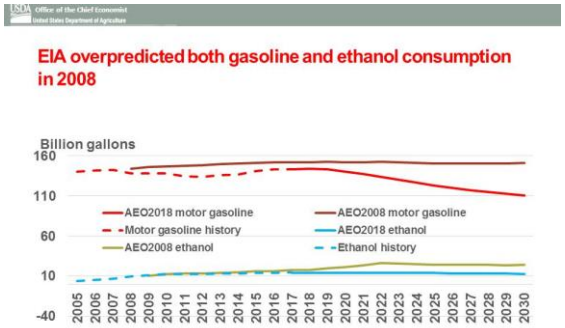
UPM
The Biofore Company

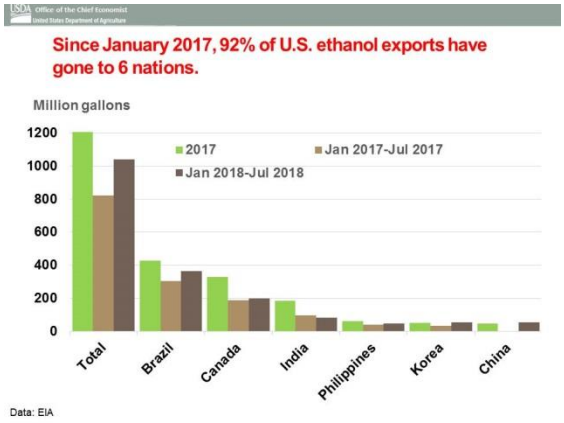
William Hohenstein (USDA)











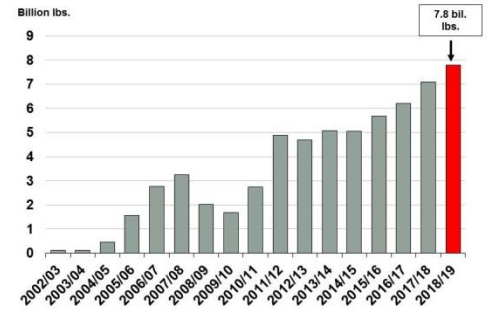
Office of the Chief Economist
United States Department of Agriculture

The U.S. is planning to allow E15 to be sold in the summer months

- E15 sales in Iowa and Minnesota grew from 11 million gallons in 2016 to 47 million gallons in 2017
  - Monthly data indicate a drop in E15 sales during the summer months, likely due to regulation
  - If average sales rate for Jan 1-May 31 and Sep 16-Dec 31 were maintained in the summer, E15 sales would have been 30% higher
- E15 will likely be limited in the short run by infrastructure and consumer preference
- Hundreds of new E15 locations were already planned before the waiver announcement
  - E15 is currently available at more than 1,600 fueling stations in the U.S.
  - Motorist concerns over the ability of their vehicles to use E15 may impact sales
  - Older vehicles (pre-2001) can use up to E10, but not E15.

Office of the Chief Economist
United States Department of Agriculture

Soybean oil used for U.S. biodiesel forecast to rise 9.86 percent in 2018/19



Data: USDA

Office of the Chief Economist
United States Department of Agriculture

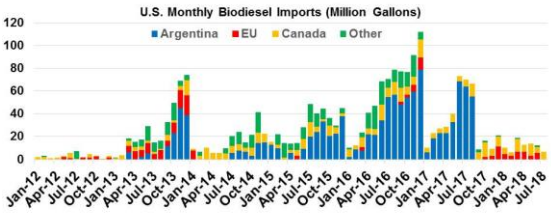
BIODIESEL

Office of the Chief Economist
United States Department of Agriculture

SUSTAINABILITY

Office of the Chief Economist
United States Department of Agriculture

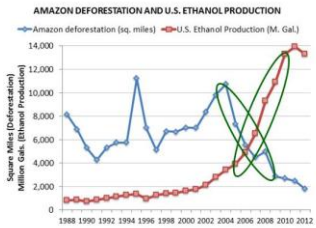
The absence of Argentina has implications for U.S. biodiesel imports and domestic production



Data: EIA

Office of the Chief Economist
United States Department of Agriculture

Amazon Deforestation and U.S. Ethanol Production

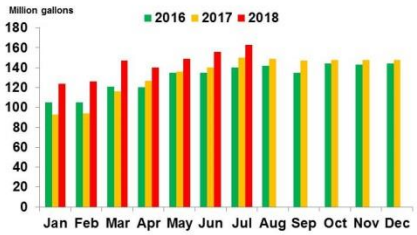


Data show that in the period that annual U.S. corn ethanol increased from 3.0 billion gallons to just under 14 billion gallons (2004 to 2010), deforestation in Brazil's Amazon dropped from 10,200 square miles to just under 2,400 square miles per year.

Sources: Brazilian National Institute of Space Research 2014, EIA 2015

Office of the Chief Economist
United States Department of Agriculture

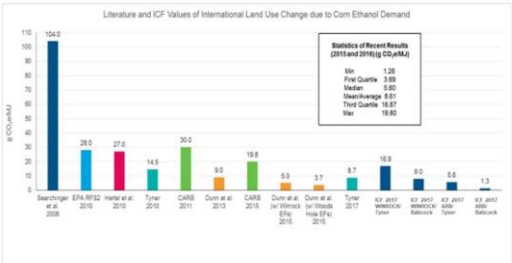
U.S. monthly biodiesel production is shaping up to be higher in 2018 than it was in 2017.



Data: EIA

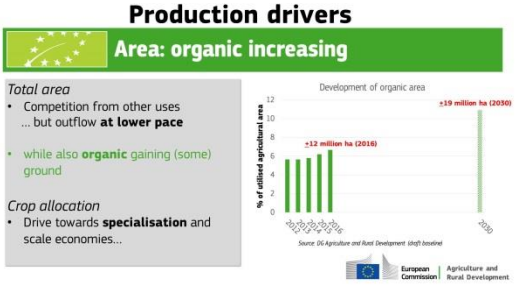
Office of the Chief Economist
United States Department of Agriculture

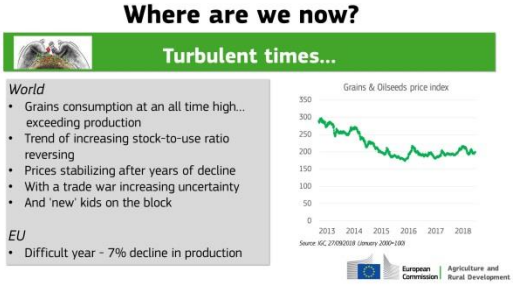
Comparison of International Land-use Change Used in Lifecycle GHG Assessments

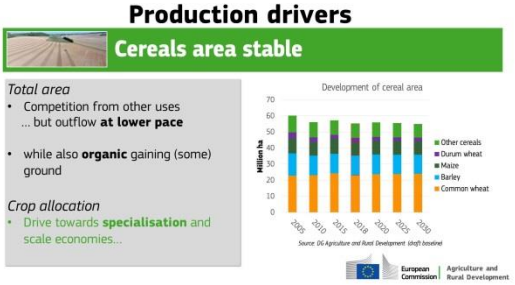


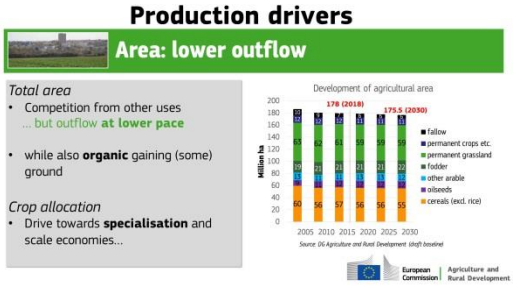
Session 8: Cereals, protein crops and oilseeds

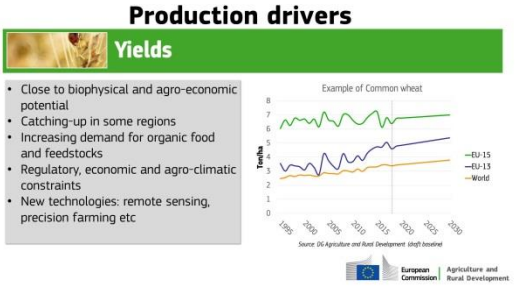
Koen Mondelaers (DG AGRI)







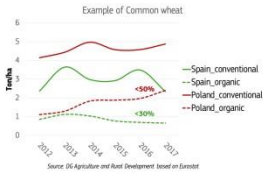




Production drivers

Organic yields show large gap

- Close to biophysical and agro-economic potential
- Catching-up in some regions
- Increasing demand for organic food and feedstocks
- Regulatory, economic and agro-climatic constraints
- New technologies: remote sensing, precision farming etc



Source: DG Agriculture and Rural Development based on Eurostat

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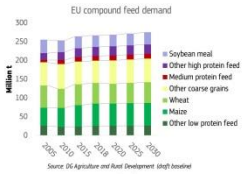
Market drivers

Feed

- Increased milk yields
- Firm poultry production
- Pig production remains n°1 feed destination
- Organic demand increasing



Source: DG Agriculture and Rural Development (draft baseline)

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Question to the audience

Go to slido.com - event code #P828

Who's expected to be the **n°1 wheat exporter** in the coming years?

1. EU
2. Russia
3. Ukraine

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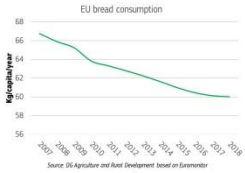
Market drivers

Food

- Bread and flour consumption per capita decreasing
- But processed food (cakes, pastries, cereal bars, pizzas) increasing
- Isoglucose growing, but moderately
- Organic demand increasing, but share remains limited



Source: DG Agriculture and Rural Development based on Euromonitor

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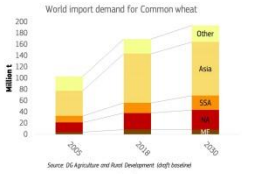
Market drivers

Exports

- sustained global demand for cereals
- in particular EU wheat but also barley
- but competition as well



Source: DG Agriculture and Rural Development (draft baseline)

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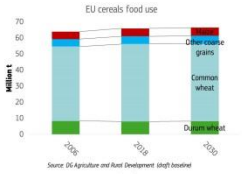
Market drivers

Food not a major driver of change

- Bread and flour consumption per capita decreasing
- But processed food (cakes, pastries, cereal bars, pizzas) increases
- Isoglucose growing, but moderately
- Organic demand increasing, but share remains limited



Source: DG Agriculture and Rural Development (draft baseline)

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Market drivers

Exports

- sustained global demand for cereals
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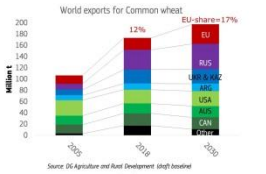

Source: DG Agriculture and Rural Development (draft baseline)

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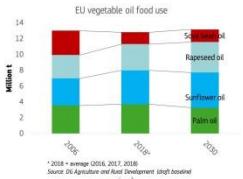
Market drivers

Food: vegetable oils

- Palm oil suffers from bad health and environmental image...
- ... but it has specific features: hard to replace (e.g. in chocolates)
- Rapeseed oil for food is increasing
- Given the healthy image, further increase expected
- RED2 also stimulates maintenance of domestic rapeseed production



* 2018 = average (2016, 2017, 2018)

Source: DG Agriculture and Rural Development (draft baseline)

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Question to the audience

Who's expected to be the **n°1 wheat exporter** in the coming years?

1. EU
2. Russia
3. Ukraine

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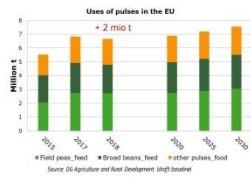
Market drivers

Food and feed also stimulate pulses

- Favourable policy environment
- Less availability in 2018 led to a small decrease in consumption
- Recovery in 2020 and growth beyond



Source: DG Agriculture and Rural Development (draft baseline)

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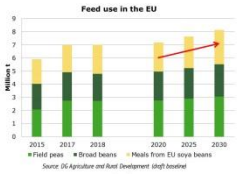
Market drivers

... and soya bean

- Favourable policy environment
- Less availability in 2018 led to a small decrease in consumption
- Recovery in 2020 and growth beyond
- But even more vigorous growth for domestic (non-GM) soya bean



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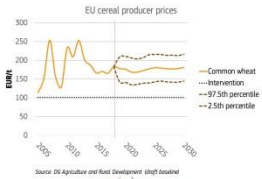
Is the price environment right?

Prices for cereals

- Wobly path
- Effects of exchange rate and oil price
- Growth expected in main producing areas – downward pressure
- Uncertainties (extreme weather events) around the corner



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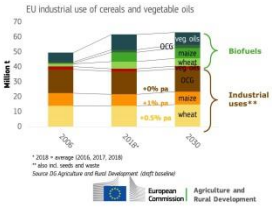
Market drivers

Industrial uses (incl. biofuels)

Industrial uses
- Bio-economy: cosmetics, pharmaceuticals, biobased plastics, polymers, detergents
- Small but increasing
- Conducive policy environment
- From starches & vegetable oils

Biofuels
- Some but limited growth in domestic oilseeds
- Increased maize use for ethanol



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Questions for panel discussion

Cargill

- Developments in food: can you confirm the decreasing trend in cereals for food use in the EU? Any idea on pulses for food use?
- Developments in feed: for which grains do you see decrease/growth? Is there a switch from bulk to specialized feed mixes?
- Industrial use of starches and alike: do you see growth in the bio-economy (outside biofuels)?
- the evolution of the global grains market, also with regard to expected or possible (new) developments, in terms of products, market segments, industrial processes, etc.
- Future prospects for Russia, Ukraine and their potential to export?

FEDIOL

- Will RED2 give an impetus to domestic rapeseed production? What about high ILUC risk biofuels, which feedstocks may be affected (in/outside EU)?
- What are the developments you see for vegetable oil food use? Which of the oilseeds/vegetable oils will profit most?
- What about industrial use (apart from biodiesel) of vegetable oils?
- What future do you see for the EU soybean production? Where is growth expected? Is there market interest in GM-free soy?

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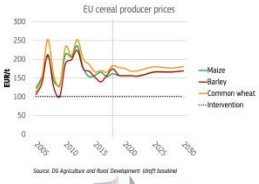
Is the price environment right?

Prices for cereals

- Wobly path
- Effects of exchange rate and oil price
- Growth expected in main producing areas – downward pressure
- Uncertainties (extreme weather events) around the corner



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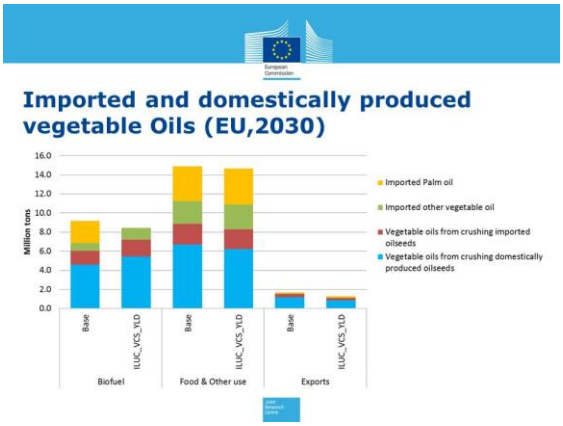
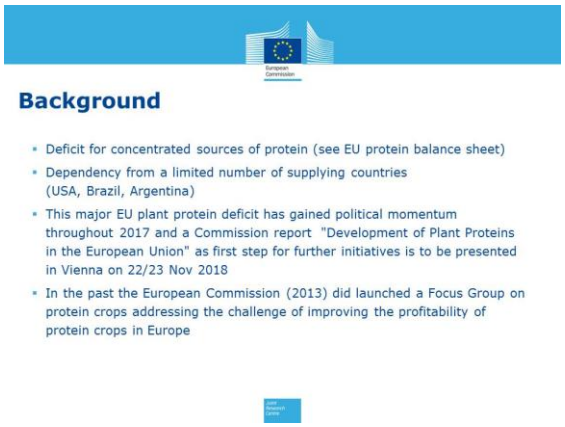
Hans Jensen (DG JRC)



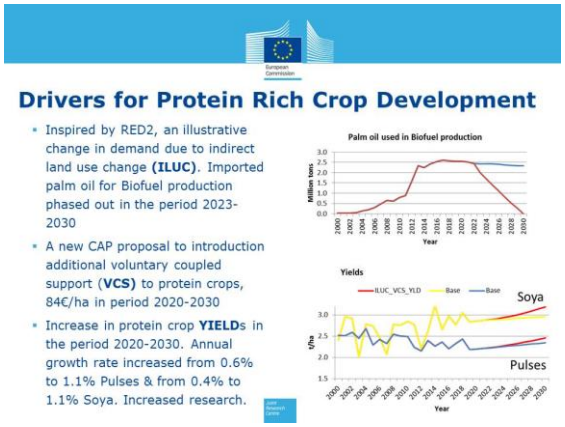


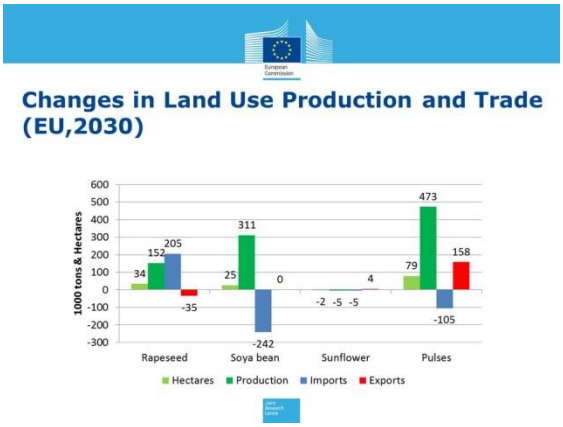
Different Uses of Vegetable Oils (EU, 2030)

	Biodiesel	Food & OU	Exports	Total
Oil (from EU produced oilseed)	877	-441	-310	126
Oil (from imported oilseed)	279	-140	-98	41
Imported oil (rape, sun, soya, copra, cotton, groundnut)	436	233	0	670
Imported Palm oil	-2329	117	0	-2212
Total change	-737	-230	-407	-1375

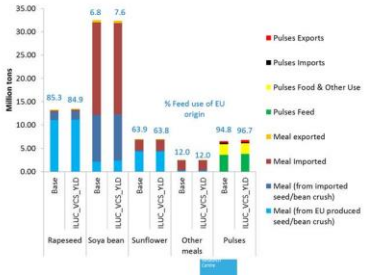
	Production	Imports	Exports	Total
Change in Biodiesel (1000t)	-795	616	-115	-64

- Biodiesel consumer price increase by 31%





Imported and domestically produced Protein meals and Pulses (EU 2030)



Changes in the Pulses Market Balance (EU, 2030)

	Pulses
Production	473
Food & Other Use	26
Imports	-105
Exports	158
Total animal feed	184

- Pulses feed consumption expands by 5.1% (184 000t)

Different Uses of Protein Meals (EU, 2030)

	Rapeseed	Soya bean	Sunflower	Other	Total
Meal (from EU produced oilseed)	106	**220**	-6	0	320
Meal (from imported oilseed)	114	**-173**	-3	0	-61
Import	-19	**-150**	11	11	-148
Exported	13	**2**	0	0	15
Total change	187	**-104**	2	11	96

- Protein meal feed consumption expands by 0.2% (96 000t)

Concluding Remarks

- The phasing out of biofuel feedstocks with high risk of ILUC (i.e. palm oil) has by itself a limited impact on protein meal produced from domestically sourced oilseeds.
- The introduction of voluntary coupled support to pulses and soybean production increases domestically produced proteins.
- Increasing the yields of protein and pulses crops through research and development has a large potential to increase domestically produced EU protein.

Decomposition of Effects in Soybean Meals (EU, 2030)

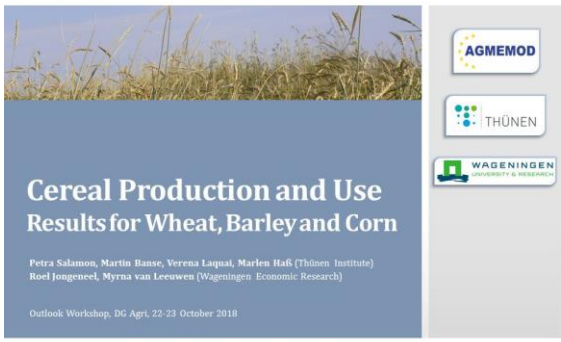
	ILUC	VCS	Yield	Total
Meal (from EU produced oilseed)	0	29	191	**220**
Meal (from imported oilseed)	34	-28	-179	**-173**
Import	-153	1	2	**-150**
Exported	2	0	0	**2**
Total change	-121	3	14	**-104**

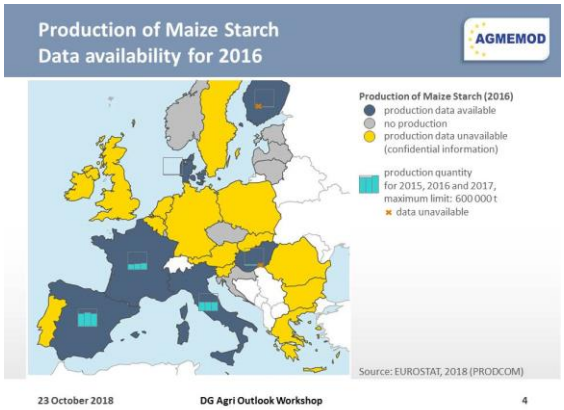
- Imported meal declines by 1% (-173 000t, -150 000t)

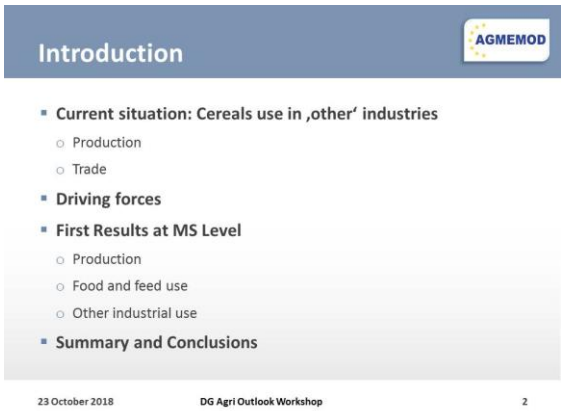
Thank you
for your attention

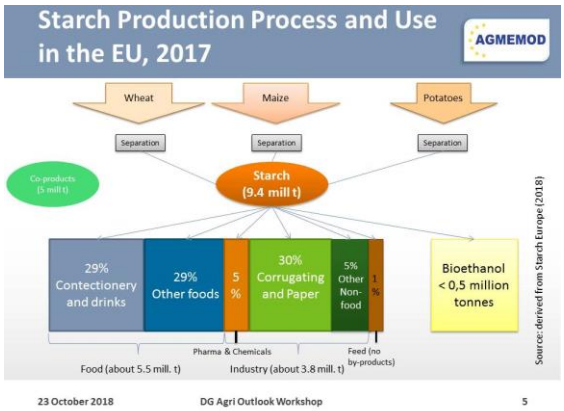
Hans.jensen@ec.europa.eu

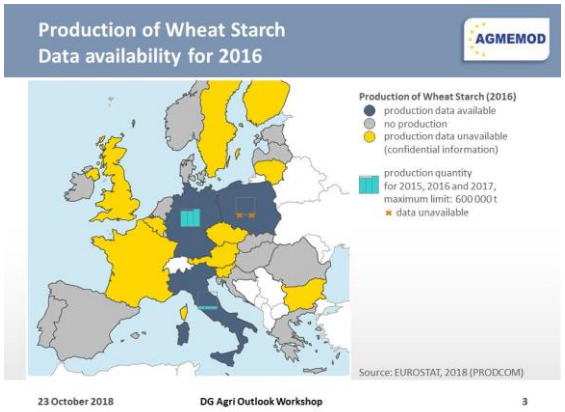
Martin Banse (Thünen Institute)

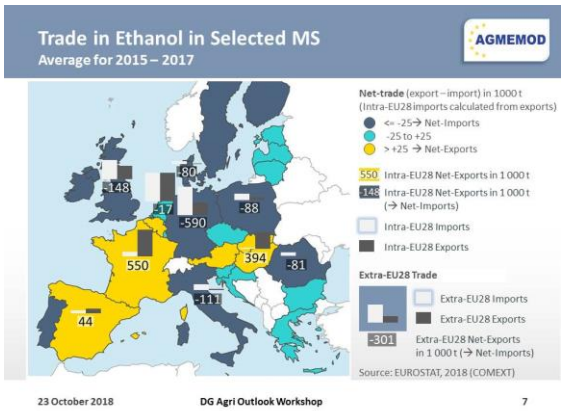











Trade in Ethanol in Selected MS
Average for 2015 – 2017
AGMEMOD
Net-trade (export – import) in 1000 t
(Intra-EU28 imports calculated from exports)
<= -25 → Net-Imports
-25 to +25
> +25 → Net-Exports
550 Intra-EU28 Net-Exports in 1 000 t
148 Intra-EU28 Net-Exports in 1 000 t (→ Net-Imports)
Intra-EU28 Imports
Intra-EU28 Exports
Extra-EU28 Trade
Extra-EU28 Imports
Extra-EU28 Exports
-301 Extra-EU28 Net-Exports in 1 000 t (→ Net-Imports)
Source: EUROSTAT, 2018 (COMEXT)
-148
-80
-17
-590
-88
550
394
-81
-111
44
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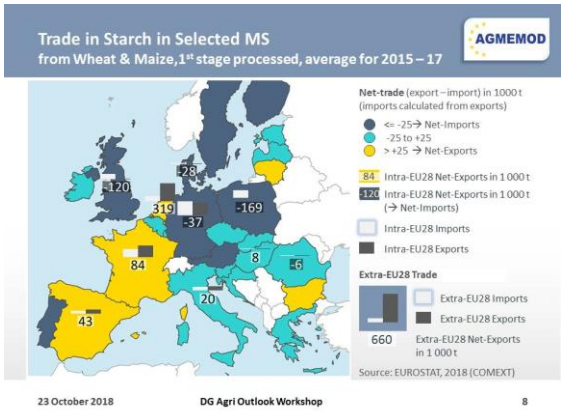
Trade in Starch in Selected MS
from Wheat & Maize, 1st stage processed, average for 2015 – 17
AGMEMOD
Net-trade (export – import) in 1000 t
(imports calculated from exports)
<= -25 → Net-Imports
-25 to +25
> +25 → Net-Exports
84 Intra-EU28 Net-Exports in 1 000 t
-124 Intra-EU28 Net-Exports in 1 000 t (→ Net-Imports)
Intra-EU28 Imports
Intra-EU28 Exports
Extra-EU28 Trade
Extra-EU28 Imports
Extra-EU28 Exports
660 Extra-EU28 Net-Exports in 1 000 t
Source: EUROSTAT, 2018 (COMEXT)
-120
-28
319
-37
-169
84
8
-6
20
43
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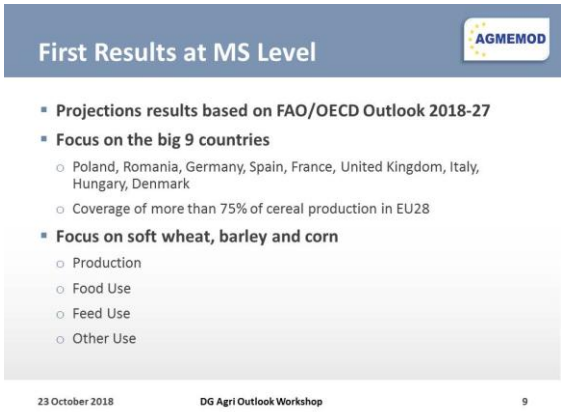
First Results at MS Level
AGMEMOD
Projections results based on FAO/OECD Outlook 2018-27
Focus on the big 9 countries
Poland, Romania, Germany, Spain, France, United Kingdom, Italy, Hungary, Denmark
Coverage of more than 75% of cereal production in EU28
Focus on soft wheat, barley and corn
Production
Food Use
Feed Use
Other Use
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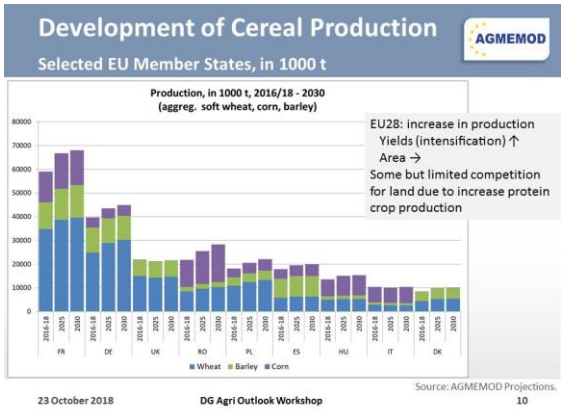
Development of Cereal Production
Selected EU Member States, in 1000 t
AGMEMOD
Production, in 1000 t, 2016/18 - 2030
(aggreg. soft wheat, corn, barley)
EU28: increase in production
Yields (intensification) ↑
Area →
Some but limited competition for land due to increase protein crop production
Wheat Barley Corn
Source: AGMEMOD Projections.
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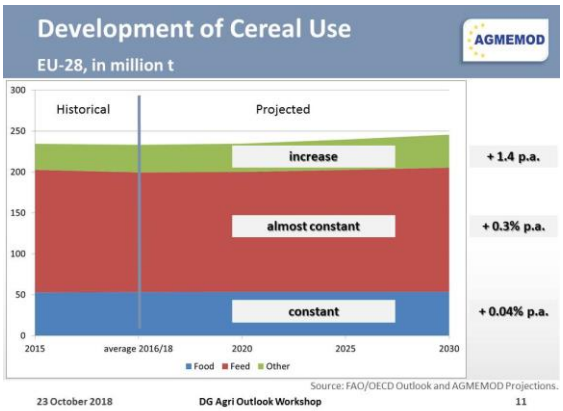
Development of Cereal Use
EU-28, in million t
AGMEMOD
Historical
Projected
increase
almost constant
constant
+ 1.4 p.a.
+ 0.3% p.a.
+ 0.04% p.a.
2015
average 2016/18
2020
2025
2030
Food Feed Other
Source: FAO/OECD Outlook and AGMEMOD Projections.
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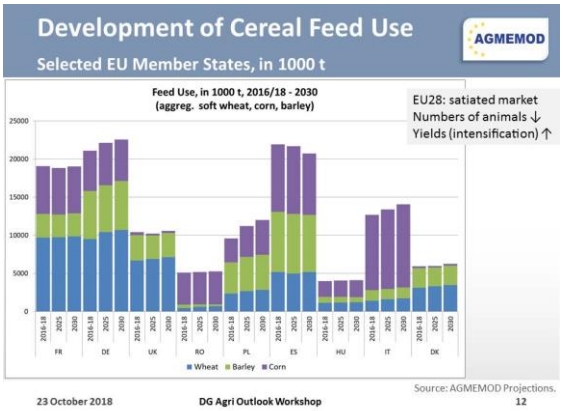
Development of Cereal Feed Use
Selected EU Member States, in 1000 t
AGMEMOD
Feed Use, in 1000 t, 2016/18 - 2030
(aggreg. soft wheat, corn, barley)
EU28: satiated market
Numbers of animals ↓
Yields (intensification) ↑
Wheat Barley Corn
Source: AGMEMOD Projections.
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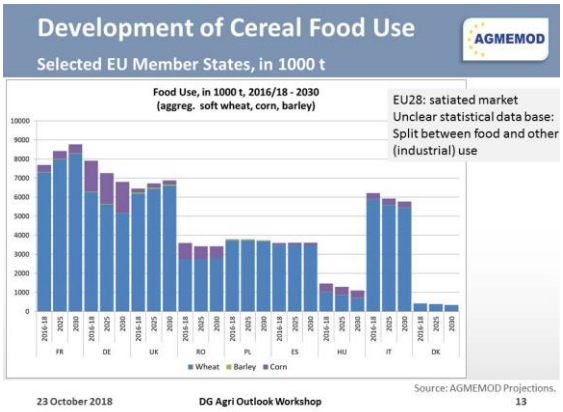
Development of Cereal Food Use
Selected EU Member States, in 1000 t
AGMEMOD
Food Use, in 1000 t, 2016/18 - 2030
(aggreg. soft wheat, corn, barley)
EU28: satiated market
Unclear statistical data base:
Split between food and other (industrial) use
Wheat Barley Corn
Source: AGMEMOD Projections.
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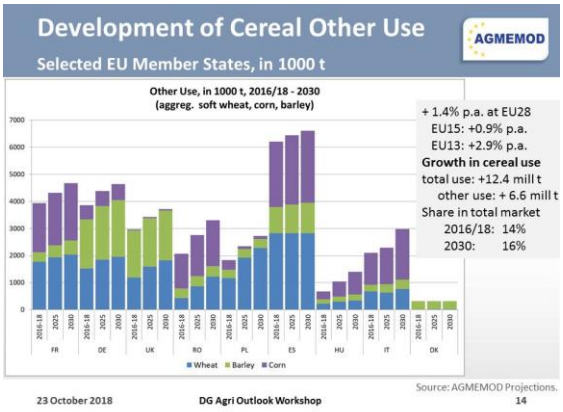
Development of Cereal Other Use
Selected EU Member States, in 1000 t
AGMEMOD
Other Use, in 1000 t, 2016/18 - 2030
(aggreg. soft wheat, corn, barley)
+ 1.4% p.a. at EU28
EU15: +0.9% p.a.
EU13: +2.9% p.a.
Growth in cereal use
total use: +12.4 mill t
other use: + 6.6 mill t
Share in total market
2016/18: 14%
2030: 16%
Wheat Barley Corn
Source: AGMEMOD Projections.
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Conclusions

- **Feed and food are the dominant uses of cereal products**
  - Feed use is expected to show limited growth
  - Food use is stable or on the decline (bread, pasta, polenta)
- **Other uses**
  - Consists to a big share in processing food/drink (shows modest growth)
  - Use for paper industry is stable and may decline or may convert to increased exports (starch)
  - Demand for biofuels
  - "Real non-food" use (bioplastics, other chemicals, cosmetics, medicals): show steady growth, but starts from small shares
- **Uncertainties**
  - Measurement issues limit insight and hamper comparability of data
  - Changes in policies may change outlet possibilities (package, DDGS & methane reduction in feed)
  - Innovations and policies may lead to 'jumps' in future prospective

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Additional slides

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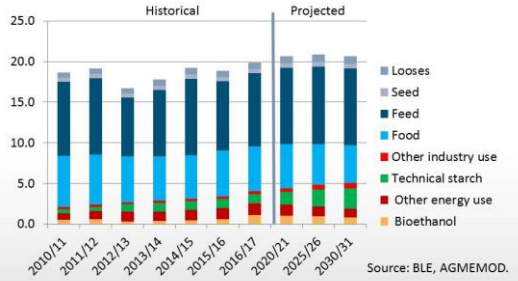
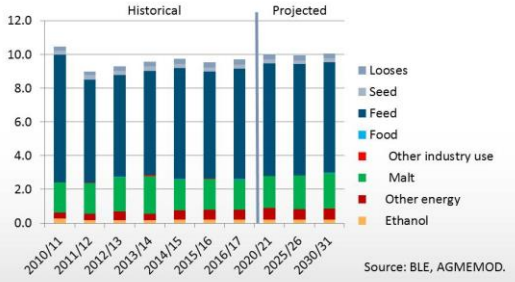
Domestic Use of Soft Wheat
Germany, million t



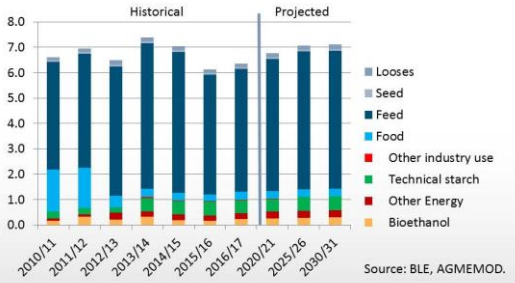
23 October 2018 DG Agri Outlook Workshop 17

Domestic Use of Barley
Germany, million t



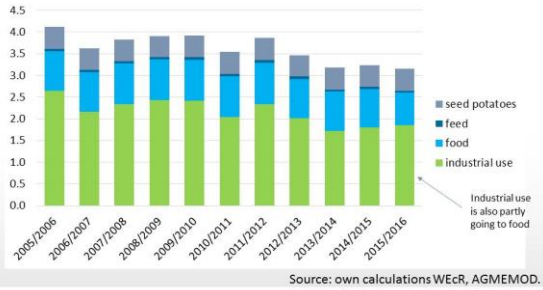
23 October 2018 DG Agri Outlook Workshop 18

Domestic Use of Maize
Germany, million t



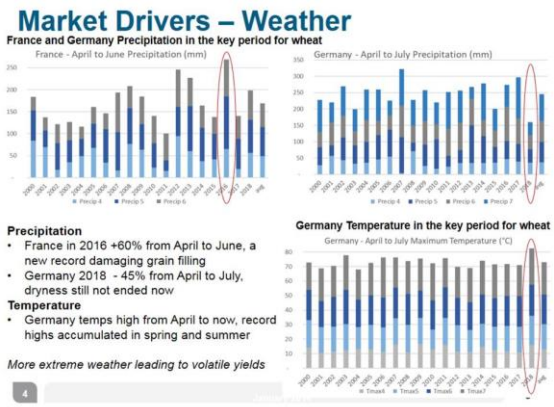
23 October 2018 DG Agri Outlook Workshop 19

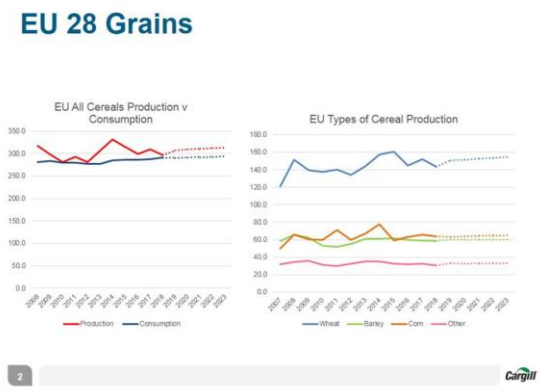
Domestic Use of Potatoes
Netherlands, million t

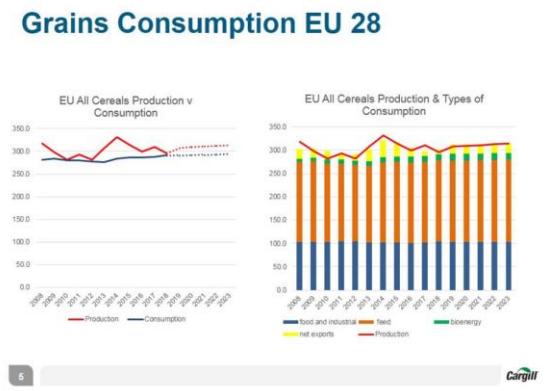


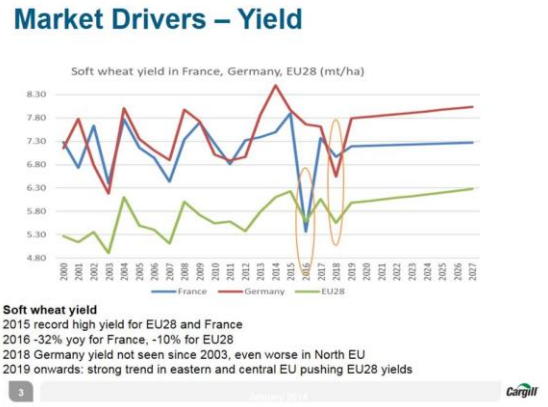
23 October 2018 DG Agri Outlook Workshop 20

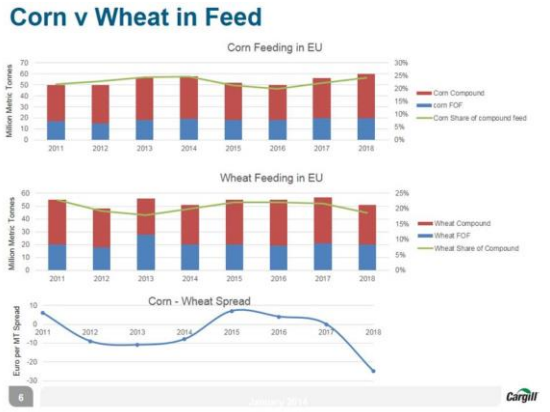
Sandy Wilson (Cargill)

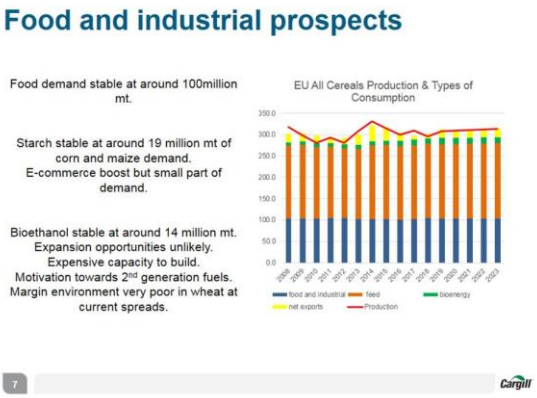


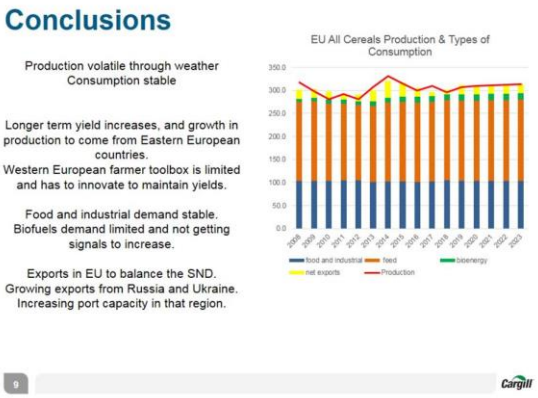




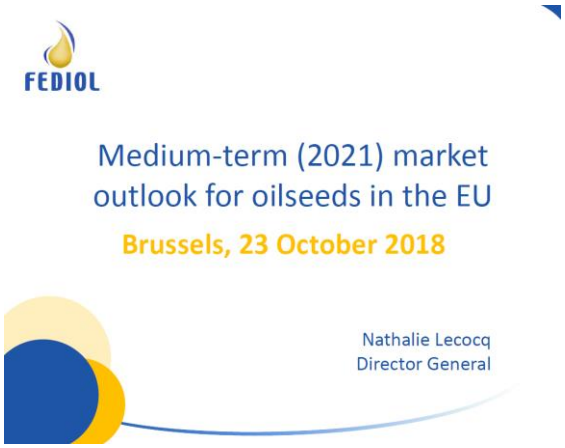


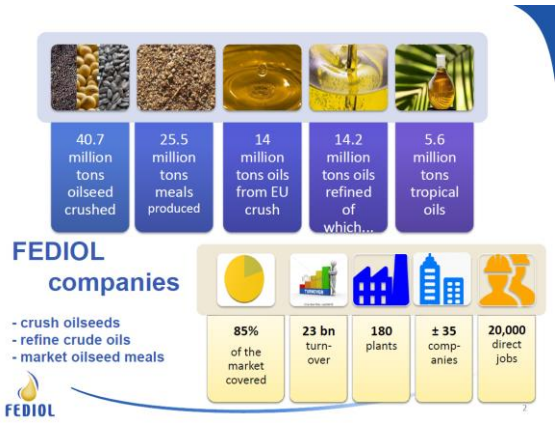




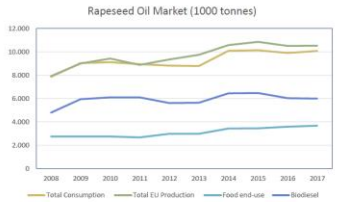


Nathalie Lecocq (FEDIOL)





Rapeseed oil trend



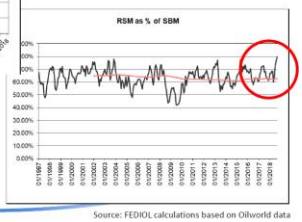
Solid demand for rapeseed oil in food
Sustained demand for rapeseed oil biodiesel
Outlook 2021: EU rapeseed crush stable around 24 mmt, BUT with lower EU production and higher imports

FEDIOL

Source: FEDIOL based on Oilworld data

Oilmeal trends

Price for rapemeal over soymeal strengthening
20% above the 60% long-term average

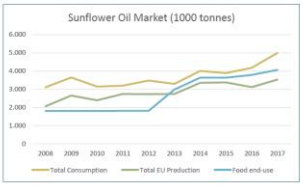


More demand for non-GMO feed material
Outlook 2021: Increase in soybean crush, based on EU production increase (+1 mio tonnes) and stable soybean imports; slightly less soybean meal imports

FEDIOL

Source: FEDIOL calculations based on Oilworld data

Sunflower Oil trend



Sunflower seed oil for food market with consumption increasing
Imports of sunoil to complement
Outlook 2021: EU sunflower seed crush stable around 7,9 mmt

FEDIOL

Source: FEDIOL based on Oilworld data

Policy uncertainties

Impacting rapeseed oil use in biodiesel

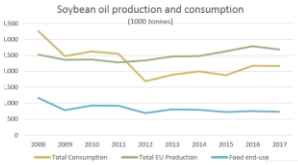
- Countervailing import duties on SME and PME?
- HVO from PFAD within our outside the 7% cap?
- Definition of high-iluc risk crops ?

Impacting EU production and imports

- EU policy on pesticides and pesticides residues
- New Breeding Techniques
- US-China trade dispute

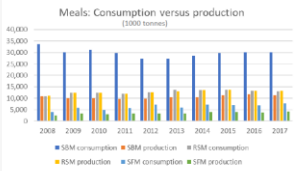
FEDIOL

Soybean oil trends



Total production of soybean oil exceeding EU consumption
Export of soybean oil
But the soybean oil market is not a driver of soybean crushing…

EU meal consumption higher than production for all meal types
Stable demand of high-protein feed material



Source: FEDIOL based on Oilworld data

FEDIOL

Conclusions

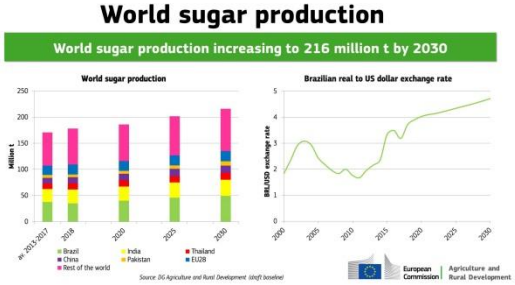
Mid-term Outlook 2021

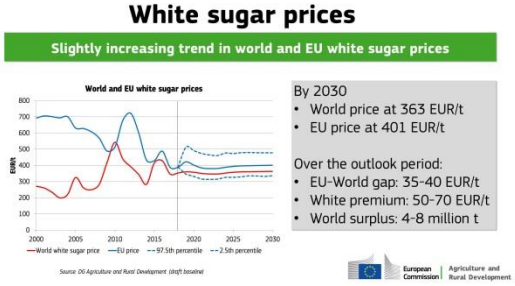
- **Rapeseed crush stable at around 24 mio tonnes,** based on slightly lower EU production compensated by imports
- **Sunflower crush stable at around 8 mio tonnes,** with similar EU producton and higher food oil demand covered by additional import of oils
- **Soybean crush increased to 16 mio tonnes** based on EU production increase of **1 mio tonnes** and stable EU soybean import
- **EU protein meal production overall stable**, except for +800.000 tonnes soybean meal from domestic soybeans

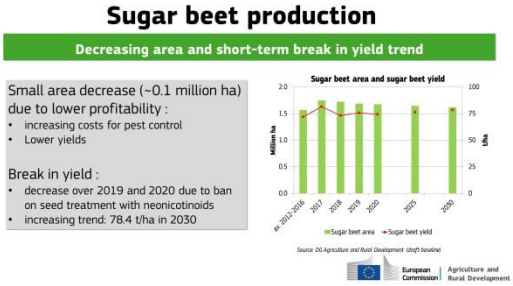
FEDIOL

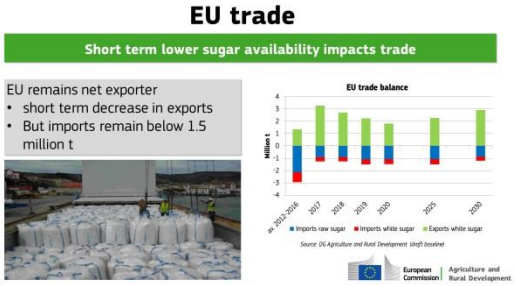
Session 9: Sugar

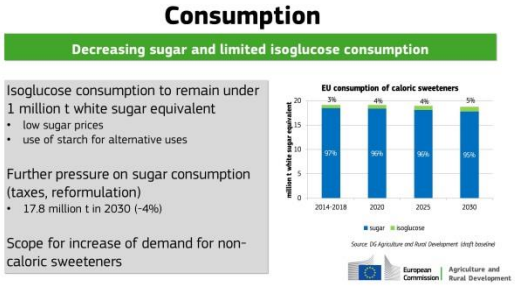
Sylvie Barel (DG AGRI)

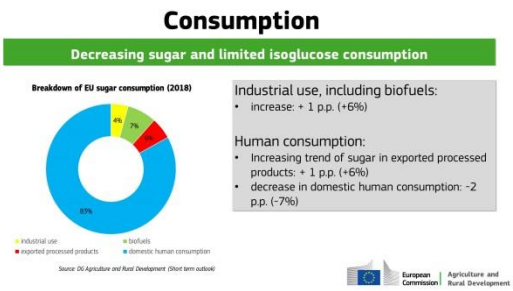


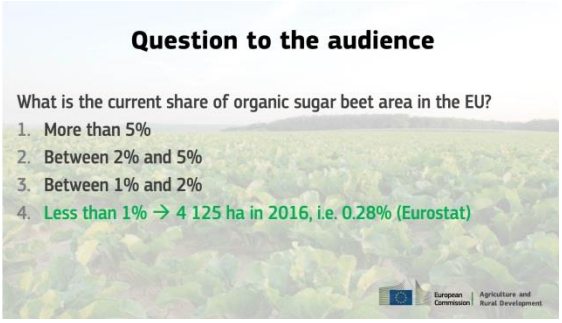


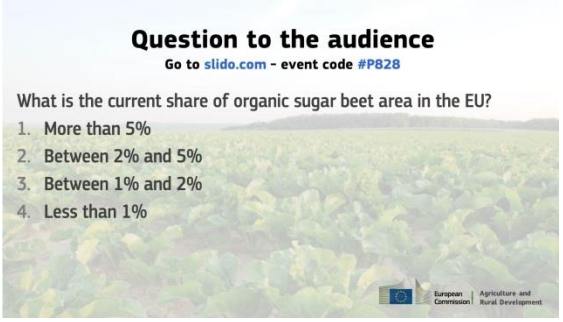






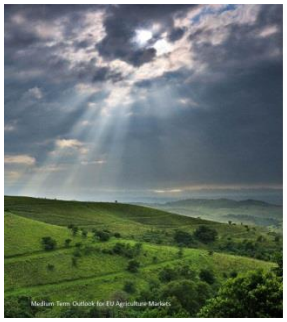

Consumption
Decreasing sugar and limited isoglucose consumption
Breakdown of EU sugar consumption (2018)
4%
7%
85%
industrial use
biofuels
exported processed products
domestic human consumption
Source: DG Agriculture and Rural Development (Short term outlook)
Industrial use, including biofuels:
• increase: + 1 p.p. (+6%)
Human consumption:
• Increasing trend of sugar in exported processed products: + 1 p.p. (+6%)
• decrease in domestic human consumption: -2 p.p. (-7%)
European Commission | Agriculture and Rural Development


Question to the audience
What is the current share of organic sugar beet area in the EU?
1. More than 5%
2. Between 2% and 5%
3. Between 1% and 2%
4. Less than 1% → 4 125 ha in 2016, i.e. 0.28% (Eurostat)
European Commission | Agriculture and Rural Development


Question to the audience
Go to slido.com - event code #P828
What is the current share of organic sugar beet area in the EU?
1. More than 5%
2. Between 2% and 5%
3. Between 1% and 2%
4. Less than 1%
European Commission | Agriculture and Rural Development


Questions for panel discussion
How much will the area decrease?
How strong will be the break in yield?
What about evolution of organic production?
What trading position for the EU given the domestic and global context?
What about global organic production and EU imports of organic sugar cane?
How strongly will sugar reduction campaigns influence sugar consumption?
What trend is expected for industrial sugar use?
And the trend for isoglucose consumption?
European Commission | Agriculture and Rural Development

Julian Price (Sugar analyst)



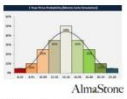
Medium-term outlook for the EU agricultural commodity markets

Tour du monde sucrier

23/10/2018 1

Global raw sugar futures prices

Futures market prices (New York #11) have risen by **42%** since the end of September, from a low of 9.83 cents/lb (basis V18) to 13.95 cents/lb (H19 on 19th Oct).



Probabilities of spot month #11 values reaching 8.10, 8.91, 10.89, 11.91, 13.32, 14.95, 16.40, 20.19 and 23.18 cents/lb.

Probability distribution based on a simple Monte Carlo using historical volatility, calculated on the 21d moving average of daily the log return.

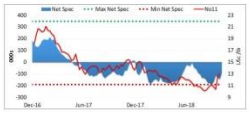
julianprice.com

23/10/2018 Medium Term Outlook for EU Agriculture Markets 2

Responding to positive market signals, speculators have been covering record shorts

Forecasts of lower crops in the EU and C/S Brazil,
India and Brazil's role in supporting ethanol prices,
together with short covering,
apparently provided sufficient market signals for the #11 market to rally.

Perhaps forecasts that the global surpluses in the past couple of years could turn into a global deficit in 2019/20 with lower output in the EU, India and Thailand, could encourage the rally in prices to continue?



Source: ESPL

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23/10/2018 Medium Term Outlook for EU Agriculture Markets 3

Global supply and demand for sugar

- Global sugar supply and demand is expected to move for a surplus of ≈10m tonnes towards balance in 2018/19 (Oct/Sep) after a fall in global production.
- Global sugar consumption is expected to grow by just 1% per annum owing to lower population growth and health concerns.

	Changes 18/19 from 17/18
BRAZIL	-0.4
EUROPEAN UNI	-2.0
INDIA	0.8
THAILAND	-0.9
CHINA	1.1
UNITED STATES	-0.1
PAKISTAN	-0.5
RUSSIA	-0.3
MEXICO	-0.1
INDONESIA	0.1
CUBA	0.3
AUSTRALIA	0.3
TOTAL	**-10.7**

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23/10/2018 Medium Term Outlook for EU Agriculture Markets 4

Brazil sugar

- With both cane and sugar production are forecast lower, the C/S crop now now projected at below 27 mmt in total for 2018/19 after 36.1 mmt in 2017/18.
- The 2019/20 campaign will begin in April 2019 with expectations low owing to a paucity of replanting, i.e. higher average age of cane.

Table 1. 2018/2019 harvest season: accumulated production until October 1, 2018

Product	South-Central region		
	2017/2018	2018/2019	Var. (%)
Sugarcane [1]	468.765	457.503	-2,41%
Sugar [2]	29.198	22.273	-24,08%
Anhydrous ethanol [3]	8.459	7.341	-13,22%
Hydrous ethanol [4]	11.862	16.845	41,8%
Total ethanol [5]	19.500	24.188	24,05%
TRS [6]	63.817	64.267	0,70%
TRS/ ton of sugarcane [7]	136,13	140,34	3,09%
Share % sugar	46,20%	34,37%	
Share % ethanol	51,75%	63,63%	
Liters of ethanol/ ton of sugarcane	41,26	52,57	27,42%
Kg of sugar/ ton of sugarcane	62,58	48,84	-22,18%

Source: UNICA

- Election expected to see Mr Jair Bolsonaro win on 28th October (59%/41% in opinion polls), with euphoria possibly strengthening the BRL.
- The Brazilian real has recovered from lows of around 4.14 to around 3.70 today; with a weaker real we may now see more producer pricing?

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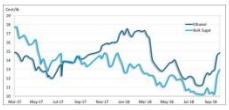
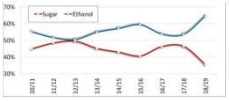
23/10/2018 Medium Term Outlook for EU Agriculture Markets 5

Brazil ethanol

- Millers have switched from sugar to to ethanol production in 2018/19 because ethanol still pays more than sugar.
- Unica records the current sugar ethanol mix at 36/64 this year compared with 48/52 in 2017/18.





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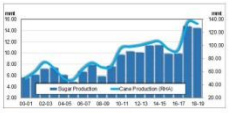
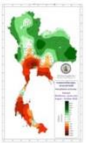
23/10/2018 Medium Term Outlook for EU Agriculture Markets 6

Thailand

- Thai crop likely to drop in 2018/19 from 14.7m to 13.8 million tonnes owing to lack of rainfall, diversion of 500kt sugar equivalent to ethanol, and some diversion to fragrant rice and possibly some "new" diversion to biochemicals.
- Thai sugar consumption is expected to reduce by ≈2% owing to a new sugar tax.
- Thai sugar exports expected to be lower than the 10.5m tonnes recorded in 2017/18, much exported under ASEAN preferences. However, with China importing less, and India subsidizing 5m tonnes of exports, the SE Asian markets are nevertheless expected to remain hotly contested.





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23/10/2018 Medium Term Outlook for EU Agriculture Markets 7

India and Pakistan

- In 2017/18 government support policies and favourable seasonal conditions in India and Pakistan drove local sugar production to record levels, which are expected to continue in 2018/19, although weather has been poorer this year in Maharashtra.
- Stocks have built up in both India and Pakistan, hence exports must come out in large volumes.
- India will resume exports after a 3-year break (with subsidies available for 5m tonnes of exports) and Pakistan will become a net exporter for the first time (exports of 1.6m in 17/19 and 1m in 18/19).
- Both countries will displace exports from Australia and Brazil in the Indian Ocean and Asian sugar markets.

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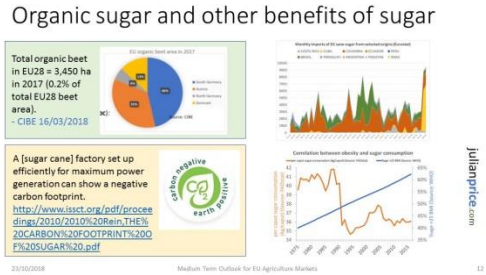
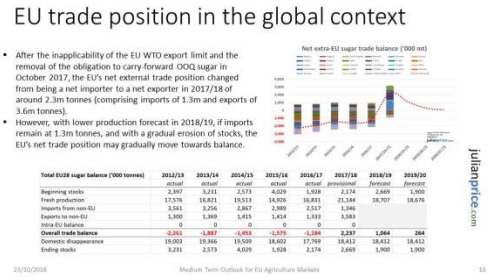
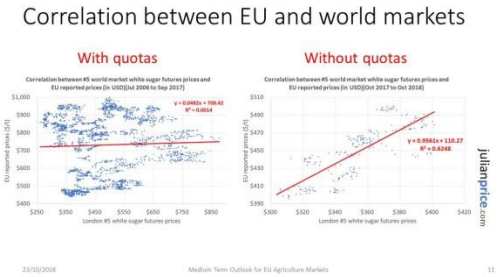
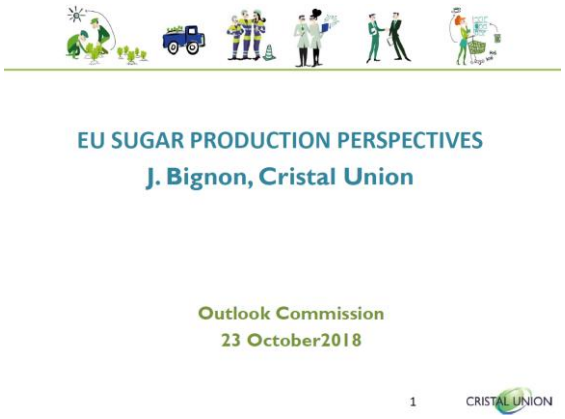
23/10/2018 Medium Term Outlook for EU Agriculture Markets 8

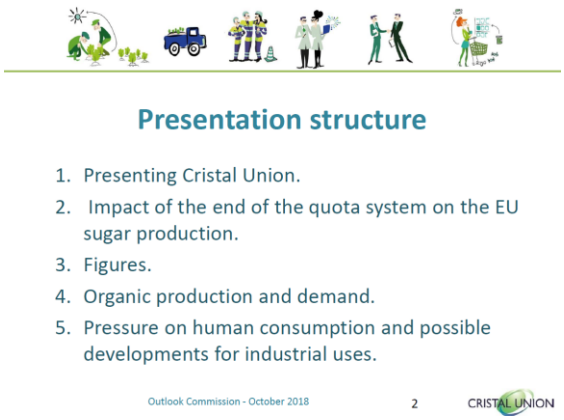






Jérôme Bignon (Cristal Union)

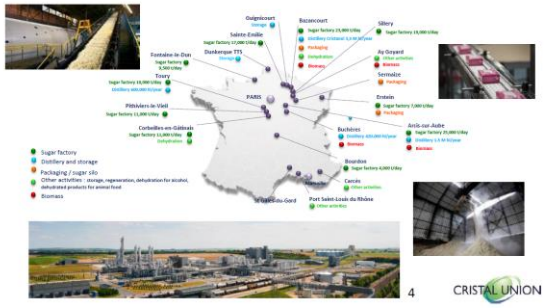




Profile of the Group with a few key figures

3 CRISTAL UNION

Sites and activities



4 CRISTAL UNION

Group activities

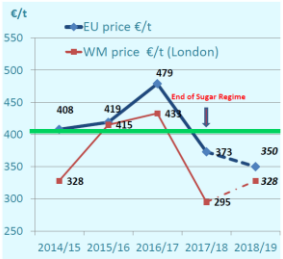
5 CRISTAL UNION

The end of the quota regime has a major impact on production perspective

CRISTAL UNION

The end of the quota regime Impact on sugar market

- The end of the quotas marks a new era:
  - An EU sugar market that is more closely linked with the world market and therefore more volatile.
  - Increased competition on the EU market, but also more opportunities for export to third countries.



Outlook Commission - October 2018 7 CRISTAL UNION

The end of the quota regime Impact on sugar market

Available market tools

- Aid for private storage.
  - Commission is reluctant to implement it.
- Art. 222 of the Single CMO Regulation (measure of last resort, provides for possibility of market withdrawal).
  - Never applied up to now.

=> No more tools are available to cope with a crisis situation.

- **No more difference between quota/non-quota** sugar
  - All sugar produced in the EU may be sold on any EU market.
- **EU producers will be free to export** sugar to third countries.
- **Isoglucose** can be produced and sold without limits on the EU market.
- ACP/LDC to keep free access to EU market. End of 'full-time refiner' status.

Outlook Commission - October 2018 8 CRISTAL UNION

The end of the quota regime Impact on beet growers

- End of beet delivery rights and minimum beet price:
  - Beet in competition with other crops (wheat, barley corn...);
  - Competition between sugar producers to source sugar beets, when supply zones overlap;
  - But companies have the freedom to contract with new growers.

Outlook Commission - October 2018 9 CRISTAL UNION

The end of the quota regime and production optimization

- On companies side:
  - Improving their competitiveness via longer campaigns (but also optimisation of logistical systems, energy efficiency...)
  - Finding new markets and outlets.
  - Managing risks as best as possible.
- On growers side:
  - Need to get a minimum level of gross margin compared with the other crops in the rotation based on:
    - Sugar beet price, but there is no correlation between sugar and cereals prices;
    - Improvement of cost of production, but new EU regulations on plant protection and NBTs jeopardize the beet growers productivity ;
    - Need to secure a minimum delivery to the sugar plant. If not, risk of plant closure for good.

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The issue of Plant protection Product in sugar beet in Europe (Source:)

- Neonics: pesticides 3 active substances used in pelleted beet seed, ban decision on 29 May 2018, effective as from 2019/20 (unless emergency authorization). No sustainable alternative in the short term → potential impact in terms of average yield losses :
  - FR : at national level minus 12% (up to minus 50% in most affected plots);
  - BE: minus 20% up to 40%;
  - NL: minus 5 to 20% on 50% beet area;
  - AT: minus 10-20%;
  - UK: up to minus 20%.
- Thiram: fungicide used in pelleted beet seed, effective against early attacks of soil borne fungi, ban decision on October 2018, effective as from 2020/21 (unless emergency authorization) → pathogen pressure estimated to increase by 15%.
- Other bans under investigation.

The issue of New Breeding techniques (NBTs)

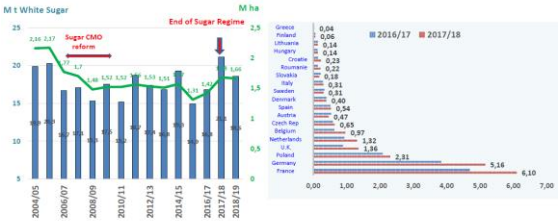
(Source:)

- ECJ ruling on mutagenesis and the EU GMO directive (25 July 2018) : Two of the questions submitted by the French Conseil d'État:
  - (a) are organisms obtained by mutagenesis subjected to the GMOs obligations?,
  - (b) does the exemption only apply to organisms developed through conventional mutagenesis techniques?
  - ECJ ruling: (a) Yes, (b) Yes (The Court's decision is in contrast with the Opinion of Advocate General).
- Future research project on new beet "conventional" varieties could be put at risk with the decision to consider NBTs as GM.

"**It is now likely that much of the potential of these innovative methods will be lost for Europe – with significant negative economic and environmental consequences. That strikes a serious blow to European agriculture and plant science**", commented Garlich von Essen, ESA Secretary-General.

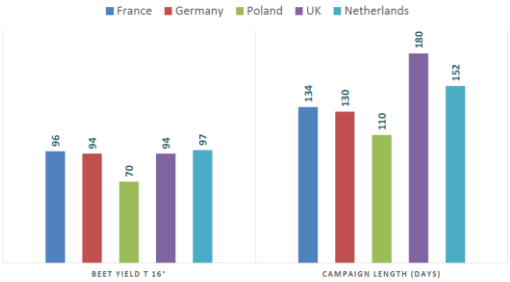
Fresh sugar production – EU 25-28

(SOURCE: FAM)



2017/2018 Campaign : Good indicator of EU potential production

(source: Estimation from CIBE, CEFS)



EU 28 net exporter as before 2006

(Source: EU Commission, CU)

Tonnes (thousands)	Sugar balance 2018-19 (EU Commission : 2018/09)	Sugar balance 2018-19 (CU : 2018/10)
Beginning Stocks	2 669	2 300
Production	19 180	18 550
Imports	1 300	1 150
Tariff-rate quotas		*650*
ACP/LDC		*500*
Consumption	17 650	17 450
Ex Quota	*15 500*	*15 500*
Ex out-of-quota	*2 150*	*1 950*
Balance of Sugar in PP	1 000	1 000
Exports of sugar as such	2 600	3 550
Ending Stocks	1 900	

Export opportunity will impact the level of production

Conclusions

- For the next decade EU will remain a net sugar exporter and for that it must secure a production around 19 millions tons.
- If before the sowing period, the WMP is attractive enough the production should be maximized.
- But, the main risk is the lack of resilience of sugar beet growers due to:
  - a mismanagement of EU plant protection and selection policies impacting their productivity;
  - a non attractive beet price, due to low WMP and an absence of safety net;

  leading to a beet withdrawal in their crop rotation and potentially plant closure.

Organic sugar in Europe

(source: CU estimation)

- No specific trade statistics for organic sugar.
- Close to 80 % imported from third countries like Brazil, Cuba, Paraguay, Colombia, India Thailand…

In the short and medium terms, organic sugar or beet are not an alternative neither for sugar companies, nor for the growers. It is a "niche market".

Organic beet area in Europe

(Source:)

Country	2017/18 organic beet (ha)	2018/19 organic beet vs 2017 (ha)
AT	1 236	+ 800
DE South	1 545	+ 200
DE North	200	
DK	450	
LT	1 000	- 200
FR	0	+ 145
IT	0	+ 130
SE	0	+ 90
BE		+ not defined yet
TOTAL	**4 431**	**+ 1 165**
CH	60	+ 140

Issues:

- Competition with third countries imports:
  - Organic cane sugar more competitive;
  - today, system of equivalence or certification which means that rules can be different, ex: in Brazil transition period for farm of 2 years instead of 3 in the EU;
  - Loophole on duty through IPR licences system.
- Organic beet growing conditions:
  - Highly demanding crop.
  - Pest control and mechanical/manual weed control are the main issues.
  - Cost of production above 1000 €/t.

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Pressure on human consumption:
French exemple on beverages

(SOURCE: CEFS, SNFS)

- 2012 : taxation 7,50 euros/hl for beverages with added sugar or sweeteners.
- 2018 : new system with differentiation :
  - Beverage with sweeteners 3 euros/hL;
  - Beverage with added sugar (+ sweeteners), taxation in proportion of added sugar leading to an increase tax around 40%;

- tax yield estimated at half a billion € per year.

Beverage sector: 25% of EU sugar market

- Education rather than taxation

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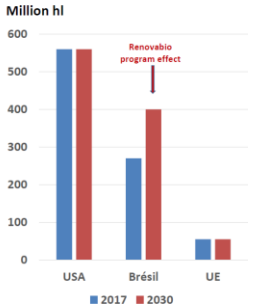
Possible developments for industrial uses:
Bioethanol from food crops example



- With adoption of RED II, cap on biofuels from food crop maintained at 7%.
- This approach:
  - jeopardizes the bio-economy development in the EU;
  - Penalizes the EU sugar industry compared with EU main competitors, Brazil, Thailand, India.
- New EU approach if barrel above 100 us$?

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Thank you.

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