1st SUPREMA Stakeholder Workshop 'Needs'

The SUPREMA workshop 'Needs' aimed at sharpening the understanding of the challenges and needs posed to future development of models and model-based support for policy actions. Hence, challenges and needs stated by stakeholders are manifold in numbers as well as the spectrum of topics to be reflected is broad. Additionally, topics are multiplied by the fact that numerous policies and measures are affecting agriculture and the linked supply chains. Some needs and topics could be covered within SUPREMA; some needs, however, would require considerable investments in time and resources and therefore go far beyond possible efforts in SUPREMA.

During the workshop challenges and needs were grouped into medium- and long-term topics. The following list presents a small overview of challenges and needs covered by stakeholders:

Medium-term:

- Environmental issues regarding degradation and ecological footprints
- Market development with respect to demand, prices, risks and volatility
- Social aspects like economic and social inequality across households and regions and structural change of markets and farms
- Reflecting SDG indicators (more long-term oriented) with respect to nutrition security and reduction of inequality
- Sustainability related policies and their impact on supply intensity and production cost
- Impact of technologies and innovations

Long-term:

- Policy and governance with CAP and its multidimensional indication
- Climate change and adaptation, mitigation policies, emission reductions to climate neutral and to low carbon economy
- Resource base with the dimensions land, soil quality, energy, water (quantity and quality), and regional productivity
- Sustainability aspects covering all pillars of environmental, social and economic sustainability
- Market development with respect to supply, demand and supply chain
- Changing societies and their behaviour including their population in size and composition
- Impact of technologies and innovations

SDGs, climate change and low carbon economy were important issues discussing needs and challenges for the '**global**' perspective. Here stakeholders addressed two groups:

- One group of challenges addressed global development aspects around SDGs in combination with demographics, food demand analysis, integration of sustainability (including of societal demand in trade agreements should regard sustainability), and the coverage of an increasing number of European standards in production, processing and trade which might pose trade barriers while the CAP partly compensates EU production.
- The second group of challenges deals with climate change, especially with a focus on possible feedback loops and the implementation of the Paris Agreement. Further, also envi-

ronmental feedback loops with respect to degradation and its impacts on agriculture and vice versa could be pinned in that group together with the challenge of better tailored and targeted subsidies.

As shortcomings and required improvements in model representation the stakeholders mentioned

- Improved trade outcome
- Representation of demand dimensions (diets, health, societal expectation, lifestyle);
- Coverage of population, migration, demographics
- Coverage of operational indicators to better address SDGs
- Land use in combination with land abandonment, land for biomass and land use for non-agricultural purposes
- Interaction between growth and climate
- Adaptations with respect to water
- Long-term horizon should reflect circular economy, technology transfers, new manufacturing, new trade flows and policies and require respective parameters
- Increased interaction between economists and other experts including model linkages

For the topics value chain, international integration and societal concerns, the participants identified a diverse set of challenges and needs:

- One group of challenges ranged around the representation of the use side of agricultural materials dealing with the competition between food, feed, bioenergy and bio material as well as food quality, nutrition, health, and use of antibiotics in animal production. To handle these challenges, data availability and data quality needs to be improved.
- Societal demand with respect to sustainability in the value chain is perceived as another important challenge. Changing priorities of the society towards short, local value chains and structural changes in agriculture and processing have been identified.
- At international level, stakeholders also mentioned the increasing number of trade wars, increased use of private standards and the long-term development of the resource basis together with long-run feedback loops between agriculture, resources and climate.

Following shortcomings and needed improvements were given high reference:

- Coverage of productivity should encompass the entire value chain
- Improved communication between modellers, policy makers, decision makers, and media
- Improved presentations of results by a coherent story
- Competition between models together with a deeper involvement of the public desirable
- More impact analyses of trade agreements on specific sectors and countries
- Improved and extended impact assessments on NTMs as well as environmental, health-oriented and Pillar 2 measures
- Stronger coverage of social and environmental dimensions, considerations on risk

Regarding farming and supply side representation stakeholders' perceived challenges and needs to implement different farm practices, farmers' behaviour, adoption of new technologies de-

pending on education, especially as past trends may not explain the future developments. There was seen as a move from farms to farming systems. Stakeholders demanded more efforts to minimize resource inputs, to represent differentiate yields by practices and to endogenize technological changes. All dimensions of sustainability and public goods (animal welfare, food safety, societal needs) should be addressed including: "Who should pay for public goods?"

Stakeholders named a number of improvements possibilities and also shortcomings. In particular, they asked for a better representation of:

- Mitigation techniques
- Supply chains, its interlinkages and competitiveness in the value chain
- Industrialized farms, structural change, organization of farms
- Investments of other sectors in agriculture
- Coverage of off-farm income
- Consideration of new actors from outside agriculture with consequences on land markets and credits
- Management of water, the full carbon cycle, soil
- Impact of farmers' behaviour on environmental policies
- Farmers' adaption to policies in general

In a last step, stakeholders set priorities based on the previous outcomes, for details see table below. From a global perspective stakeholders prioritized with SDGs, e.g. income generation and growth as well as its distribution also outside European countries. Future food demand developments and their implication on trade were seen as strongly. Challenges with respect to environmental degradation of soil, water and bio-diversity, impact of adaptation and mitigation strategies or adoption of new technologies were also ranked as very important. Water (shortages, sudden surplus, quantity and quality) was also mentioned. Specifically, priority was given to the fact that the SDG indicators should be operational.

With respect to climate change, priority was given to the modelling of disruptive changes in consumer preferences and behaviour. Dietary changes towards lower content of animal protein may have impacts on GHG emissions. Although, in general, demand shifts evolve smoothly, disruptive changes may pop-up quite sudden, often in combination with quality, hygienic, diseases or animal welfare problems. Likewise, the internalization of externalities was given a high priority by stakeholders. Modelling the reduction of greenhouse gases (GHG) and the mitigation and adaptation is in the focus, whereas disruptive technologies should be given considerations.

In the field of value chains, markets, international integration changes in the political agenda for example strategies towards a more bio-based economy were identified as being very important. This would require model-based analysis with a strong relation exists to low carbon and circular economy. As the value chains often determine the income at farm level, distributional aspects in an international context are of concern.

Stakeholders' priorities identified during the SUPREMA Workshop 'Needs'

Global	
SDGs (first 5 items of 14)	Points
Income distribution and growth	18
Environmental degradation (soil, water, biodiversity) impact on economy	12
SDGs indicators with limited coverage -> model outcomes	12
Future food demand -> trade	10
Water	5
Climate Change / Low Carbon Econ. (first 5 items of 14)	
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
Value chain	
Value chain, market, international integration (first 5 items of 27)	
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
Social concerns (first 5 items of 9)	
Productivity gains vs employment	9
Sustainability	9
Immigration, jobs and migrant labour in food chain	7
Climate change	6
Health, nutrition	6
Farming	
Farming challenges: behaviour – markets (first 5 items of 9)	
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
Farming risks (first 5 items out of 15)	
Water constraints	18
Adaptation versus mitigation	18
Yield as a function of applied fertilizers and chemicals as pest infections	14
Feed efficiency	10
Technology	9

Source: Own compilation

Stakeholders also addressed the importance that private entities often fulfilling the role of public entities e.g. by defining and controlling standards. A growing gap is observed between increasing international supply and societal preferred regional provision of food. High priority is given to the availability of data in necessary quantity and quality which is seen as a permanent need. Especially new channels of data acquirement with a focus on the supply chain have to be formed, proper-

ty right and privacy issues require to be solved and transparency along the chain needs to be established.

With respect to social concerns, analysing the impact of productivity gains on employment was given quite high significance. Other challenges were directly linked to SDGs and climate change, with a strong emphasis on sustainability, (im)migration, migrant labour (in food chains) and job availabilities under climate change, differentiated coverage of income groups, GHG reduction and employment. The focus was more on markets and supply chains with an emphasis on processing. Participants also attribute priorities to health and nutrition concerns in general, antibiotics use in husbandry related to animal welfare but also to health issues.

Modelling needs with respect to **farming** and **supply adaptation** comprise new mitigation technologies related to climate change, adoption of new technologies, including remote sensing and robotics as well as on constraints related to environmental regulation. Challenges were attributed to two areas: how to face market and behaviour adjustments of actors and farming risks. Consumers' behaviour is perceived as difficult to anticipate because citizens express a willingness to pay for organic, animal welfare and low emission products while, at the point of sale, consumers choose differently. High priorities received the adoption of new innovations which will require a better representation in models. Also, monitoring markets was perceived as an important.

Priorities concerning farming risks were discussed with highest ranks allocated to water constraints and, equally important, whether to concentrate on adaptation or mitigation of climate change. Also yields, productivity gains in yields and factors contributing were seen as important, whereas efficiencies in livestock (feed efficiency) needed for focus. Also feedbacks between breeding and climate change needs to be covered, technologies and innovation (see also SDGs and climate change) received high perception. Further challenges are seen in development of infrastructure and related cost and in the role of farm structure and education also prioritised under SDGs. Existing knowledge on GHG effects is also considered as a challenge.

References

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