D1.4: STAKEHOLDERS WORKSHOP NARRATIVES

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Executive summary

Changes with respect to the DoA

No changes with respect to the DoA.

Dissemination and uptake

The deliverable is publicly available.

Short Summary of results (<250 words) (word count: 249)

The Workshop on 'Narratives' took place on Tuesday, 5th March 2019, at the Representation of Lower Saxony to the European Union in Brussels. The input of the stakeholders served as an inventory of information supporting for policy assessments from the stakeholders' perspective.

As a starting point for the discussion, presentations were given on the topics findings of the workshop on "Needs", and narratives for respectively the baseline, the climate change policy and the CAP. The presentations focused on (i) scenarios, model linkages and improvements; (ii) strengths and weaknesses in the modelling; and (iii) possibilities of future directions in modelling.

The discussions with the stakeholders showed the communication challenge with regard to the role of baseline and scenario narratives. In order to evaluate the impact of any policy, measures have to be additional to what happens in the baseline. For the baseline, information about agri-food outlooks could be used. With regard to the CAP, for example, the scenarios should relate to the CAP objectives, thereby taking into account that farming needs to remain viable in terms of earnings/ income, while making the required efforts for sustainability and the environment. With regard to climate policy, it was mentioned that the focus should be on the 1.5 degrees scenarios that would be elaborated from the EU perspective. The input provided by the stakeholders is taken up in the narratives of the project, as elaborated in deliverable D1.3. Those issues that cannot be taken on board within SUPREMA will be considered for future research, i.e. for the roadmap with future directions for agricultural modelling in the EU.

Evidence of accomplishment

The deliverable itself can act as the evidence of accomplishment.

Glossary / Acronyms

AGMEMOD	AGRICULTURAL MEMBER STATE MODELLING FOR THE EU AND EASTERN EUROPEAN COUNTRIES
AGLINK	AGLINK MODEL
CAP	EU COMMON AGRICULTRAL POLICY
CAPRI	COMMON AGRICULTURAL POLICY REGIONALISED IMPACT MODELLING SYSTEM
CGE	COMPUTABLE GENERAL EQUILIBRIUM
EC	EUROPEAN COMMISSION
EUROCARE	EUROPEAN CENTRE FOR AGRICULTURAL, REGIONAL AND ENVIRONMENTAL POLICY RESEARCH
FAO	FOOD AND AGRICULTURE ORGANISATION
GDP	GROSS DOMESTIC PRODUCT
GLOBIOM	GLOBAL BIOSPHERE MANAGEMENT MODEL
GHG	GREENHOUSE GASES
ICT	INFORMATION AND COMMUNICATION TECHNOLOGY
IIASA	INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS
JRC	JOINT RESEARCH CENTRE OF THE EUROPEAN COMMISSION
MAGNET	MODULAR APPLIED GENERAL EQUILIBRIUM TOOL
MACC	MARGINAL ABATEMENT COST CURVE
NECPS	NATIONAL ENERGY AND CLIMATE PLANS
NTMS	NON-TARIFF MEASURES
ROW	REST OF THE WORLD
SDGS	SUSTAINABLE DEVELOPMENT GOALS
SUPREMA	SUPPORT FOR POLICY RELEVANT MODELLING OF AGRICULTURE
TFP	TOTAL FACTOR PRODUCTIVITY
OECD	ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPEMENT
PBL	NETHERLANDS ENVIRONMENTAL ASSESSMENT AGENCY
PE	PARTIAL EQUILIBRIUM
WR	WAGENINGEN RESEARCH

1 Introduction

The SUPREMA Workshop on 'Narratives' took place on Tuesday, 5th March 2019, 10:00 - 15:30, at the Representation of Lower Saxony to the European Union, Rue Montoyer 61, B-1000 Brussels.

A list of 80 stakeholders to be invited was prepared in January 2019, accounting for a broad participation from different actor groups along the agro-food supply chains, NGOs and society, policy makers and public officials, and the scientific community. The stakeholders that participated in the first SUPREMA stakeholder Workshop 'Needs', held on 1st March 2018, were part of the list. The Workshop on 'Narratives' was announced on 29th January 2019 (save the date), and invitation with all the details were sent thereafter. The registration started on 12th February 2019, followed with a second reminder on 19th February 2019.

The agenda is provided in appendix A1. The list of affiliations of the participants is provided in appendix A2.

On behalf of the head of the Representation of Lower Saxony to the European Union where the workshop could kindly be held, Martin Banse (Thünen Institute) welcomed the participants. Floor Brouwer (WR), the coordinator of the SUPREMA project, was the moderator of the workshop and also welcomed the participants, elaborating on the agenda and how the session of discussion and feedback were planned.

The aims of the Workshop on 'Narratives' were as follows:

- Presenting the findings of the first SUPREMA Workshop on the 'Needs'.
- Presenting narratives that are developed in SUPREMA on
    - the baseline for agricultural modelling.
    - the climate change policy narrative.
    - the agricultural policy narrative.
- Discussing the narratives with the aim to identify a relevant and consistent set of scenarios.

We started with presentations on respectively findings of the Workshop "Needs", narrative for the baseline, narrative for climate change policy and narrative for the CAP. The slides of the four presentations are provided in appendix A4. The presentations focused on (i) what is going to be delivered by the SUPREMA project , i.e. scenarios, model linkages and model improvements, (ii) what are the strengths and weaknesses in the modelling capacity, (iii) what remains promising for future modelling and will be part of the roadmap. Details of the SUPREMA project are on the website: https://www.suprema-project.eu/

At the Workshop on 'Narratives', each presentation was followed by discussion and feedback. While providing an outline of the presentations, the minutes elaborate on the discussion in the different sessions. We do not mention who commented since the focus is on the feedback that was provided by the stakeholders and that will be taken into account in the SUPREMA modelling. The workshop adopted the Chatham House rules, which implies that no recording has been taken. Information may be reported, but the source of that information may not be explicitly or implicitly mentioned.

2 Link to the stakeholder Workshop "Needs"

Petra Salamon (Thünen Institute) presented the findings of the 1st stakeholder Workshop on "Needs – Scope to address new challenges in modelling", which was organised on 1st March 2018 at the same location. For the slides of the presentation see appendix A4-1. Petra Salamon (Thünen Institute) summarized the key topics that stakeholders mentioned as model needs to be captured,

and how they fit to the program of the second stakeholder Workshop on"Narratives' for the modelling exercise conducted in the SUPREMA project.

Following the presentation, there was a remark made on the needs for modelling at farm-level, including the importance of farm management practises. Farm-level changes and the micro linkages of the models have been noticed at the Workshop 'Needs and part of the stock-taking (see long list with topics in Deliverable 1.1).

3 Narratives for the baseline

Jesus Barreiro-Hurle (JRC)presented the baseline narratives in a plenary session (see appendix A3-2). Hereafter the narratives were discussed in two smaller groups, which concentrated around the areas a) scope of the baseline, b) potential users of the baseline; and c) alignment of baseline assumptions across models. In this section, we present the comments and suggestions that the participants shared on those different areas, without giving any rankings or qualifications.

In general, it was stated that the baseline could reflect the current policy commitment and its continuation in the future. Thus it should not cover new agri-food specific policies or new climate policy packages, e.g. mitigation targets and mitigation pathway, because such will be captured in the narrative(s) of the alternative scenarios and the corresponding impact analyses of the simulation models. However, it was emphasised that depicting the policy commitments in the future, which includes those not implemented or ratified yet, appears to be crucial for the modelling results. Without their appropriate depiction in the baseline, the impact in the scenarios could be very large and potentially unrealistic if commitments were modelled in the scenarios rather than in the baseline and the other way round.

With regard to trade, it was suggested to depict all free trade agreements covered in the last mid-term outlook, which includes detailed tariff liberalisation and non-tariff measures (NTMs) as mentioned in the agreements. Overall, no increased use of NTMs like product requirements and origin labels should be modelled in the baseline such that the focus would be on price competiveness or rather the EU agri-food production's lack of being competitive on price.

For determining the baseline, it was suggested to elaborate about what scenarios would be chosen. Which scenarios would be depicted and what would be the timeline, including short, medium and long term perspective? Which variables would be of interest? That would allow a better definition of the baseline acting as a counterfactual scenario.

3.1 Discussion about the scoping of the baseline: variables reflected the baseline

It was acknowledged that it should become clear *what* would be included in the baseline and what not. And it should also be clear *how* and *why* it has been done. Related to these questions, the following comments on the variables to be reflected in the baseline were mentioned during the group discussions. Note that statements were not validated and could reflect opposite views.

<u>Gross domestic product (GDP)</u>

- Member state based information: reflecting the situation and trends in the EU member states.

Energy prices

- The baseline that the European Commission used for the EU Energy Strategy could be a good starting point for the baseline in the SUPREMA project: https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/2050-long-term-strategy.
- Using the assumption of the long term strategy of the EC, as provided by the Energy outlook by JRC: http://data.jrc.ec.europa.eu/collection/id-00132; or making energy projections based on assumption made in AgLink.
- In general equilibrium models, energy prices would be endogenous by a linkage to GDP.
- As a standard, energy prices are held constant/exogenous in real terms, e.g. in CAPRI, Globiom.

Greenhouse gases

- Ideally the impact of climate change should also be in the baseline – not only by a change in average temperatures and water scarcity, but also by the presence of more and more extreme weather events.
- There are no specific GHG targets agreed for agriculture, and thus it would be difficult to model them in SUPREMA.
- The National Energy and Climate Plans (NECPs) of new CAP reform should ideally already be in the baseline, however these are not yet available.
- Carbon prices in the scenario could be anticipated globally and covered in the baseline.
- Mitigation parts should be modelled in the scenarios (see below under general considerations).

Population developments, demographics:

- Member state based information: reflecting the situation and trends in the EU member states.

Diet

- Diet assumptions might need to be updated. The FAO 2012 study has been updated in 2018 – "The future of food and agriculture – alternative pathways to 2050" (FAO, 2018): http://www.fao.org/3/I8429EN/i8429en.pdf, see page 49 for the baseline assumptions.
- Changes in consumer preferences seem to be important. The baseline has to include more and detailed products because 1) details of healthier diets (e.g. increased demand and consumption of fruits and vegetables) require this, and 2) some commodities could be grown in different regional in future.
- Key issue is meat consumption.
- EUCLIMIT4 scenarios with "diet4" (less ruminant meat and less dairy) may be seen to be fully in line with recent historical trends that show a decline in beef consumption. The older ("no diet" shift) FAO projections should be considered as being outdated.
- The baseline has to include more and detailed products because details of healthier diets (e.g. increased demand and consumption of fruits and vegetables) require it but also because some commodities could be grown in different regional areas due to climate change. For example wine, olives are historically produced in the southern European regions, but these products could also be produced in the more northern European regions due to higher temperatures.
- Capture of product and price differentiation in the supply chain.

Technology - productivity

- The baseline should (ideally) not only reflect smooth transitions between technologies, but also include investment decisions. This means that technologies would involve significant

investment of firms (and also governments) and this would in turn mean the assumption of sunk costs that are lost after the investment is made. Such investment decision should ideally be modelled.

- Nitrogen use efficiency should be increasing due to improved management skills and due to better monitoring of the Nitrates Directive.
- Expansion of Precision Farming – it might be differentiated by region.
- Productivity could mean the modelling of the following:
    - Increase in land yields
    - Disruptive technology change and adoption, innovation in terms of changes in input use and costs.
    - Efficient use of production factors, efficient for nitrogen use, chemical use.
    - Feed efficiency.
- ICT should not be forgotten since this is important also for the agri-food sector. The question arises how to build technical shifters in the models, and what would be its effects: e.g. reduced environmental impact, less labour due to ICT or robots, how to model structural change due to ICT.

Labour

- Stakeholders asked if trends in labour need to be modelled, esp. also employment in rural areas, given the aim of the CAP. This could be possible via the regional dimension of some of the models that allow for local/regional effects.
- Labour is covered in different forms in most (not all) SUPREMA models, but there is a need for alignment.

Environmental indicators related to SDGs asked for by stakeholders

- Water use and quality
- Nutrient balance
- Biodiversity
- Pricing externalities
- Biofuels, bioenergy and bioeconomy: is there competition with agriculture for the land?

3.2 Discussion about the alignment of assumptions across models

During the next discussion round, the stakeholders and modellers interacted by answering and exchanging ideas on the topics raised and on modelling options. Issues discussed are summarised as follows:

- Key issues to align in the models refer to GDP development, population growth, exogenous input prices, technological development, GHG emission levels, diets, etc.
- Make sure there is coherence and consistency between assumptions and exogenous values; i.e. accelerated technical change can affect GDP growth.
- There is a list of variables (task 2.1) that will be compared up to 2030 for all the models.
- It is not only about the same data, but also on how these are introduced into the different models
- Technology change can be total factor productivity (TFP) or responsiveness to inputs. Aligning technology is challenging;
- Productivity can be represented in different ways in the different models.
- GDP growth and income distribution are key parameters that should be well aligned.
- Land use, including transition from agricultural to other types of land.
- There is also a need to align the reference year parameters (for example elasticities, cost shares, etc.) and how they relate to different commodities or spatial aggregations.

- The starting point of the projections (baseline) is important as the scenario impacts will be different with different starting points.
- Aligning the exact technical “base year“ (2008 or 2010 or 2012 or .2016-2018..) is desirable, but does not appear indispensable, looking at previous examples of differences for CAPRI and MAGNET baselines (e.g. regarding certain cost shares).
- Some shocks need to be taken as the new normal/business-as-usual so they should be in the baseline, as follows:
    - Geo-political situation (i.e. BREXIT).
    - Diet shifts.
    - GHG mitigation and adaptation.
    - Reduced productivity because of increasing and tightened restrictions on pesticides.
- Differentiation of the baseline – current policies as they are translated in the models and the continuation of them in order to have the baseline as a reference point. In addition to add a time horizon: short/medium run and long run.
- A baseline should reflect the trend in the sector growth, technological change, while it should be assessed where the changes actually come from. This would be important for the story line.
- Issue of ratification of legal rules and commitments, compliance with the rules across the member states; for example, the EU nitrate directive that sets the goal, but not how the goal would be achieved. How do we deal with the lack of information on implementation, including details versus drafts for example?
- Consistency issues also given that inputs are taken from models where other assumptions were made: if harmonisation means that we modify some key input variables (GDP, pop, energy prices) from those values assumed in our “input models” (AGLINK for CAPRI, AGMEMOD; GLOBIOM for CAPRI), then we lose internal consistency.
- When mentioning that something is not captured in the baseline there is a need to differentiate between implicit and explicit. De facto, any transition that has already started and is impacting the input data (i.e. new technologies, agri-food sector differentiation) is captured implicitly in a baseline either in the parameters that are estimated using that data or in the calibration to agreed mid-term projections. That doesn't mean that they are parametrized in the model (i.e. organic farming). It is key to consider this difference and reassure that baselines do or do not reflect structural changes (the curse of implicitly covered).

3.3 Discussion on the potential users

- Representatives from the public and private sector need information about demand by types of product. How to cover shifts in diets towards quality, e.g. towards organic products?
- If more people are to use the baseline, more variables have to be reported to respond to the needs of policy makers, private actors and NGOs.

4 Narratives for the climate policies

Petr Havlik (IIASA) presented the narrative for the climate change policies in a plenary session (see slides in the appendix A4-3). After the presentation, two external discussants, Frank van Tongeren (OECD) and Henk Westhoek (PBL), gave their view on the narrative. Second, all participants were invited to provide feedback on the narrative for the climate policies. In this section, the comments and suggestions of participants are presented without giving rankings or qualifications.

4.1 Discussion about scenario versus baseline

- It is unclear what the baseline is about now: is it a forecast, or is it a continuation of trends, policies etc. and thus reflecting the situation that we already know?
- From the modelling perspective, the baseline would best be used as a reference situation for scenarios that reflect the policy changes and reforms for the analyses.
- The scope, i.e. narrative of the baseline, also determines the outcomes of the scenario to a certain extent. Messages will be different if already some climate change mitigation measures will be included in the baseline. If you leave them out, the results of the models would potentially be very large.
- The role of SUPREMA models is to explore the magnitude of things, e.g. to test the reality and to get a robust baseline.
- Are the two highlighted scenarios really the ones to focus on? The 1.5 degree scenario is the only one to look at; the current climate ambitions in the EU are beyond 2 degree scenario. .
- The SUPREMA model platform captures global models, so it makes sense to have the whole world included.
- EU versus the rest of world (RoW) with respect to carbon leakages calculations in scenario: it is important to have the global interaction. What are effects of EU actions on impacts on RoW; e.g. what impacts will have less soy meal imports on land use in South America.

4.2 Discussion on the policy interventions

- Instead of imposing mitigation taxes, why not depicting mitigation subsidies?
    - Consider to possible role of climate related subsidies in new CAP after 2020, i.e. linking subsidies to the mitigation targets?
    - This option goes against the 'polluter pays' principle and can be considered as financing pollution. Thus the main question here would be: who and how much are you want to finance?
- Policy interventions must be towards balancing plant-based proteins and animal-based proteins (50%-50%); it's now 40-60%. What will be the GHG effects?
- How to take into account the implementation of policies? An outcome could be due to the uncompleted and unsatisfactory implementation or it could be the actual impact. This needs to be carefully communicated to those using the models and the results.
- SUPREMA could help to explain mechanisms of policies and their effects , economic theory and also in the models, next to explaining the order of magnitude and to testing the results and compare them across models.

4.3 Discussion on sustainable production

- Look at the carbon footprint of various EU consumption patterns.
- Bioeconomy is regarded as a key element: achieving a balance between producing biomass and doing that sustainably.
- How sustainable is carbon storage actually?
- SUPREMA should look further than the public sector, not only public as there are many private sector , retailers, and farmers may help consumer make the right, healthy choice.

5 Narratives for the Common Agriculture Policy (CAP)

Roel Jongeneel (WR) presented the agricultural policy narrative in a plenary session. The key policy priorities in the discussion about the CAP are the following: income and resilience, and its variability and biodiversity. A matrix of measures/instruments with objectives and their likely outcomes/impact was presented. One can consider three general objective: 1) sustainability; 2) farm viability and stability of the farming sector, but viability does not seem to be in the forefront since 40% of the

income of EU farmers comes from support measures; and 3) Consumer part; for details see the slides provided in appendix A4-4.
In general, the current set of models doesn't capture the CAP reform foreseen, but the implementation of the CAP reform would be very different across the member states. There is a lot of choice in subsidiarity to the member states. The new CAP constitutes a menu of measures that the member states would implemented in different ways, regulatory constraints in combination with enhanced cross compliance. Hence the question about how to deal with that in a scenario was raised.

After the presentation, the two external discussants, Frank van Tongeren (OECD) and Henk Westhoek (PBL), gave their view on the narrative, and then all participants were invited to provide feedback on the CAP narrative. In this section, we present the comments and suggestions of participants without giving rankings or qualifications.

5.1 Discussion on the scenario narratives

- The presented narrative is a realistic view of how future of CAP might look like.
- Non-agricultural land consumption is ignored, i.e. road, forestry, urban, etc. are not captured. How to deal with it, especially urbanisation and deforestation could be interesting with regard to land use changes.
- There is a lot of waste of food and not everything is used, thus modelling policies to reduce waste, very important for EU agri-food policy and world-wide initiatives.
- The consumers' perspective is missing: contract producers and consumer/retailers on product characteristics, e.g. products for which a certain volume of pesticides was used, etc..
- Consumer cohort analysis was mentioned, but might be used for the roadmap.
- Social trends are important; e.g. to become vegan.

5.2 Discussion on CAP measures

- In the table that links 'measures' to 'objectives', policy instruments that do support innovation are missing but should anyway be modelled, given the importance of innovation in the "new" CAP. Is income support really good for competitiveness? Direct income makes farms not to go bankrupt, but do not make them more competitive.
- Legal proposal give a lot of subsidiarity to member states and hence adds flexibility that way. How to deal with it?
- Enhanced conditionality is part of cross-compliance; it is not an additional instrument.

5.3 Discussion on modelling CAP measures

Marginal Abatement Cost Curve (MACC) (as presented in the presentation, slide 8)

- MACC reflects a supply curve for environmental services. If a measure contributes to CO_2 reductions but gives costs to the farmer, he/she will probably not apply the measure voluntarily unless financial (subsidy) incentives are in place.
- It was mentioned as a good concept to map measures to mitigation effects.
- Managing the measures: even if MACCs are negative there is a problem with adoption, e.g. economic bottlenecks, traditions. Something need to be done anyway.
- MACC can be included in both CGE and PE models.
- Abatement costs - what are the barriers to cover the abatement costs, zero abatement ? Here, the farmers' perspective would need to be taken into account and be analysed.
- In the general approach of carbon prices, the carbon price gives the incentive to reduce carbon via demand and then the consumers pay. In case of other instruments, like subsidies,

consumer would not pay. Investigating the different mechanism based on demand would be interesting, see also climate policies.

Coupled income support, private schemes and farmer's viability

- Coupled support could also be used for producing biomass crops.
- How to implement/target subsidies? Who is targeted? In SUPREMA concrete measures would need to be depicted.
- This is time consuming as there are so many uncertainties. What can SUPREMA cover and what is for the future, i.e. the roadmap?
- Is there structural change expected on farm size as result of environmental measures? E.g. in China farm size is increasing as they are more efficient in using fertilizer and pesticides.
- We should not follow the current trend 'small is beautiful'. If the farm size is too small, it cannot survive.
- Payments for ecosystem services:
    - Usually not depicted.
    - Indicators not clearly there; but mapping of variables and indicators that have been collected in SUPREA could be a start. Overall it will be complicated to model
- How to operationalize biodiversity?
- Nutrient and waste recycling in new CAP seems under-addressed.
- The supply chain perspective might be useful for paying farmers a better price. This includes private labelling schemes for higher quality output, but in reality those labelled products are mainly niches. Some farmers supply at the high quality level, other do free riding on a public standards, and consumer do not want to pay.

Technology

- Most farmers are non-adopters of technology or innovation and should move to become adopters. Farmers are non-adopters of technology/innovation and should move to adopters. The empirical evidence is difficult to obtain and not available for being used in the modelling. It would be necessary to review/investigate the literature and find out why farmers are not adopting technologies.
- Learn from examples where new technology has been adopted on a short term; e.g. regulation was imposed on nitrogen targets, a transformation to adoption of animal low-nitrogen feed took place within one year. If you can earn money, than adoption can follow soon.

Innovation

- The question thus arises: How to depict innovation in the models?
- Innovation to enhance productivity, sustainability, and here the relationship between innovation and productivity would need to be looked into.
    - The starting point would probably be the best practices of farmers. Then, there is a large deviation among farmers, small versus large, old versus young etc. Thus a systematic comparison and evidence of the link would be very useful. Need to analyse micro-level data of farmers.
    - Something should be imposed, e.g. an innovation subsidy to promote innovations

6 Concluding remarks

The workshop on 'Narratives' was the second workshop of a series of stakeholder workshop in the SUPREMA project. The outcome will be taken up in the third Workshop on 'Strategic Prospects' and used further within the project. The outcome feeds into the overall results of the stakeholder engagement and will be shared with the stakeholders. More specifically, based on the inputs of the workshop we make an inventory of information needs for policy assessments.

As the approach of the stakeholder workshop, we have taken the findings of the Workshop on 'Needs', held in March 2018, as the starting point for this Workshop on 'Narratives'. In this way, the project is developed in line with engaging stakeholders in course of the project duration. We have assessed which of the needs and narratives mentioned can be taken on board during the SUPREMA project and what type of insights and results this would generate. Those issues that cannot be taken on board within the project will be further examined and if selected as being relevant for policy making and impact assessment, they will be taken up in a list of future research needs (i.e. the roadmap developed in the SUPREMA project). Feedback and recommendations will be provided about what it would need in terms of model adjustments or modelling needs for being able to include them in future assessments.

The discussion and input as well as comments provided at the Workshop on 'Narratives' are being taken into account when exploring the narratives of the project, as elaborated see deliverable D1.3. The discussion points are used as input and part of developing the SUPREMA models in such a way that they could better used for answering future research and policy issues. In general, the discussions in the workshop made clear that there is a communication challenge with regards to the role of a baseline in the process of modelling and policy evaluation. In order to evaluate the impact of any policy, the measures have to be additional to what is happening. Therefore it is key to depict what is happening without the policy in the baseline. However many of the things that are already happening cannot be captured by the models in the calibration effort (where the baseline is constructed) and will become part of the scenario. The process is further complicated due to the fact that when models are calibrated it is not clear what is included already included in these calibrations. If the projections do not include the topic at all, an option is to construct a reference scenario (baseline plus scenario including the expected level of the topic without policy intervention)[1].

For the baseline, we suggest to apply assumptions that are usually and frequently made with regard to market outlooks. These include current policies, e.g. policies as they have been implemented or have been signed in parliament to become implemented. In addition, exogenous trends on population, economic growth, yields, preference shift (per cap cons) are extended. The scenarios will be developed accordingly, by taking into account the discussion from the Workshop on 'Narratives'. With regard to the CAP, for example, the scenarios will be related to the CAP objectives. This means that although we would like to structure scenarios around sustainability/environment (for example climate, fertilizer use, ammonia). We also account for other aspects, including biodiversity. In addition, we take into account viability of farming, which allows farmers to make the required efforts. Focusing on the sustainability and environmental aspects of the CAP makes the link to the climate policy scenarios. With regard to the climate scenario, it was mentioned that the focus should be on the 1.5 degrees scenarios that would be elaborated from the EU perspective. Details about the narratives for the CAP and the climate policy scenarios are provided in deliverable D1.3.

[1] For example, if the projections do not include organic farming and stakeholders expect that organic farming will grow without policy intervention to X % of the total area as the reference scenario would put on top of the baseline X% organic production area. The scenario on the organic conversion of production would only consider the target minus X% which is already in the reference scenario.

Appendix

A1. Agenda

Defining the Narratives for future model-based policy analyses of European Agriculture
An interactive stakeholder workshop

Programme

Chairperson of the workshop: Floor Brouwer (Wageningen Economic Research)

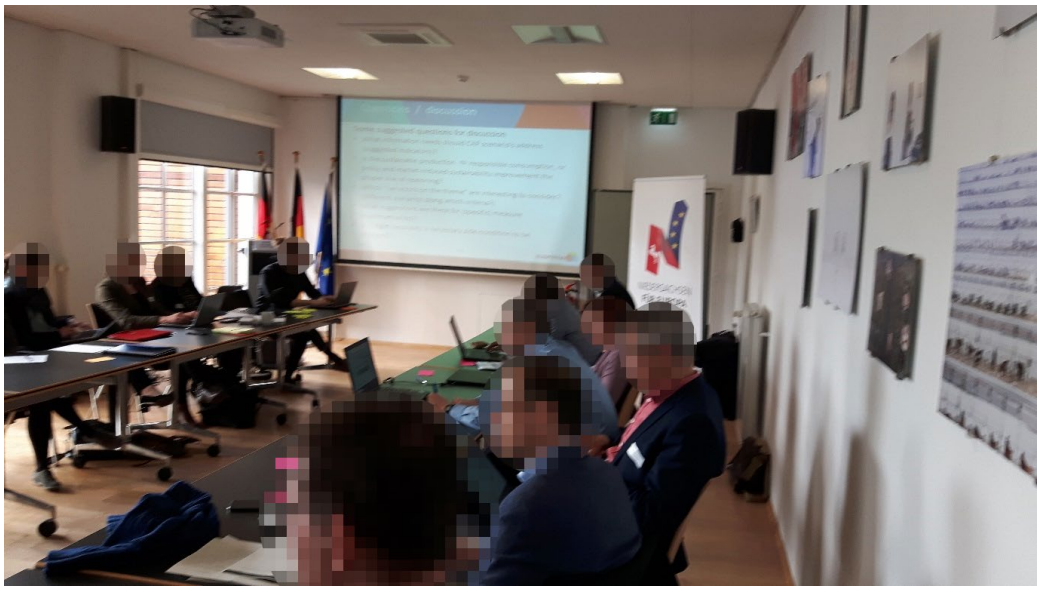
09:30 – 10:00:	Welcome coffee and registration
10:00 – 10:05:	Welcome by the Representation of Lower Saxony to the European Union (tbc)
10:05 – 10:10:	Welcome by Monica Garcia-Puerto on behalf of the REA (Research Executive Agency)
10:10 – 10:15:	Welcome and introduction into the project SUPREMA; introducing the Workshop (Floor Brouwer, Wageningen Economic Research)
10:15 – 10:30:	Introducing participants
10:30 – 11:00:	Findings of the 1st Stakeholder Workshop 'Needs' (Petra Salamon, Thünen Institute)
11:00 – 11:30:	Baseline in SUPREMA (Jesus Barreiro-Hurle, Joint Research Centre). What is implemented from the workshop 'Needs' and remains relevant for future work?
11:30:	Feedback in two groups (to discuss the baseline in light of the Needs identified during the workshop in 2018) (Jesus Barreiro-Hurle and Peter Witzke to lead the feedback groups; Myrna van Leeuwen and Marie-Luise Rau to collect feedback)
12:15:	Lunch
13.00:	Narrative for climate change modelling in SUPREMA (Petr Havlik, IIASA), including feedback by two discussants: Frank van Tongeren (OECD) and Henk Westhoek (PBL Netherlands Environmental Assessment Agency); Q&A by participants
13:45:	Narrative for CAP modelling in SUPREMA (Roel Jongeneel, Wageningen Economic Research), including feedback by two discussants: Frank van Tongeren (OECD) and Henk Westhoek (PBL Netherlands Environmental Assessment Agency); Q&A by participants
14.30:	Feedback in two groups (to discuss the two scenarios, identify priorities and make explicit some gaps that are worth to elaborate in SUPREMA) (Petr Havlik and Roel Jongeneel to lead the feedback groups; Myrna van Leeuwen and Marie-Luise Rau to collect feedback)
15.15:	Short summary of the discussions from the two groups and follow-up in SUPREMA
15.30:	Closure

A2. List of participating institutions

Table A1: List of participating institutions

Participating institutions	**Number of participants**
European Commission	4
EuroCARE	1
European Commission -JRC	1
European Landowners Organization	2
IIASA	1
John Deere	1
OECD	1
PBL Netherlands Environmental Assessment Agency	1
REA – European Commission	1
Spanish Ministry of Agriculture	1
Thünen Institute	3
Universidad Polytechnica de Madrid	1
University of Leeds	1
Wageningen Economic Research	7

A3. Pictures of the workshop



A4. Presentations

A4-1. Presentation on needs workshop

A4-2. Presentation on narratives for the baseline

A4-3. Presentation on narratives for climate policy

A4-4. Presentation on narratives for the CAP

A4-1. Presentation on needs workshop

Findings of the 1st Stakeholder Workshop 'Needs'

Petra Salamon and Martin Banse

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 773499 SUPREMA.

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Overview

- Set-up of the Workshop 'Need'
- Setting the Scene
- Discussion Groups with Stakeholders
- Running World Café
- Priorities
- First conclusions

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SUPREMA Workshop 'Needs'

- First of 3 Interactive Workshops
- March 1st, 2018
- Same venue - EU Representation of Lower Saxony
- Participation - 36 persons
  - 15 stakeholders
  - 6 External Advisory Board
  - 15 from the Partnership
- Stakeholders
  - Farmers, industries, NGOs
  - Policy, administration , scientific community

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Objectives

- To get insights into **perception of stakeholders on future challenges** of the agri-food sector and related policies
- To identify **stakeholders' needs** for model-based analysis
  - medium-term until 2030
  - long-term beyond 2030 (until 2050)
- To identify **priorities of stakeholders**
- To **support evidence based** policy making
- To identify current **short-comings** in impact assessment
- To define
  - desired improvements in models to better cover future needs
  - options to present outcomes in a more understandable way

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General Set-up

- Stakeholders set the scene (unsupported)
  - All participants
- Interactive group discussions - participants in 3 groups
- Running World Café - Each of the three headers had two flip charts with keywords, participants were asked to provide additional input
  - All participants
- Priorities - Each participant five points per header

	medium-term (up to 2030)	long-term (up to 2030)
Global	Value chain	Farm
SDGs	Social concerns	Farm risks
Climate change, low carbon econ	Value chain, market, international integration	Farming challenges behaviour – markets
5 pts	5 pts	5 pts

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Setting the Scene

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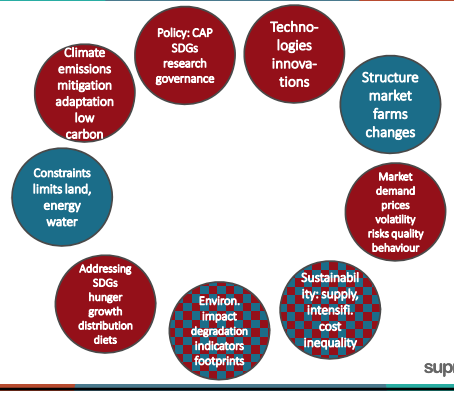
Set the scene - medium-term (up to 2030)



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Set the scene - long-term (up to 2050)

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3 Expert Group Discussions (parallel)

Global: climate change, low carbon economy, SDGs, constraints (land and water)

Market and value chain: international integration and up- and downstream sectors, societal concerns and ethical issues

Farming: supply adaptation: new mitigation technologies, adoption of new technologies, restrictions

Questions

- For **which future challenges** do you require model based analysis?
- For your decision taking **what would you need**?
- Which **shortcomings do you see** currently?
- How to **improve models** to achieve those outcomes?

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Global I - Challenges and Needs

- **Food demand** analysis
- **Feedback loops**
  - Environmental -> degradation -> impacts on agriculture and vice versa (as with environmental restrictions)
  - Climate change
- **Baseline or scenario**
  - Paris Agreement
  - Legislation to be implemented - binding or non-binding
- Increased **European standards** pose trade barriers, CAP compensate within EU
- **SDGs and demography**
- Trade agreements to **consider sustainability** (societal demand)
- **Subsidies** (too) simplistic – more **tailored and targeted**

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Global II – Shortcomings and Improvements

- Unrealistic/unreliable **trade outcomes**
- **Demand dimensions** (diets, health, societal expectation, lifestyle)
- Coverage of
  - **Population, migration**, demography
  - **SDGs' role** (operational indicators)
  - **Land** use, land abandonment, land for biomass, non-ag land
  - Circular economy, technology transfers, new manufacturing, new trade flows **(long-term horizon)**
  - **Interaction between growth and climate** – analyse mitigation
- Adaptations with respect to **water** - spatial issue
- **Parameters** for new technologies, products, policies, activities should reflect
- **Interaction** between economists - other experts, model linkages

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Value Chain I - Challenges and Needs

- **Sustainability** in the entire **value chain**
- **New developments in food processing**
  - New attributes: nutritional aspects, health, use of antibiotics
  - Change in priorities of society, short and local value chains
- **Competition in material use**: food, feed, bioenergy, bio material
- **Data** availability and data quality
- Strong **structural changes** in agriculture and processing
- **Trade wars**
- **Private standards** versus role of public entities
- **Resource base** and degradation, soil situation, extreme weather, GHG emissions
- **Long-term feedback loops** between agriculture, resources and climate

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Value Chain II – Shortcomings and Improvements

- Coverage of **productivity along entire value chain**
- **Impact** of trade agreements on **specific sectors and countries**
- Conduct impact assessment on **regulations, NTMs, environment, health, Pillar 2 measures**
- Models provide **economic outcomes**, but should also cover other dimensions (**social and environmental** dimensions), risk
- **Improve communication**
  - between modelers, policy makers, decision makers, and the media
  - of results by provision of a coherent story - provide one-pager plus extended appendix
- **Competition between models** important - deeper involvement of the public

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Farm I - Challenges and needs

- Farm practices, **farmers' behavior**, adoption of new technologies depend on education
- **Endogenize technological change**
- Minimize of resource inputs
- Model **public goods** - animal welfare, food safety, societal needs
- Need to move from **markets to farms to farming systems to practices**
- **Differentiated yields** by practices (key parameters may change)
- **Sustainability**
  - Cover **all dimensions**
  - Sustainability reflected in products - Who will pay for public goods
- Past trends may not explain the future

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Farm II - Short comings and Improvements

- Model **management of water, whole carbon cycle, soil**
- Impact of **farmers' behavior on environmental**
- How farmers **adapt to policies**
- Better representation of
  - **Mitigation techniques**
  - **Supply chain** and interlinkages
  - Industrialized farms, structural change, organization of farms
  - Incorporating **off-farm income** -> persistence
  - land markets, access to credit, new actors from outside ag (Investments)
- Mixed methods (models and choice experiments)
- Value chain
  - **Market size and competitiveness** in the VC
  - **Distribution of value added** in VC

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Running World Café

- For each group discussions 2 flipcharts with keywords based on notes
- Presentation of preliminary outcomes each header (Global, Chain, Farm)
- Participants moved from flip chart to flip chart and provided additional input and discussed
- Each participant indicate priorities by allocating five points per header

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Keywords and Priorities – Global

SDGs (first 6 items of 14)	points
Income distribution and growth	18
Environmental degradation + feedback to economy (soil, water, biodiversity) + interaction with policy	12
SDGs indicators with limited coverage -> model outcomes	12
Future food demand -> trade	10
Water	5
Holistic model approach -> global beyond Europe	3
Climate Change / Low Carbon Econ. (first 6 items of 14)	**points**
Disruptive consumer preferences and behaviour	13
Internalize externalities (positive/negative)	12
Disruptive technologies	8
Technology diffusion, adoption	7
Adaptation -> calibration of new activities (between farms)	7
How to anticipate future shocks -> Policy shock	7

Keywords and Priorities – Value chain

Value chain, market, international integration (first 6 items of 27)	points
Bio economy	9
Data quantity + quality	9
Distributional aspect (in relation to hunger)	8
Private entities take the role of public entities	7
Regional vs international production	7
Structural change in the chain	6
Social concerns (first 6 items of 9)	**points**
Productivity gains vs employment	9
Sustainability	9
Immigration, jobs and migrant labour in food chain	7
Climate change	6
Health, nutrition	6
Rural and urban relationships	6

Keywords and Priorities – Farm

Farming challenges: behaviour – markets (first 6 items of 9)	points
Role of consumers with respect to organic, animal welfare	15
Supply chain	12
Spread of innovation	7
Monitoring useful for farmers and policy	5
New Approach integration of choice experiments	3
Monitoring in general	3
Farming risks (first 6 items out of 15)	**points**
Water constraints	18
Adaptation versus mitigation	18
Yield = f (…) e.g. fertilizer, pests, chemicals	14
Feed efficiency	10
Technology	9
Infrastructure, transport costs	9

First Conclusions

- A number of challenges and shortcomings may have been placed under any header
- Proposal: Extend time horizon to 2070 for selected 'Narratives'
- What should a baseline cover – what a scenario
- Put more emphasis on 'story telling'
  - Communication and interaction with stakeholders
  - Harmonized and easy understandable
  - Write a one-pager and add annex
  - Apply several models, align assumptions, link models
- Not all topics can be covered during SUPREMA because
  - they need more research, other data or
  - more time for implementation
- - >Definition of future research needs = Roadmap

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First Conclusions II

- First considerations on the Narratives (only show cases)
  - CAP - medium-term
  - Climate change - long-term
- To follow later
  - Data and data quality issue
  - Detailed representation of supply chain (decision taking, market power, structural changes, competitiveness -> only a show case coverage)
  - Detailed food demand - role of consumers (product differentiation/segmentation, societal demand, demand DCs -> shift in diet)
  - Detailed representation of bio-materials
  - Mixed method approaches
  - Disruptive behavior (consumers, policy, technologies)

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Next Steps

- Results of the 1st Workshop serves as a first step for our current workshop
- After definition of ‚Needs' → development of narratives

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A4-2. Presentation on narratives for the baseline

The SUPREMA common vision of the future (*Baseline harmonization*)

Jesus BARREIRO-HURLE
JRC-D4 Economics of Agriculture

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 773499 SUPREMA.

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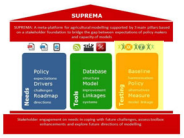
Overall approach for WP3



OBJECTIVES

- Explore future directions applying scenarios in a coordinated fashion
- Improve understanding at different scales
- Showcase potential and limitations with respect to needs

Expected impacts

Activities in SUPREMA	Task	Expected impact		
Work Package	Task	Improved capacity of models	Strengthening of research modelling community	Exploration of future directions for modelling
WP3: Testing the SUPREMA model family	3.1 – Baseline			
	3.2 – Agricultural policy			
	3.3 – Climate policy			

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Milestones and Deliverables for WP3

Dec 2018 (M12)	▪ Data to be used in the baseline ▪ Narrative for Policy Scenario ▪ Narrative for Climate Scenario
Dec 2019 (M24)	▪ Draft baseline results ready ▪ Draft scenario results ready ▪ Draft scenario results ready
April 2020 (M28)	▪ (3x) Report on baseline construction and divergence analysis

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Setting a common baseline

1. Main characteristics of baseline under SUPREMA

	BY WHEN	BY WHO	WITH WHAT IMPROVEMENTS
	2030	CAPRI / AGMEMOD / IFM-CAP / MAGNET	IFM-CAP – CAPRI AGMEMOD-MITERRA
PARIS2015 COP21-CMP11	2050 / 2070	CAPRI / AGMEMOD / GLOBIOM / MAGNET	CAPRI: LULUCF MAGNET,GLOBIOM: SDGs

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Setting a common baseline

2. Identify key issues to align

GDP & Population Growth	GHG emission levels	Agricultural Policy
Exogenous input prices	Biofuels / Bio energy / Bio economy demands	Trade policy
Technological Development	Diets	……

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Setting a common baseline

3. Reference values for each of the domains
GDP GROWTH & POPULATION GROWTH

Relevant for	MAGNET, AGMEMOD, GLOBIOM, CAPRI
Data sources	DG AGRI MTO (up to 2030) DG ECFIN GME3 (2050) SSP Database (2050)

Action to be taken: Align to common data source

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Setting a common baseline

3. Reference values for each of the domains
Exogenous input prices

Relevant for	MAGNET, AGMEMOD, GLOBIOM, CAPRI
Data sources	Oil, Gas, Coal, Fertilizers IEA, Ad hoc assumptions

Any specific suggestion for the energy prices pathway?

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Setting a common baseline

3. Reference values for each of the domains
Technological change

Relevant for	MAGNET, AGMEMOD, GLOBIOM, CAPRI
Data sources	Up to 2030 aligning yields to DG AGRI MTO? And beyond? Efficiency use of production factors New technologies

What technological change should be included in the baseline?

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Setting a common baseline

3. Reference values for each of the domains
GHG emission levels

Relevant for	MAGNET, AGMEMOD, GLOBIOM, CAPRI
Data sources	Policy commitments (no AG specific target) Review of NECPs (Q4 2019)

Should the baseline include GHG emission target or should it be the focus of the climate policy scenario?

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Setting a common baseline

3. Reference values for each of the domains
Biofuels, Bioenergy and Bioeconomy

Relevant for	MAGNET, AGMEMOD, GLOBIOM, CAPRI
Data sources	Specific policy targets Assumptions

RED II - Share or 1st generation biofuels (2030 [7%] and 2050 [??])
Bioenergy?
Bioeconomy?

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Setting a common baseline

3. Reference values for each of the domains
Diets

Relevant for	MAGNET, GLOBIOM, CAPRI
Data sources	FAO World Agriculture towards 2030/2050

Any particular assumption on diets?

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Setting a common baseline

3. Reference values for each of the domains
Agricultural Policy

Relevant for	MAGNET, GLOBIOM, CAPRI, AGMEMOD, IFM-CAP
Data sources	EU: CAP 2014-2020 or 2020+ proposal (base for 3.2) ROW: mainly via trade policy (CAPRI) & Land use (GLOBIOM)

Big differences in degree of granularity of CAP policy representation – difficult to align

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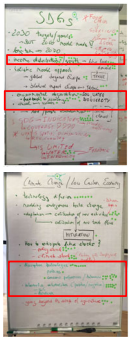
Setting a common baseline

4. Issues raised at needs workshop hardly captured by current baselines: **GLOBAL**



Counting dots – key issues

- Change in income distribution and growth
- Environmental degradation
- Disruptive technologies
- Change in consumer preferences
- Pricing externalities

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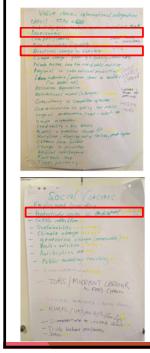
Setting a common baseline

4. Issues raised at needs workshop hardly captured by current baselines: **GLOBAL**



Counting dots – key issues

- Bio-economy
- Chain in power distribution
- Productivity and employment in the sector

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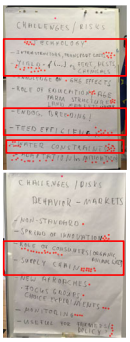
Setting a common baseline

4. Issues raised at needs workshop hardly captured by current baselines: **GLOBAL**



Counting dots – key issues

- Technology (wide sense)
- Water constraints
- Consumer concerns (beyond diets)
- Supply chain

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Questions / discussion

Some suggested questions for discussion

- Do we consider any of the missing aspects in the baseline?
  - RISK: Further driver for misalignment
- Are they part of the scenarios?
- What to do in SUPREMA with these topics:

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The SUPREMA common vision of the future (*Baseline harmonization*)

Jesus BARREIRO-HURLE
JRC-D4 Economics of Agriculture

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A4-3. Presentation on narratives for climate policy

Long-term climate mitigation policy narratives

Stefan FRANK, Petr HAVLIK
IIASA

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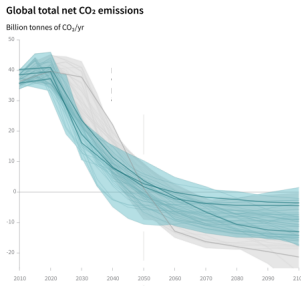
Climate mitigation challenge



To stabilize global warming at 1.5°C

Global CO2 emissions
-45% in 2030 compared to 2010
and 0 by 2050

EU GHG emissions targets
-40% in 2030 compared to 1990
-30% compared to 2005
in non-ETS sectors
-80-95% in 2050 compared to 1990

Source: IPCC SR 1.5

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EU climate mitigation policies

- 2020 targets: 20% GHG reduction, bioenergy and energy efficiency
- 2030 targets/NDC: 40% GHG reduction
  - -43% ETS: covering power plants and large industrial installations
  - -30% non-ETS covering smaller industries, transport, ag. non-CO_2 …
  - Limited access to LULUCF credits
    No specific target for agriculture yet
- 2050 climate strategy: GHG neutral by 2050
  - Long-Term Strategy "A clean planet for all"

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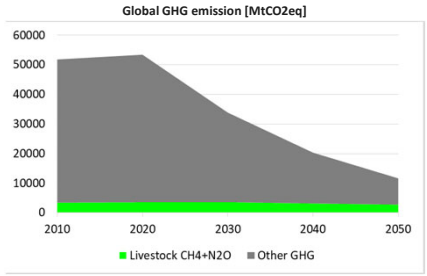
Global agricultural GHG emissions

- Direct GHG emissions from livestock represent 7% of total emissions today, but 24% of GHG by 2050 in a 1.5°C stabilization scenario



Source: Rogelj et al. 2018

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Mitigation ambition?

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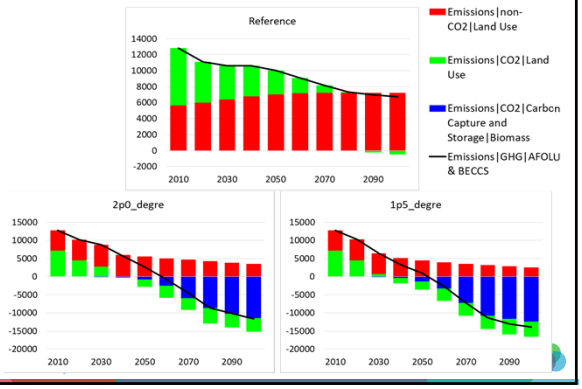
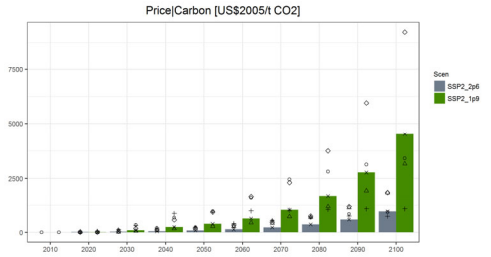
Total land use related GHG emissions [MtCO2eq]



Climate stabilization well below 2 degrees

- Carbon price used by IAMs to reach the stabilization
  - 2050: USD 100 for 2°C and 400 for 1.5°C



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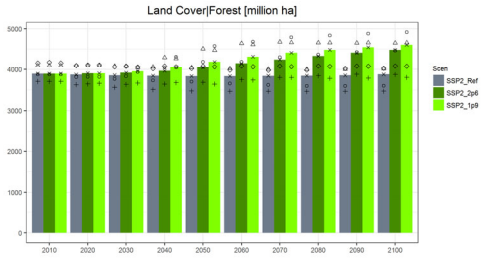
Land use implications

- Forest area up by 200 million hectares versus 350 by 2050



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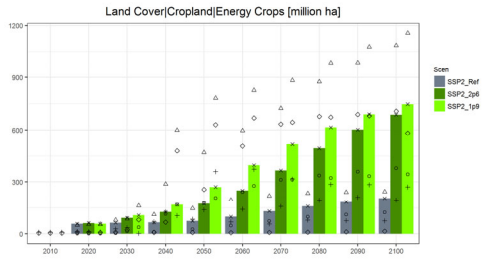
Land use implications

- Energy crops area 170 Mha for 2°C and 270 Mha for 1.5°C by 2050



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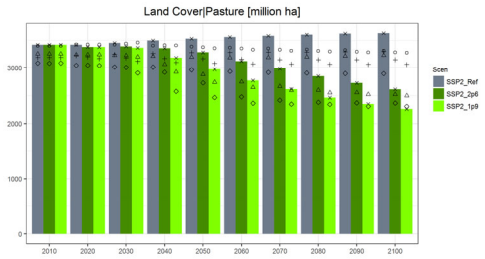
Land use implications

- Pasture area down by 250 versus 550 million ha by 2050



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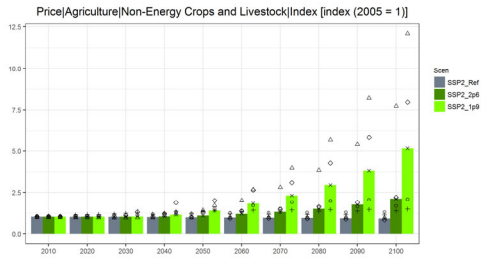
Food availability implications

- Potentially large impact on agricultural prices
  - 2050: +10% versus +40%



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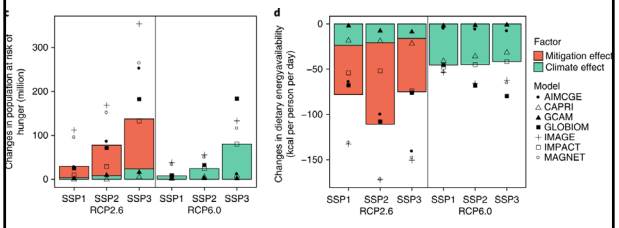
Food availability implications

- Carbon tax worse than climate change impacts



Source: Hasegawa et al. NCC 2018

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Mitigation sectors?

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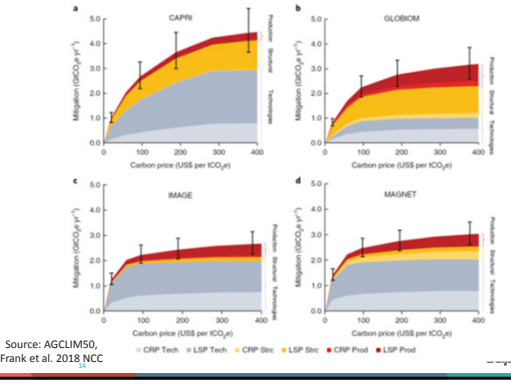
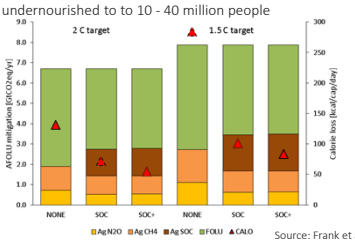
Global agricultural non-CO2 mitigation potential



Source: AGCLIM50, Frank et al. 2018 NCC

Soil organic carbon in agricultural land

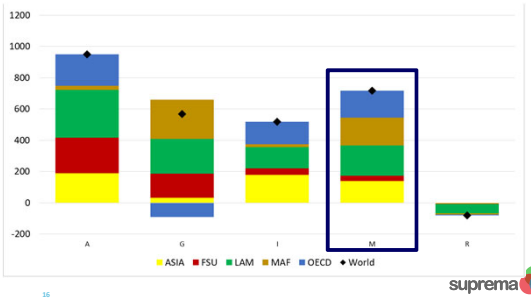
- Land based mitigation without considering soil organic carbon would lead to a rise in undernourishment of 40 to 170 million people in 2050
- While including the SOC into the mitigation portfolio would limit the additional number of undernourished to to 10 - 40 million people



Source: Frank et al. ERL 2017

LULUCF mitigation potential

- **Forest area** for 1.5 degree scenario in 2100 compared to 2010 [Million hectares] : + 720 Mha



Mitigation geographical coverage?

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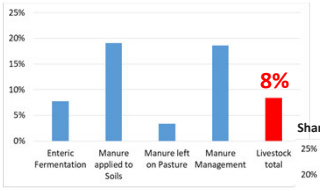
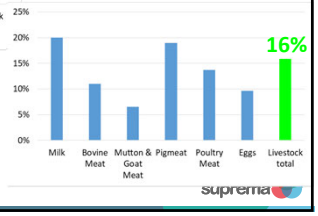
EU livestock in the global picture

Share of EU livestock emissions in Global emissions



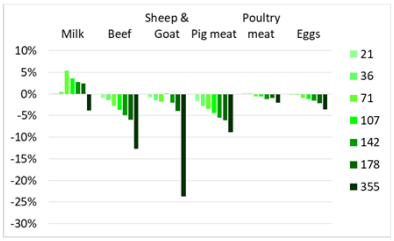
Source: FAOSTAT

Share of EU livestock production in Global production



EU agricultural sector mitigation potential

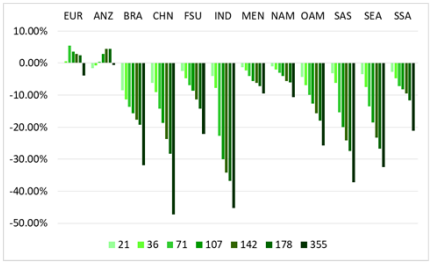
- EU Livestock production change compared to baseline by 2030 [%]



Source: AGCLIM50, Frank et al. 2018 NCC

EU agricultural sector mitigation potential

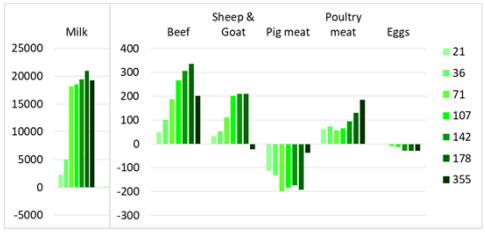
- Global milk production change compared to baseline by 2030 [%]



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

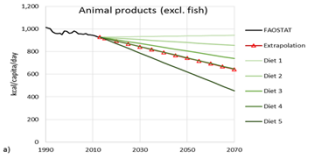
Life style change contribution?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 773499 SUPREMA.

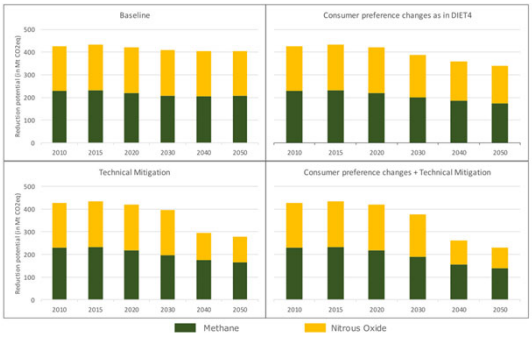
EU LTS Diet change scenarios

- Several diet options tested
- LTS finally relied on Diet4
- Sensitivity around international trade response

	Diet 1	Diet 2	Diet 3	Diet 4	Diet 5
Bovine meat	-50%	-50%	-50%	-50%	-50%
Sheep and goat meat	-50%	-50%	-50%	-50%	-50%
Milk	2010	2010	-50%	-50%	-50%
Pig meat	BAU	2010	BAU	2010	-50%
Poultry meat	BAU	2010	BAU	2010	-50%
Eggs	BAU	2010	BAU	2010	-50%



EU LTS Agriculture GHG emissions



It’s not only about climate change mitihgation…

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Sustainable Development Goals

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Long-term climate mitigation policy narratives

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SUPREMA Long-term Narratives

	Mitigation target	Mitigation region	Mitigation sector	Consumer side mitigation
Baseline	None	None	None	None
1p5deg_WLD_AG	RCP1p9	World	Agriculture	None
1p5deg_WLD_AG_DIET	RCP1p9	World	Agriculture	Diet+Waste
1p5deg_WLD_BE	RCP1p9	World	AFOLU+BE	None
1p5deg_WLD_BE_DIET	RCP1p9	World	AFOLU+BE	Diet+Waste
1p5deg_EU_AG	RCP1p9	EU	Agriculture	None
2deg_EU_AG_DIET	RCP1p9	EU	Agriculture	Diet+Waste
1p5deg_EU_BE	RCP1p9	EU	AFOLU+BE	None
1p5deg_EU_BE_diet	RCP1p9	EU	AFOLU+BE	Diet+Waste

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A4-4. Presentation on narratives for the CAP

SUPREMA (Horizon 2020)

Brussels workshop: Assessing agricultural policy alternatives

Roel Jongeneel, Wageningen Economic Research

5 March 2019

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Context

Key policy challenges

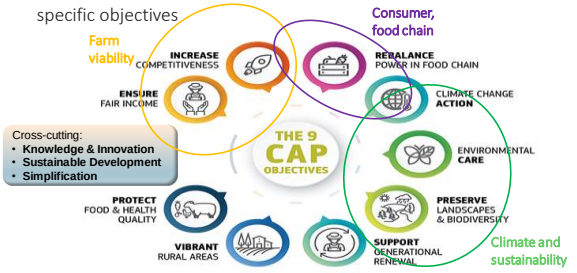
- Farm income and resilience (level, variability)
- Environment and climate (incl. biodiversity)
- Rural areas (development, viability, employment)

Main changes of the newly proposed CAP (June 2018 proposals)

- New delivery model (subsidiarity)
- New green architecture
- Changing priorities (innovation, climate)

The objectives of the new CAP

- Three general objectives: i) Foster a Resilient Farm Sector, ii) Bolster Environment and Climate, iii) Strengthen Fabric in Rural Areas => 9 specific objectives



Policy interventions from CAP (1/2)

- Proposed new CAP (Title III) has several interventions aimed at improving sustainability
- Direct payments (DPs)
  - Basic income support (decoupled, but structural change) and DP redistribution (RP and capping)
  - Coupled income support for sustainability
  - Young farmers & others
- Revised Green architecture
  - Revised/extended baseline (enhanced conditionality), partly at discretion of MSs (obligatory)
  - Eco-schemes, with voluntary participation from farmers (obligatory for MSs, voluntary for farmers)
  - Agr-environmental and climate action measures

Policy interventions from CAP (2/2)

- Rural Development Policy (RDP) Measures (all voluntary)
  - Agr-environmental and climate action measures (part of green architecture; potentially affecting all 9 CAP specific objectives; focus on environment and climate)
- Other RDP measures
  - Investment support (incl. young farmers)
  - Payments for areas with handicaps
  - Knowledge and information (farm advisory)
  - Innovation and collaboration

NB Climate action measures are still left largely open, but a budget commitment is made!!
CAP uses a streamlining approach with 20% of the budget related to climate action

Characterization of policy measures

- Policy measures include various forms of targeted (decoupled) **direct payments**
- Policy measures include **incentive policies** (e.g. coupled income support, sectoral interventions, investment support)
- Policies can be targeted at specific **beneficiaries** and/or **regions** (problem areas)
- Policies can be **obligatory** (enhanced conditionality) or **voluntary** (uptake endogenous)
- Policies can include **regulatory constraints** impacting at farm level

How do models handle different types of policy measures…? …improvements, …new linkages … (role of SUPREMA)

Instrument Objective Impact (IOI)-matrix

Illustrative example of IOI-matrix

Instrument / objective	fair farm income	competitiv-eness	climate	biodiversity	territorial/ regional
BIS	++	+/?	?		+
CIS	+	+/?	-		+
Enh.Condit	-	?	+	+	
Eco-Scheme	+		++/?	+	
AECMs			+/?	++	
Inv. support		+	+	+	
Pmt for ANC					++
Farm advisory		+	+	+	

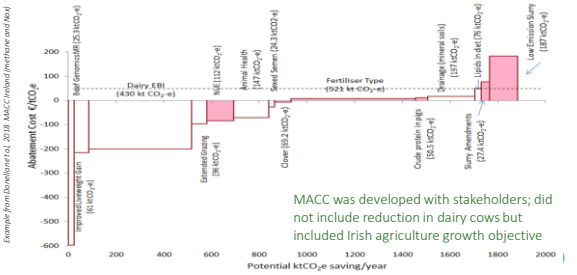
BIS=basic income support; CIS=coupled income support; AECM=agr-environm.&clim.measures; Inv.=investment support; ANC=adverse natural conditions.

Scenario choice: we propose a sustainability focus (especially climate) while taking into account side conditions

Several elements need to be developed (policy schemes and implementation modes)

Policy making: CAP, climate, instruments, and their use/selection

- Marginal abatement cost-curve, measure-ranking and selection (=adoption? <= policy should account for incentive compatibility constraints)



MACC was developed with stakeholders; did not include reduction in dairy cows but included Irish agriculture growth objective

Example of Narrative New CAP scenario

- Intended choice for a CAP-sustainability scenario-approach is motivated by:
  - calls for a sustainable agricultural sector;
  - that contributes to GHG emission reduction; and
  - orients itself to a more targeted and incentive-based delivery system for direct payments.
- Side conditions:
  - Farm viability is a prerequisite for delivery (farm-economics)
  - The role of EU agriculture in the provisioning of current and future world food demand should be recognized (EU and international scope)
- Consumer and food option
  - Account for shift in preferences (meat consumption)

Questions / discussion

Some suggested questions for discussion

- What information needs should CAP scenario's address (suggested indicators)?
- Is the sustainable production ⇔ responsible consumption, or policy and market-induced sustainability improvement the proper line of reasoning?
- Which "variations on the theme" are interesting to consider? (different scenarios along which criteria?)
- What suggestions are there for (specific) measure implementation?
- Is budget neutrality a necessary side-condition to be imposed?