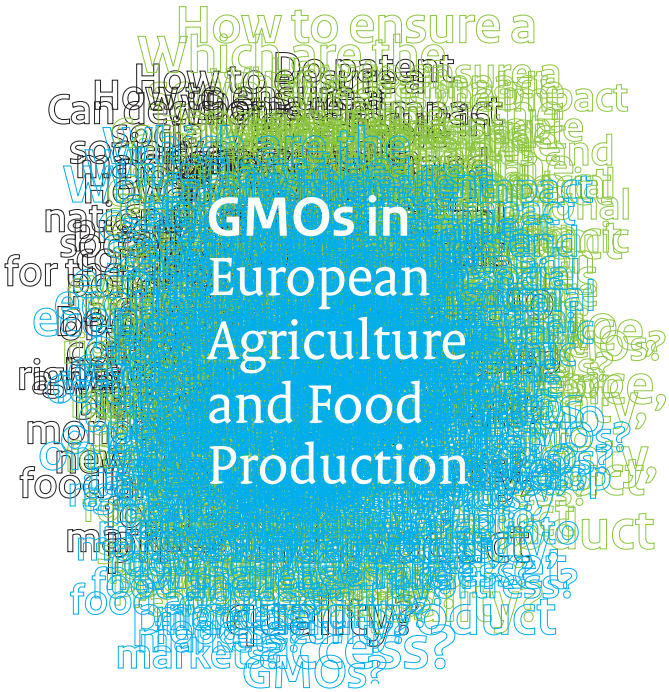
Ministry of Agriculture, Nature and Food Quality

Ministry of Housing, Spatial Planning and the Environment



Conference Report

The Hague, The Netherlands **25 and 26 November 2009**

Table of contents

1 | Introduction

The benefits and risks of the use of genetically modified organisms (GMOs) in agriculture and food production, in particular the cultivation of genetically modified crops, are continually discussed in the EU. This was reiterated by the adoption of Council Conclusions in the EU Environment Council in December 2008. These called for a further improvement of the implementation of the EU legal framework, while acknowledging the need for the continuing timely processing of applications for the placing on the market of GMOs and fulfilment of relevant international obligations. An efficiently functioning framework is required to allow the EU to continue to make proper assessments of future GMO applications, in particular when GMOs could contribute to more sustainable agriculture or better quality food production.

The international conference on GMOs in European Agriculture and Food Production was held at the initiative of Ms. Gerda Verburg, Minister of Agriculture, Nature and Food Quality of The Netherlands, and Ms. Jacqueline Cramer, Minister of the Environment and Spatial Planning of The Netherlands.

The conference sought to take an inventory of stakeholder opinion on the present EU policy framework in the EU and to explore possible ways forward. Participants were invited to discuss a proposal to give EU Member States the authority to make a final decision on the cultivation of GMOs on their territory. This proposal had been put forward by the government of The Netherlands in March 2009 in the EU Agriculture and Environment Councils. A second element of the conference was the exchange of information and the building of a knowledge base on the socio-economic aspects of the use of GMOs in European agriculture and food production.

The conference took place on 25 and 26 November 2009 in The Hague, The Netherlands and was attended by more than 250 participants from Europe and beyond. These included both representatives of the EU Member States and the European Commission as well as farmers, consumers, agri-business and trade partners, non-governmental organizations and representatives from the biotech industry and the scientific community.

The conference offered a two-day programme with speakers representing the different stakeholders from around the world. The conference programme also presented an extensive opportunity for participants to make an active contribution. Working groups, side events and poster presentations provided participants with

a platform to present their views and experiences. Furthermore, the conference programme contained a ministerial roundtable meeting that was attended by EU ministers of agriculture and environment and their delegates. Also, representatives of DG Agriculture and Environment of the European Commission took part in the meeting. The conference was chaired by Ms. Gerda Verburg, Minister of Agriculture, Nature and Food Quality of The Netherlands.

The outcomes of this conference will be presented at both the Agriculture and Environment Councils (December 2009). It will also be included in the contribution of The Netherlands (January 2010) to a European Commission report on the socio-economic benefits and risks, as well as the agronomic sustainability of commercial GMO applications.

This document is a chair's report on the conference proceeding and the most relevant discussions and outcomes. The report includes a summary of the proceedings of the conference (section 2), including the outcomes of the working groups (section 2.3) and the main findings of the event's ministerial roundtable (section 3).

The presentations given during the conference are available on **www.minlnv.nl/gmoconference2009.**

2 | Summary of Conference Proceedings

2.1 Opening of the conference

The conference was opened by the Chair of the Conference, Ms. Gerda Verburg, Minister of Agriculture, Nature and Food Quality of The Netherlands. In her opening address she welcomed all participants to the conference and outlined the challenges agriculture is facing and the need to find ways forward in the use of GMOs in agriculture and food production. Ms. Jacqueline Cramer, Minister of the Environment and Spatial Planning of The Netherlands and co-organizer of the conference, elaborated on the development and possible implementation of socio-economic considerations. Mr. Karl Falkenberg, Director-General for the Environment of the European Commission, stressed the importance to Europe of trade and innovation. He also highlighted the elements considered most relevant by the European Commission that should be taken into account when finding ways forward.

2.1.1 Ms. Gerda Verburg, Minister of Agriculture, Nature and Food Quality of The Netherlands

After welcoming participants to The Hague, Ms. Verburg identified the central challenge to today's food providers: to feed, in 2050, a world population of 9 billion people in a sustainable way. In her view, genetic technology should be fairly judged on its potential without considering it as the answer to all our problems. We should not close our eyes to the technology's possible drawbacks.

Ms. Verburg sketched a drastically changed world compared to a decade ago. The number of hungry people has risen from 850 million in 2000 to the current 1 billion. Genetically modified (GM) crops, a rarity 10 years ago, are grown around the world. And these days, the EU is one of the largest importers of GM products in the world, especially for livestock feed.

The question is no longer *whether* we want to allow the cultivation of GM crops in the EU, but *how*. Safety for humans and the environment is the primary concern. But there must also be room for the assessment of the socio-economic impact of GMOs.

It is important to find ways forward by breaking the current European deadlock on the GMO authorization process as soon as possible, since it harms the interest of all stakeholders. Moreover, future developments will require an adequate response, not least in terms of safety.

The Dutch contribution to the attempts to untie this knot and find ways forward is a proposal to grant EU member states the final say in whether to allow the cultivation of GM crops within their territory. Approval authority for the import of GMOs would remain in Brussels. Commission President José Manuel Barroso has voiced support for this proposal, as has a considerable number of Member States.

On another tack, the EU-Council agreed to consider socio-economic implications of the placing on the market of GMOs, including possible benefits and risks as well as agronomic sustainability. . One of the aims of this conference is to closely examine how this could be done. Another is an in-depth debate of the Dutch proposal on GMO cultivation in the EU.

In conclusion, Ms. Verburg shared what she considered to be the main issues in this field.

- Safety for humans, animals and the environment is paramount.
- Free choice between GM and non-GM crops – for producers and consumers – is a key issue.
- In the approval process, we should review – apart from the possible risks – on a case by case basis the benefits of any GMO to society as a whole, its contribution to a sustainable agriculture, how it helps meeting the challenge of feeding the world population, etc.
- Governments, science, industry and society must cooperate to draw up research proposals and business plans that can contribute to solving societal questions.
- Further consider should be given to the importance of patents on genetic material and new breeding techniques, and the effect on the availability of propagating material for plant breeding.

2.1.2 Ms. Jacqueline Cramer, Minister of the Environment and Spatial Planning of The Netherlands

Ms. Cramer emphasized the complexity of the subject of including socio-economic factors into the GMO authorization process. Nevertheless, practical, clear-cut criteria must be developed to allow us a judgment on whether GMOs can contribute to solving challenges in the field of agriculture and food production, and if so, under which conditions.

In the Netherlands, the development of such criteria was modeled on an earlier study on sustainability criteria for biofuels. COGEM, a Dutch advisory body on genetic modification that considers technical, scientific, ethical and social matters, came up with the following:

- Benefit to society – e.g. yield increases or food quality improvement;
- Economics and prosperity – such as increased employment and productivity;
- Health and welfare – for workers, the local population and consumers;
- Local and general food supply – these should remain at the same level or improve;
- Cultural heritage – if desired, specific elements of cultural heritage or local customs should be preserved;
- Freedom of choice – both consumers and producers should be able to choose between GMO and GMO-free products;
- Safety – in terms of both personal health and the environment;
- Biodiversity;
- Environmental quality.

When implementing these criteria, a distinction should be made between importing GMOs and their cultivation in the EU. In the case of imports, getting reliable data from producing countries would seem very difficult. Moreover, there are WTO-related issues such as free trade and free market access for developing countries. So it seems wise to limit application of socio-economic criteria to cultivation in the EU, at least for the time being.

In conclusion, Ms. Cramer said that EU Member States should be given a chance to gain experience with these criteria by granting them power of decision on the cultivation within their own borders. Such national experiences would make significant contributions to the international debate on the issue.

2.1.3 Mr. Karl Falkenberg, Director-General for the Environment, European Commission

Mr. Falkenberg opened his remarks with a brief review of the importance to Europe of trade and innovation. Since the Union is not endowed with large deposits of raw materials or sources of energy, the prosperity of Europe depends to a large extent on what Mr. Falkenberg dubbed "intelligent products and services." In this light, it is surprising that European societies look so critically at the GMO issue. He called for a debate based on verifiable, science-based evidence.

Given its dependence on trade, the EU has a formidable interest in international GMO

rules defining verifiable criteria with a global reach. There is a collective interest in sound decisions.

After briefly discussing the role of the European Food Safety Authority – calling on that body to anchor itself more firmly in scientific communities within the EU and abroad – Mr. Falkenberg addressed the issue of the Dutch proposal on granting power of decision on GMO cultivation to the Member States. Calling it "interesting but complex," he noted that its adoption would create a paradox: a central authorization process for imported GMOs, applicable to all 27 Member States, that would coexist with cultivation decisions on the national or subnational level.

Turning to the issue of socio-economic criteria, Mr. Falkenberg stressed that they must be verifiable and transparent in order to avoid discretionary and arbitrary decisions. Still, a legal framework is essential; after all, the EU is based on the rule of law. Nevertheless, the inclusion of socio-economic aspects into the approval process could be a new avenue out of the current deadlock. Quoting President Barroso as saying "We have to find a way" to get things moving again, Mr. Falkenberg said we must look into the question whether socio-economic criteria could somehow be fitted into existing EU legislation or whether some adjustments would be required. A middle ground must be found between national sentiments and EU-wide interests.

2.2 Setting the Scene: Achievements and Challenges in Agriculture

This plenary 'kick-off' session of the conference was to provide the conference with the wider perspective in which the discussions on the use of GMOs in agriculture and food production takes place. Agriculture has seen strong developments in its production potential. At the same time, it is facing many challenges, ranging from increasing demand for feedstock to the need for more sustainable production methods and an increasingly global market. The relative position of the use of GMOs with respect to these big questions was illustrated by three eminent speakers. First, Ms. Louise Fresco elaborated on ten major concerns relating to GMOs and posed three questions the EU should address to come to a fast and responsible decision on its GMO policy. Mr. Hans Herren, speaking as co-chair of the IAASTD, introduced IAASTD's development and sustainability goals and concluded that the use of GMOs had sofar not contributed to solving the major problems in today's agriculture. Mr. Julian Kinderlerer spoke as the rapporteur of the Opinion on the Ethics of Modern Developments in Agriculture Technologies of the European Group on Ethics and New Technologies to the European Commission (EGE). He introduced the Opinion and the ethical analysis of agricultural technologies, including GMOs.

2.2.1 Ms. Louise Fresco (University of Amsterdam): Where Do We Stand in Understanding GMOs in Food and Agriculture?

Ms. Fresco opened her presentation with a general overview of the current situation. Proponents and opponents to GMOs are engaged in trench warfare; a minefield of misunderstandings separates them. She noted that the generations that have benefited most from the advances in science en technology are now afraid of new developments in those fields. The call for inclusion of socio-economic criteria into the EU's GMO approval process fits into this pattern of fear.

But the discussion on GMOs must go forward. First, they are here to stay. More than 150 GMO crops are now under cultivation, while in many countries, GMOs are fully integrated in the agricultural system. Second, there are growing irritations among non-EU countries about the European attitude, which is seen as, among others, a formidable barrier to closing the Doha Round. These concerns should be taken seriously.

Ms. Fresco continued with an in-depth discussion of 10 major concerns relating to GMOs.

1 *The supposed contribution of GMOs to increased food security*. There is not a whole lot of evidence that GMOs are the solution to hunger and poverty, Ms. Fresco said. Most GMOs are found in livestock feed. Moreover, GMOs are only partly responsible for any yield increases. The whole yield increase issue cannot be disconnected from the yield gap problem.
2 *The beneficial effect of GMOs on food prices*, turning crises such as the one in 2007-2008 obsolete. Ms. Fresco dismissed this notion, at least for the present. In the future, drought-resistant GMOs might help stabilize food prices.
3 *The supposed threat from GMOs to local traditions*, such as food preferences, rural landscapes and such. The perceived deterioration of those values is not specifically attributable to GMOs, according to Ms. Fresco. Changing food patterns and rationalized landscapes are part of a wider modernization trend. Nonetheless, GMOs can lead to more uniformity. The challenge is to find out how GMOs could promote diversity and small-scale agriculture.
4 *GMOs are purportedly harmful to the environment*, causing, among others, deforestation and soil degradation. Ms. Fresco claimed that GMOs have been unjustly accused of many an environmental crime, including the destruction of the Amazon rain forest. There is no indication that they have much to do with it. On the issue of soil degradation, Ms. Fresco said there is no recorded proof that GMOs have a major impact. But the soil issue is very complex and potentially dangerous, especially in the tropics, so there is reason to be concerned. Similarly, caution

should be exercised vis-à-vis the potential use of salt-resistant crops in hitherto virginal wetlands.

5 *The question of ethics*. A middle ground is needed between those who hold that we cannot deprive developing countries of yield-increasing technology, and those claiming that the introduction GMOs results in the destruction of small-scale farming and local knowledge. Safeguards should be put in place to protect regions of exceptional cultural importance, such as Tuscany.

6 *Intellectual property*, or patents vs. plant breeders' rights. On this issue, one has to bear in mind that most GMO-developing companies have their roots in the pharmaceutical or chemical sectors, where patents are common. To alleviate concerns about unhampered access to seeds – which Ms. Fresco said must be guaranteed – an agreement is needed that links the best elements of the patent system and public breeders' rights.

7 *Perceived GMO threats to human health*. Ms. Fresco gave short shrift to this notion, observing that hundreds of millions of US consumers have been happily ingesting GMO-related foodstuffs for decades without significant health effects. She noted, however, that there was tremendous potential in the field of diet enhancement to combat afflictions such as obesity, diabetics and cancer.

8 *Climate change*. There is no evidence so far that GMOs are helping to fight climate change, according top Ms. Fresco. But here is potential, for instance in limiting the greenhouse gases emitted by livestock and rice paddies.

9 *Waste*. Ms. Fresco claimed that 40 percent of total agricultural production is wasted through pests and rodents, but also because of poor transportation and storage practices. GMOs could contribute to the solution of the waste problem, for instance by increasing the shelf life of food products.

10 *Transparency and information*. Here Ms. Fresco made a plea for careful communication management. Many foodstuffs – including venerated products such as *moutarde de Dijon* – already contain traces of unauthorized GMOs. Overnight introduction of compulsory GMO labeling would lead to chaos on the food market.

In conclusion, Ms. Fresco posed three questions, urging Europe to come to a "fast, elegant, and responsible" decision concerning GMO market access.

1 Should the EU persist in its reservations about GMOs, allegedly restricting free trade while hiding behind socio-economic concerns?

2 Shouldn't the EU be more positively inclined to actively promote scientific and technological developments instead of just letting them happen (or not)?

3 Shouldn't the EU be actively promoting a global approach including a system of internationally agreed criteria, a global GMO clearing house and a worldwide code of conduct?

2.2.2 Mr. Hans Herren (The Millennium Institute): Key Biotechnology Findings of the IAASTD Report

Mr. Herren began his presentation with a brief sketch of the background of the IAASTD (International Assessment of Agricultural Science and Technology for Development) Report. With 400 contributors from 52 countries, the report adresses the impact of knowledge, science and technology on the reduction of hunger and poverty, the improvement of rural livelihoods, nutrition and human health, and on the enhancement of sustainable development. All this in the face of formidable worldwide challenges, such as climate change, population and demand growth, and a decline in natural resources and energy.

Mr. Herren noted that since 1960, total food production had almost trebled, but paradoxically, the number of undernourished people in developing countries is, after a steady decline since the early 1980s, on the rise again since 1995. Meanwhile, food prices have seen a steady decline, except for a sharp increase from an all-time low early in the new millennium.

Mr. Herren identified several problems in contemporary agriculture. First, people have benefited unevenly from the significant yield increases of the last few decades. Second, this rise in productivity has been detrimental to environmental sustainability, soil and water quality, and biodiversity. Moreover, it is one of the key contributors to climate change. A third problem identified by Mr. Herren concerned the declining share of public R&D spending in higher-income countries. Finally, the conventional agricultural system has become heavily dependent on external and non-renewable inputs such as fertilizers, water and pesticides.

Mr. Herren claimed that despite the success of agricultural science and technology within North America and Europe, we need nothing less than a paradigm shift to successfully meet development an sustainability goals and respond to changing circumstances. Such a shift must recognize the importance of a multifunctional agricultural system and of adaptation to local environmental and sociopolitical contexts, that is, addressing the needs of small-scale farms.

Meeting those goals requires three enabling strategies: reshaping agricutural knowledge systems; changing the policy and governance frameworks; and redirecting and increasing investments in agricultural R&D.

One of the major challenges is climate change. Mr. Herren said that agriculture – which is a major part of problem – must contribute to the solution through reduction of the detrimental effects of the system on the world's climate. Adaptation to

changing circumstances is also necessary to reduce the vulnerability of agriculture to climate change. Meanwhile, the development of renewable energy sources should accelerate, as should the development of effective treatment of new and resurgent diseases, weeds and pests.

Mr. Herren sounded critical notes when addressing the possible role of GMOs tackling all these challenges. He said that so far, they had had little impact on IAASTD's development and sustainability goals. Rather than providing a structural solution, GMOs were little more than symptom treatment, according to Mr. Herren. He claimed that agricultural production in Africa could be trebled or even quadrupled today with existing technologies and practices. He acknowledged that GMO R&D should continue, but not at the expense of other agricultural research, education and training.

Finally, Mr. Herren cracked some nuts on food prices in the developed world – he said "food is far too cheap" – and the practice to haul food and feed over great distances – he said "it is ridiculous to grow soy in Argentina to feed pigs in Europe." He finished by saying that adoption of the necessary changes in the agricultural systems would require great political courage.

2.2.3 Mr. Julian Kinderlerer (University of Cape Town): Ethics of Modern Developments in Agriculture Technologies

Mr. Kinderlerer, speaking as a member of the European Group on Ethics and New Technologies to the European Commission (EGE), held a talk on the Group's 2008 opinion on the ethics of modern developments in agriculture technologies. This opinion – whose focus is wider that GMOs alone – is based on the principles of food security, the sustainable use of resources and fair worldwide trade in agricultural products, as well on that of an ethically sound design of sustainable agricultural policies in the EU.

After an extensively reviewing agricultural developments over the past half-century, Mr. Kinderlerer noted that ethics in agriculture centered on such issues as human dignity, justice, the right to food, and responsible stewardship of the ecological environment. Any debate in the field of food ethics excluding GMOs is artificial, according to Mr. Kinderlerer.

The EGE's opinion holds that from an ethical perspective, sustainable agricultural technologies (genetic modification among them) should help maximize the use of natural resources, while at the same time protecting them from exhaustion so that they can regenerate in a natural way.

In order to achieve this, the processes governing primary production, distribution and storage of food need to be improved. There is also a need for improvement of the use of arable land. Meanwhile, methods must be developed to turn non-arable land into territory that is suited to agricultural use (e.g. salt-resistant crops). Harvest losses and waste must be cut through improvement and simplification of the food chain – "from farm to fork" – as well as through effective waste recycling systems.

As to food safety standards, the opinion states that those of the EU have to be based on scientific data only; and if EU food safety standards for food products differ from international standards, they must be scientifically justified. In this context, Mr. Kinderlerer noted that in Europe, GMOs are subjected to a hugely complicated process of risk assessment with a rigor not applied to new products from the conventional and organic farm systems.

Mr. Kinderlerer said that the EGE recognizes that agriculture brings both benefit and harm – especially to the environment. All technologies could involve risks with irreversible effects. This warrants their careful study and evaluation through impact assessments that also compare the effects of current and new technologies. The assessments should be based on an integrated approach to agriculture, taking into account both environmental and social implications.

The group identified several methods to achieve goals such as the sustainable use of soil and the reduction of spray pollution, of active ingredients in herbicides and of CO_2 emissions. Among them are proven techniques sch as contour farming and non-tillage techniques; bioengineering; modern genetics; ICT tools; and technologies and methods conducive to better water management and the prevention of water pollution.

2.3 Working group sessions

The conference programme contained eight different working groups in four parallel sessions. Each of the working groups addressed a different topic in the GMO debate. Upon the introduction by different speakers a more in depth discussion took place with the audience to come to an inventory of views and to explore possible ways forward in the authorization and use of GMOs. Each working group was chaired by a representative from the conference participants, who reported the main outcomes of the meetings to the Chair of the Conference in the plenary closure of the conference.

2.3.1 The Cultivation of GM Crops – EU Views on GM Crop Cultivation

Chair: Bernward Geier (COLABORA)
Introductory presentations were made by:

- Ms. Esther Esteban Rodrigo (Head of GMO Department, Environment/Rural and Marine Affairs Ministry, Spain) - The Spanish experience with GMO.
- Mr. Fabio Boscaleri (Vice-President, GMO-Free European Regions Network) - European Regions and agricultural policies: the GMO-free option.
- Mr. Willy de Greef, Secretary-General, EuropaBio) - Commercial cultivation of GM crops: what have we learnt in 15 years?

The working group reviewed the cultivation of GMOs in the EU and made an inventory of socio-economic considerations associated with these applications. While GM-maize is cultivated at large scale in Spain and cultivation of GMOs is being introduced in other EU Member States, an increasing number of European regions ban the cultivation of GMOs on their territory and declare itself GMO-free.

The presentations during this working group reflected this diversity. Ms. Esteban Rodrigo explained that Spanish farmers, formerly hard-hit by the corn borer, benefit from a lower use of pesticides and higher yields because of GMO cultivation. More than 76,000 hectares of Bt-Maize were under cultivation in Spain(2009). She also highlighted the relevance of the imports of soybeans and cereals for the Spanish (and European) livestock sector. The existence of an asynchronous authorization of GMOs between the EU and third countries are considered to have a great economic impact on the feed industry and livestock sector.

On the other hand, Mr. Boscaleri introduced the European regions united in the GMO-Free Network. The network of GMO-free European regions encompasses a total of 51 regions and reaches from the Shetland Islands in the North to the isle of Crete in the Mediterranean. The Network seeks the power to establish GMO-free zones to protect their regional products, their landscapes and their local way of life. He stressed the socio-economic impact of GMO contaminations in non GMO food production that demand strict coexistence measures with active involvement of local/regional governments.

The European association of biotech industries, represented by Mr. de Greef, is a strong proponent of genetic modification technology. The technology is being applied to an increasing number of crops that are primarily used in developing countries and address challenges like nutritional value and disease resistance. The biotech industry deplored the fact that due to all the dithering, Europe has lost its position as global leader in GMO Research & Development, probably forever. He

argued that the socio-economic value of agricultural technology is best assessed by the farmers who are actually using the GMO crops.

The debate following the presentations covered a wide field. Among the subjects discussed were the coexistence issue, the question of compensation (for both non-GMO and GMO farmers), the disruptive effects of introducing socio-economic criteria concerning GMO cultivation on competition, and on when to conduct an assessment on socio-economic criteria (with ex ante assessment deemed almost impossible according to biotech industry representatives); there was also a brief exchange of views on farmers' freedoms and the restrictions imposed on them. The subjects discussed would require further attention when implementing the proposal to authorize the cultivation of GMOs at national level.

2.3.2 International Policy Frameworks – Perspectives from International Agreements and National Legislation

Chair: Helmut Gaugitsch (Austrian Environment Agency)
Introductory presentations were made by:

- Mr. Bjarte Rambjør Heide (Senior Adviser, Directorate for Nature Management, Norway) - The Norwegian Gene Technology Act and socio-economic aspects.
- Mr. Joost Pauwelyn (Professor of International Economic and WTO Law, Graduate Institute of Insternational Studies, Switzerland) - The GMO Debate Under the Rules of the World Trade Organization.

The working group discussed relevant policy frameworks outside the EU that may either serve as a possible reference for the EU or have an inter-linkage with the EU framework.

Presentations in this working group focused on two regulatory frameworks outside the EU: the Norwegian Gene Technology Act (GTA) and three WTO-agreements. Mr. Rambjør Heide explained that under the GTA, release of GMOs is only allowed when there is no risk or adverse effect on health and environment. The possible benefit to society and likeliness that it promotes sustainable development are also given considerable weight. In the only case subjected to the GTA procedure so far, a genetically modified carnation, it was clear that this broad approach leads to increased complexity of the process. There was insufficient documentation to assess the full scope of criteria. Additional research and collecting of data is needed.
The WTO allows more regulatory measures by national governments than is generally perceived. Mr. Pauwelyn highlighted that WTO rules do not allow any discrimination in favor one of several sources of the same product. Any measure should be rationally

motivated, that is, related to a legitimate objective and based on scientific or other evidence. In developing their line of argumentation countries need to define socio-economic aspects as risk-, health- or trade-related to make them subject to either of three WTO Agreements, each of which represents a specific 'box' of arguments.

1. The WTO Agreement on Sanitary and Phytosanitary Measures (the SPS Agreement)
2. The General Agreement on Tariffs and Trade (GATT)
3. The Agreement on Technical Barriers to Trade (the TBT Agreement)

Examples showed that restrictions based on concern for "public morale" are sometimes allowed under the WTO.

In the discussion, specific aspects of both legal frameworks were covered. It is clear that in WTO terms, "risk" has to be defined 'in the real world', beyond laboratory tests. Socio-economic criteria are not a priori excluded, as long as they are verifiable and transparent.

2.3.3 Consumer and Producer Interests – The Food and Feed Dimension

Chair: Stuart Wainwright (UK Defra)
Introductory presentations were made by:

- Ms. Heike Moldenhauer (Senior Campaigner Biotech Policy, Friends of the Earth Germany) - Views on socio-economic considerations.
- Mr. Arnaud Petit (Director Commodities and Trade, Copa-Cogeca) - The use of biotechnology in agriculture.
- Mr. Olivier Andrault (Chargé de Mission Agriculture et Alimentation, UFC-Que Choisir, France) - Consumer perspective on GMOs: crucial role of regulation.

The use of GMOs in agriculture and food production involves an entire supply chain from farm to fork and includes a wide range of stakeholders. This working group made an inventory of views from different stakeholders in Europe with respect to the use of GMOs in agriculture and food production.

Echoing the opinion of many NGOs, Ms. Moldenhauer, representative of Friends of the Earth Europe, voiced strong doubts about the benefits of GMO imports and cultivation, demanding rigorous approval procedures including an assessment on socio-economic criteria.

Speaking on behalf of 30 million farmers in Europe (as well as 40,000 co-operatives), Copa-Cogeca's spokesman Mr. Petit asserted that GMOs would increase primary producers' competitiveness, give consumers a wider choice of products, and would ease compliance to environmental regulations. Moreover, the current legal frame-

work is sufficient to manage the approval of new GMOs.

Noting that polls indicate that a majority of European consumers is opposed to GMOs, Mr. Andrault of UFC-Que Choisir, the French consumer advocacy group, said his organization is "not directly against" GMOs, as long as certain criteria in the fields of safety, the environment and freedom of choice – for instance the availability of GM-free food – were met.

Reactions from the audience pointed at the speakers' radically different views on consumers' preferences. Others spoke about, among other topics, the validity of data, the matter of who to trust, whether socio-economic criteria would alleviate the concerns of consumers and farmers, and how to include socio-economic aspects into the approval process. Several participants to the working group endorsed the recently-founded Biotech Council in France, which includes an all-stakeholder Economical, Ethical and Social Committee.

2.3.4 The EU Legislative Framework – Assessment of its Implementation

Chair: Helmut Gaugitsch (Austrian Environment Agency)
Introductory presentations were made by:

- Mr. Per Bergman (Head of GMO Unit, European Food Safety Authority) - EU Risk Assessment of GMOs: Role of EFSA.
- Mr. Garlich von Essen (Secretary-General, European Seed Association) - GM 'developments' in the EU: ESA's point of view.
- Ms. Christine Noiville (Research Director, Haut Conseil des Biotechnologies, France) - The Haut Conseil des biotechnologies: towards a new type of GMOs assessment in France.

The working group addressed the EU stakeholders' views on the present EU policy framework and on possible ways forward to improve it. While the implementation of the present EU legal framework has been in a deadlock for many years, that situation appears to meet nobody's satisfaction nor interest. Nevertheless, any improvement has so far remained elusive.

Mr. Bergman stated that EFSA is in a continuing process of updating its guidance documents for stakeholders. This sometimes leads to complaints by companies who feel that too many updates create new uncertainties. The EFSA is always prepared to enter into discussion with stakeholders in the EFSA Stakeholder Consultative Platform. In 2010 the EFSA Member State scientific network for risk assessment of GMOs will be a new platform for harmonization of risk assessment practices.

The European Seed Association (ESA) is critical of current situation, considering the important role of the European seed industry as player in the world market and as contributor to growth in agricultural productivity. Mr. von Essen stressed that ESA urgently calls for a reliable authorization process and a practical enabling policy providing thresholds for adventitious presence of GMOs. Realism, responsibility, a clear strategy and leadership should be the hallmarks of a future EU policy on GMOs.

Ms. Noiville explained that the French Haut Conseil des Biotechnologies, created in April 2009, is composed of two committees, one focusing on scientific elements and the other on economic, ethical and social issues. It will advise the French government on a wide range of biotech issues. An important issue here is the ranking and prioritizing of all criteria, once they are assessed. Ultimately, this is a political process.

During the discussion it became clear that stakeholders' trust in implementation of the protocols is a prerequisite for acceptance. With regard to the Dutch proposal on national authority to decide on cultivating GMOs on their soil, it is unclear how this would affect the use or transport of seeds within the EU, in particular when the GMO is allowed in one Member State but not in the other. Clearly, broadening the process by introducing socio-economic criteria will not provide an automatic solution (as was shown in the Norwegian example).

2.3.5 The Global Perspective – Views from Third Countries

Chair: Harry Kuiper (EFSA GMO panel)
Introductory presentations were made by:

- Ms. Laura Foell (Soybean Farmer and Director, United Soybean Board, USA) - U.S. soybean production and sustainability.
- Mr. Alexander Ivashchenko (General Manager, Provimi, Russian Federation) - A view on GMO issues from Russia.
- Mr. Walter Colli (President, Brazilian Biosafety Committee CTNBio) - The Brazilian Biosafety Network.

The use of GMOs in agriculture has taken a particularly strong growth in countries outside the EU. The working group pictured the use of GMOs in agriculture outside the EU and their regulatory frameworks.

Ms. Foell described the blessings that GM soy had brought to her Iowa farm in the fields of soil erosion and quality, greenhouse gas emissions, water loss, and biodiversity. US-wide, some 30 million hectares are under soybean cultivation, 92 percent of which is genetically modified. Non-GM soy is scarce and is twice as expensive as the

GM variety. Ms. Foell's presentation made abundantly clear that in the US, GMOs are there to stay.

In Russia, Mr. Ivashchenko explained, commercial cultivation of transgene crops is banned; only scientific research is permitted. Import of GMOs is permitted under strict regulations, however. Among the general public, understanding of the GMO issue seems limited: according to one poll, 30 percent of respondents had never heard of them, but 71 percent were certain that they are harmful to human health.

Mr. Colli described the GMO approval process in Brazil. Every company, university or research institute planning to do genetic modification work is required to set up an internal biotechnology committee that reports to the national level. Currently, there are 288 of them. The Brazilian process, in which the precautionary principle plays a major role, resembles a complex deliberation of scientific, political, legal and social interests.

The Q&A session following the presentation focused, among others, on the reliability of scientific data, on the true nature of the precautionary principle, on the cost of non-GMO livestock feed for European farmers. Questions were also raised among the audience about the efficiency of the Brazilian legal framework.

2.3.6 Sustainability Initiatives – Lessons Learned from Sustainability Networks

Chair: Bernward Geier (COLABORA)
Introductory presentations were made by:

- Mr. Rudy Rabbinge (University Professor, Wageningen UR, Netherlands) – Food security in 2040 and need for innovation.
- Mr. Guillermo Terol (Social and Environmental Manager, Desarrolle Agricola des Paraguay) - DAP's triple bottom line approach for sustainable agriculture.
- Mr. André Goig (Global Head Vegetables, Syngenta Seeds) - Grow more … from less.

The working group discussed experiences that do already exist in defining and implementing social and economic criteria for a sustainable production of agri-commodities to be taken into account when discussing socio-economic aspects related to the use of GMOs.

Mr. Rabbinge made a strong plea for applying a wide range of innovative 'Green Life Sciences' to provide food security in 2040, including use of GMOs. A focused approach, close collaboration of science, industry and public policymakers and striving for excellence are key factors for a new bio-based economy. Criteria for

sustainability should not be too rigid, since they may block future developments in biotech sciences.

The agricultural company DAP operates a 'triple bottom line system' to create economic, social and environmental value in partnership with NGOs and local communities. Mr. Terol explained that key to its success is that relationships between environmental, social and economic stakeholders are based on mutual trust. Typically, DAP's members apply GMOs, only conventional farming techniques or strictly organic principles.

Mr Goig offered some clear examples of ways to create higher yields by innovative techniques for crop protection, but also by an extensive program to provide training to farmers. He emphasized that assessment of new developments and innovation should be free of fear and fact-based. Also, freedom of choice and a pragmatic, region-based approach are vital.

Discussing the presentations, one clear conclusion was that there is no 'silver bullet' which will resolve all issues of sustainable food production. Any approach will have to be free of fear, in order to use all potential methods and techniques. Assessment of risks and methods should be strictly fact- and science based. The call for more independent audits to verify claims of successful approaches was welcomed. Collaboration is another key ingredient of a successful approach.

2.3.7 Intellectual Property Rights – Assessment of the Impact on the Agricultural System

Chair: Julian Kinderlerer (University of Cape Town)
Introductory presentations were made by:

- Mr. Peter Button (Technical Director, International Union for the Protection of New Varieties of Plants (UPOV)) - The impact of plant variety protection under the UPOV Convention.
- Mr. Andreas Popp (Director Intellectual Property, BASF) – Patent protection in plant biotechnology: View of a trait provider.
- Paul Pedro Borja (Policy Officer, South-East Asian Regional Initiative for Community Empowerment (SEARICE), Philippines) - The right of farmers to protect and preserve traditional farming knowledge and systems.

The working group explored the possible impacts of intellectual property systems on innovation and availability of genetic resources in Europe and a stakeholders' perspective on possible socio-economic aspects.

Mr. Button talked about the impact on UPOV's Plant Variety Protection System. Protection of breeders' rights has resulted in increased investment in plant breeding, more and better varieties for farmers and growers, rising income for farmers, a boost to rural development and the development of international markets.

BASF's Mr. Popp told the audience that given the cost in time and money to bring a new genetic trait to market (10-12 years and EUR 200-400 million respectively), patents were a necessity for biotech companies to recover their investment. Without patents, the biotech industry would lose the incentive to develop new traits, which Mr. Popp deemed essential to a truly sustainable agriculture able to feed 9 billion people in 2050.

Mr. Borja, whose organization works at the South-East Asian community level, made the case for the right of farmers to fair and affordable access to seeds, as well as their right to keep seeds for use in the next growing season. Noting that farmers in his region are breeding new varieties – predominantly rice – he called for a viable system to recognize and protect those varieties.

A lively discussion ensued. The main issue was the right of plant breeders and biotech companies to protect their intellectual property and get a return on their investment versus farmers' rights to fair access to new plant varieties and seed. The discussion focused on the purported stranglehold of biotech companies on farmers and traditional plant breeders through the patent system. Participants claimed that fair access is the cornerstone of innovation; and that while the patenting of whole plants is banned in many countries, the biotech industry is acquiring control of complete organisms "through the back door" by patenting essential genetic traits. The general call was for a better balance between the protection of intellectual property rights and the right to fair access.

2.3.8 Innovations in Agriculture – Developments to Meet New Food Security and Sustainability Challenges

Chair: Anthony Arundel (UNU-MERIT)
Introductory presentations were made by:

- Mr. Anthony Arundel (Senior Researcher, Maastricht University, Netherlands) - Innovation and the future of sustainable agriculture.
- Mr. Berward Geier (Director COLABORA, Germany) - Sustainability the organic way: Nature mobilization instead of genetic manipulation.
- Mr. Gianluca Brunori (Professor of Agricultural and Agro-Food Economics, University of Pisa, Italy)) - New challenges for European agricultural research in the next 20

years: the role of GMOs.

The working group reviewed the possible contributions of GMOs in meeting the challenges agriculture is facing. The call for a new agricultural revolution is heard, but controversy exists over the introduction of new technologies due to possibly associated impacts.

Mr. Arundel explained that in order to create sustainable agriculture, not only new technology is needed but also an appropriate business environment including an active public research sector. Biotechnology for plant breeding may imply GMOs but there are several other options. He emphasized the detrimental effect of delaying GMO research and field trials in Europe.

Mr. Geier argued that food security through sustainable agriculture could be achieved by the many innovations that are possible in organic agriculture. He focused on several risks of introducing large-scale GM-based agriculture. He showed some clear examples of successful innovative organic techniques to increase yields and diversify sources of income for farmers.

Mr. Brunori presented an review of key questions for food production in the next 20 years. He reviewed the "pro's and con's" of GMOs and highlighted issues that need to be addressed urgently, especially with regard to the current regulatory context and public research. He cited full research freedom, public debate and plurality of paradigms and technology as a few of the key issues for the next 20 years.

Presentations and the discussion focused on the need for diversity in innovative techniques to develop new products, with or without GMOs. Uncontrolled introduction of new techniques can have considerable downsides, as, according to some, the so-called Green Revolution has shown according to some. The concept of socio-economic criteria is worth exploring, provided they are credible and independently verifiable. ISO-certification can enhance this credibility. Socio-economic criteria should not further increase costs for stakeholders, since this leads to further concentration of expertise of producers, shutting out smaller firms and limiting diversity and freedom of choice.

3 | Main findings of the ministerial roundtable

As a separate part of the conference programme a ministerial roundtable meeting was organized. Participation in the roundtable consisted of ministers and representatives from 13 EU Member States, as well as European Commission representatives from DG Agriculture and DG Environment. The Chair of the Roundtable, Ms. Gerda Verburg, Minister of Agriculture, Nature and Food Quality of The Netherlands, presided over the roundtable meeting.

The roundtable meeting focused on discussing the proposal to give EU Member States the authority to make a final decision on the cultivation of GMOs on their territory. As a second but clearly separate issue, the roundtable meeting aimed at an exchange of views on socio-economic implications of the use of GMOs in agriculture.

Ms. Verburg reported on the outcomes to the conference in the plenary closing session and distributed a copy of the main findings as they are depicted below:

Part I: Cultivation

a) Ministers and representatives highlighted the new challenges we are facing worldwide and which agriculture is facing in a changing environment.
b) Both the opportunities that GMOs could represent in terms of increasing agricultural competitiveness, productivity and fighting hunger in the world, as well as concerns relating to seed diversity, access to knowledge and food security were expressed.
c) Many ministers and representatives underscored the need to make a distinction between authorization of GMO products and cultivation within the EU. They highlighted the need to maintain the current authorization criteria in the field of human, animal and plant health, including the science based risk assessment. The crucial and important role of EFSA was clearly stated.
d) Ministers and representatives expressed support for the concept of granting Member States and/or specific regions the right to decide on cultivation of GMOs on their own territory. Some representatives expressed reservations.
e) In this context, several participants referred to subsidiarity, proportionality and the right of self determination as important concepts to respect when considering EU GMO policies, taking into account regional agricultural, ecological, geographical, co-existence and other legitimate factors.

f) It was pointed out that this approach could improve the effectiveness of the GMO procedures in the EU.
g) It was noted that GMOs in food and feed should be treated differently from GMO cultivation. The EU should remain in a position to not only import, but also produce GMOs. In this respect attention was drawn to the issue of zero tolerance in the EU for non-authorized GMOs.
h) Different views were expressed as to how a framework could be developed to encompass this issue.
i) In this regard, it was pointed out that it is important to take into account practical and legal considerations and to ensure a firm international and European legal basis.
j) It seemed appropriate to first assess whether solutions could be found within the current framework for GMOs. If this would prove impossible, changes to the framework as proposed by several Member States could be considered.
k) In any case, the implementation of the current framework should be improved, including the safeguards therein for environmental, food and feed safety. In this context, several participants emphasized the importance of maintaining the science-based Risk Assessment of GMOs.
l) Different participants considered it desirable to include in such a framework the possibility for member states to base their decisions on cultivation of GMOs on their territory on socio-economic considerations. Some representatives wanted these discussions to enrich also the process of authorization.
m) However, other participants described the taking into account of socio-economic aspects as opening Pandora's box, raising many new questions. In this respect they underscored the need to comply with international treaties and agreements, especially WTO.
n) Given the broad desire for a swift solution and the need to accelerate the process for coming forward with proposals, participants called upon the European Commission to put forward as soon as possible proposals to encompass the issues raised.

Part II: socio-economic aspects

a) As a second and clearly separate issue, the Roundtable exchanged views on socio-economic implications of GMOs in European agriculture.
b) A number of ministers and representatives expressed support for the nine criteria as identified by the Netherlands. Others stated reservations or the need to have more time for study.
c) Other issues mentioned included plant breeding, patent rights, ethical criteria and threshold levels for adventitious presence of GM seeds in conventional seed batches.
d) Some participants pointed to the generally negative public opinion on GMOs

in general. In this regard it was suggested that consumers should be made more aware of the thorough scientific risk-assessment that underpins market authorizations of GMOs.

e) Several participants agreed that a further analysis of socio-economic consequences of GMOs, including possible adverse effect but also socio-economic benefits and opportunities to stimulate innovation, would be worthwhile.
f) In that regard, it was recommended to promote independent socio-economic and agronomic impact studies of GMOs.
g) Furthermore, involvement of all affected stakeholders in the discussions on this issue was considered essential.
h) Views diverged as to whether and how socio-economic aspects could be included in EU policies and authorization procedures. Some participants were in favor of including such aspects. Others expressed reservations, pointing for instance to a possible increase in administrative burdens or complicating the process of authorization.
i) In any case, the EU should comply with international agreements such as the WTO agreements. Also the issue of non-trade concerns under the WTO should be taken into account.
j) Some participants considered that appropriate and transparent methodologies for the assessment of socio-economic criteria might be required.
k) Also, any efforts in the context of socio-economic aspects should not jeopardize the scientifically based risk-assessment procedure.
l) Some ministers and representatives pointed out that the relevance of specific socio-economic aspects can differ between Member States.
m) Different opinions were expressed on the issue whether it would be appropriate to have a policy for import in relation to the policy for cultivation within the EU.
n) Establishment of GMO free regions in the EU could be considered, eg. to preserve traditional cultivation methods. A GMO free status was considered by some representatives to be a market advantage.
o) Mention was made of difficulties arising from the increasing number of incidents with GMOs cultivated outside the EU, but not authorized in the EU and the high dependency of the EU on imported feed.
p) Ministers and representatives noted that the current procedure allows for the exclusion of specific regions from GMO authorizations for scientific reasons. The challenge seemed to be to find the scientific data that allows for such exclusions.
q) When considering any changes to the legislative framework, it was recommended to strive for a very limited change to the current EU legislation.

4 | Closing session

In the plenary closing session of the conference, the Chair of the Conference, Ms. Gerda Verburg, Minister of Agriculture, Nature and Food Quality of The Netherlands, first invited the chairs of the working groups to report on the outcomes of the different working group discussions. Subsequently, different stakeholders were given the floor to reflect on the outcomes of the conference. These interventions were followed by a presentation of Mr. Mousnier, member of cabinet of the European Commissioner for Agriculture. He spoke on behalf of Ms Fischer Boel explaining the position and activities of the European Commission in the field of GMO policy. In her closing statement, the Chair of the Conference, Ms. Gerda Verburg, reported on the main findings of the ministerial roundtable discussions and concluded on the outcomes of the conference. This chapter of the report contains a synopsis of the statements made in the plenary closing session.

4.1 Stakeholders: Friends of the Earth Europe, Dutch Product Board for Margarine, Fats and Oils, Public Research and Regulation Initiative

Speaking on behalf of several NGOs participating in the conference, Friends of the Earth Europe (FoEE) stated that the setup of the conference was biased towards supposed benefits of GMOs, that its main objective seemed to be to speed up the EU GMO approval process and that there was no time for constructive debate. The representative of FoEE strongly argued for socio-economic assessment of all costs of importing and producing GMOs, including contamination and liability. She also urged European leaders to take into account the experience of harmful effects of GMOs in non-EU countries. FoEE feels that a new paradigm is needed to address urgent problems of climate change, food security and environmental degradation. In its view, GMOs are part of the old paradigm.

A representative of the Dutch Product Board for Margarine, Fats and Oils (MVO) emphasized to start a socio-economic assessment of the use of GMOs at the farm level and to use the 15 years of experience with the growing of GM crops in the US and other countries. He also called for NGOs to take this information into account and to reconsider their opinion on GMOs. MVO supports the proposal by the Dutch government on the introduction of socio-economic criteria for the cultivation of GMOs in the EU and to give EU Member States a final decision on the cultivation of

GMOs in their territory. This proposal should prevent asynchronous authorization between the EU and third countries. Still, due to the expansion of the use of GMOs worldwide a more effective authorization process and a responsible and workable threshold for low level presence of GM products that have not been authorized by the EU are needed.

The Public Research and Regulation Initiative (PRRI) expressed its appreciation to the Dutch Government for organizing this conference, because the current regulatory situation in the EU also impacts public research in biotechnology. PRRI believes that socio-economic considerations are of key importance. The question is to what extent it is legally possible and practically feasible to take those aspects into account. The PRRI spokesman referred to earlier discussions on the issue, the gist of which was that socio-economic considerations are best addressed on a generic level, such as decisions on funding of research; and that WTO rules and EU internal market regulations offer only limited scope to take socio-economic aspects into consideration.

4.2 Mr. Julien Mousnier, member of cabinet of Ms. Mariann Fischer Boel, European Commissioner for Agriculture and Rural Development

Mr. Mousnier identified three GMO-related problems that the EU must address: which elements to consider in the assessment of market approval; what the appropriate level of decisions on cultivation is; and how to deal with the issue of low-level adventitious presence of unauthorized GMOs in food and feed imports.

Mr. Mousnier noted that the Commission has begun a consultation process with EU Member States on the first issue. Whatever the outcome of that process, there are some limits to what can be done. Mr. Mousnier pointed at Europe's obligations in the WTO framework, the need to base socio-economic criteria on scientific evidence, and the need to make a clear distinction between cultivation and imports. The objective must be to devise better-functioning GMO legislation without jamming the system with ever-more obstacles, according to Mr. Mousnier.

On the issue of the level of cultivation decisions, Mr. Mousnier said that resolution of this highly sensitive subject is a matter of the new Commission. But he quoted President Barroso, who said earlier this year that it should be possible to combine a common, science-based authorization system with freedom for Member States to decide on GMO cultivation on their own territories.

Finally, Mr. Mousnier told the conference that time is "definitely" running out on

the issue of low-level GMO presence in imported food and feed. He noted that EU livestock farmers are highly dependent on feed imports. The large majority of these originate in countries that have adopted GM technology. Moreover, according to Mr. Mousnier, it is almost impossible to avoid the presence of GMO "dust" during processing and transportation across the globe. With an ever-increasing number of GM crops, there is an urgent need to speed up the approval process. After all, European cattle breeders are faced with high costs for GMO-free feed.

Mr. Mousnier assured the audience that there is "absolutely no question" about changing the case-by-case GMO approval policy or turning our backs to zero tolerance.

4.3 Ms. Gerda Verburg, the Netherlands' Minister of Agriculture, Nature and Food Quality

Ms. Verburg thanked all participants for their constructive contribution to the conference and recapped the challenges facing the agricultural system over the next few decades. She also reiterated the need to find ways forward and to break the European deadlock on the GMO issue.

Ms. Verburg reported to the conference on the outcomes of the ministerial round-table meeting and distributed the main findings among the participants. These are reproduced in chapter 3 of this report.

Turning to the outcomes of the conference, Ms. Verburg noted that there are large differences between Member States vis-à-vis the cultivation of GMO crops. A system that makes a clear distinction between imports and cultivation of GMOs, leaving decisions on the latter to the Member States, might do justice to that diversity. In that respect, she concluded that broad support was voiced during the conference for the proposal to adjust the authorization on the cultivation of GMOs.

Ms. Verburg said that although the need to address socio-economic aspects is evident, it is less clear how to tackle the subject. Involving socio-economic aspects in the authorization process drew both support and reluctance. The EU must comply with international agreements such as the WTO; and the criteria must be objective and science-based to avoid arbitrary decision making. Europe should be very specific about its intentions regarding GMO and about the way it is going to implement them. Further elaboration and implementation would thus require flexibility, time, and learning-by-doing.

Ms. Verburg concluded by stating that although a careful debate on the issue is necessary, speed is essential, given the urgency of the challenges agriculture is facing.