Report – International workshop on a socio-economic assessment framework for GMOs

20 November 2014

Scientific advisory body COGEM[1] organized a one day international workshop on a socio-economic assessment framework for genetically modified organisms (GMOs). The initiative will support the drafting of a report by COGEM on this subject following a request by the Dutch government. This request pre-empts the adoption in the EU of a new Directive that will authorize EU Member States to restrict or prohibit the cultivation, in all or part of their territory, of GMOs[2].

The objective of the workshop was two-fold:

- To **learn**; by promoting the exchange of knowledge, insights and specific experiences between scientific experts and policy advisors
- To **explore**; by identifying elements that may be of relevance for a socio-economic assessment framework for GMOs.

The workshop enjoyed the participation of 42 experts from 11 European countries. The program addressed three topics:

1. Perspectives and challenges towards the possibility for the Member States to restrict or prohibit the cultivation of GMOs in their territory.
2. Identification, qualification, quantification, operationalization and monitoring of socio-economic considerations.
3. Experiences with socio-economic considerations in other areas, including socio-economic criteria in sustainability frameworks for agricultural products.

This report is COGEM's reflection of the most relevant discussions and outcomes of the meeting.

1. Perspectives and challenges

The introduction of a socio-economic assessment (SEA) framework will enable EU Member States to take into account other arguments but risks to human health and the environment to restrict or prohibit the cultivation of GMOs on their territories. The implementation of such a framework faces **two immediate challenges**: what is considered a socioeconomic (SE) impact and what methods can be applied for a sound evaluation of such impacts. The workshop identified several features that need to be taken into account when addressing these two challenges:

[1] COGEM is the scientific advisory body to the Dutch government on the risks to human health and the environment of the production and use of GMOs and informs the government of ethical and societal issues linked to genetic modification.
[2] Proposal for a Regulation of the European Parliament and of the Council amending Directive 2001/18/EC as regards the possibility for the Member States to restrict or prohibit the cultivation of GMOs in their territory.

- Quantitative and qualitative impacts. Economic impacts often have a **quantitative** character as they are expressed in monetary terms, while social impacts more often have a **qualitative** character as they are based on values and cultural and behavioural norms.
- Reversible and **irreversible impacts**. Reversible impacts will be restored when the activity that causes the impact is stopped. Irreversible impacts, however, cause an effect (positive or negative) that cannot be overturned and will carry an absolute SE cost or benefit.
- **Distribution of SE impacts**. The SE impact can differ between, as well as within stakeholder groups. The impact of the cultivation of GMOs can e.g. be a benefit to one group of farmers, while it presents a cost to another group of farmers.
- The **uncertainties** of SE impacts. The quantification and qualification of SE impacts bring inherent uncertainties. This is due to the complexity of defining SE impacts and limited experience in measuring SE impacts. **Limited data** are available, esp. for social impacts, while the analysis of economic impacts often relies on mathematical models.
- The tasks, roles and responsibilities of **stakeholders** (scientific experts, policy advisors, industry, societal organizations, general public) in the design and use of an assessment framework for SE impacts.
- SE impacts will be associated both with a refusal and approval of GMO cultivation.

Another challenge is to carefully **manage the expectations** people may have from a SEA framework. Proponents of GMO cultivation expect that the introduction of a national SEA framework will improve the EU authorization procedure for commercial cultivation of GMOs. While critics of GMO cultivation expect it will provide better means to restrict or prohibit the cultivation of GMOs on their territories. The features listed above make clear that a SEA framework is unlikely to give a clear yes or no answer towards the socioeconomic performance of certain GMO cultivation. It was reiterated several times during the workshop that SEA, at this stage, can have an important function in the disclosure and **sharing of information** amongst stakeholders about possible SE impacts associated with the cultivation of a certain GMO. Today, SEA is not fit for decision-making on the cultivation of GMOs, due to the limited availability of data and the uncertainties and lack of methodologies for a sound evaluation of SE impacts.

An evaluation of SE impacts is further complicated by conveying the outcomes to stakeholders and the general public. The inherent uncertainties and consideration of multiple SE impacts will present a complex and careful message, while people may only expect to hear a yes or no. Participants to the workshop thus argued to pay close attention to **communication** with stakeholders and the general public. It was suggested this should be done in a structural and transparent way and include an active outreach to, and involvement of, stakeholders already at the start of developing a SEA framework. A structural communication and interaction with stakeholders should i.e. contribute to developing a **shared language** to describe and discuss SE impacts and **take away potential conflicts** arising from interpretations and perceptions of uncertainties associated with SE impacts.

2. Identification of elements for a socioeconomic assessment framework

The different presentations and discussions highlighted a **diverse set of potential SE impacts** (see Figure 1 below). The workshop did not qualify these in terms of e.g. measurability, occurrence, relevance or priority/urgency. Economic impacts can be regulated until the benefits outweigh the

costs, with the **irreversible impacts key** in any such analysis. However, not all impacts will be quantifiable and thus the overall SE impact may be expressed as a **threshold** level, rather than an absolute number to take into account the multiple impacts and their uncertainties.
The various SE impacts all face the challenges mentioned under 1., stressing the **need for guidance** in qualification and assessment of SE impacts. The European GMO socio-Economic Bureau (ESEB) is an initiative by the European Commission to identify possible SE impacts and to develop methodologies for the investigation of SE impacts. ESEB consists of scientific experts nominated by the EU Member States and experts from the European Commission. ESEB expects to publish a first general reference document shortly. It introduces **scenarios** to describe possible manifestations of SE impacts and it **differentiates between stakeholder** groups on the nature and extent of a given set of SE impacts. ESEB uses certain **criteria to select for SE impacts**: an SE impact should have at least one measurable indicator, there must be a plausible causal relationship with the GMO cultivation and a sound method must be available to assess the impact. These criteria are particularly challenging for social impacts that generally are more qualitative in nature and have been researched less exhaustively. As a result, the emphasis in the reference document is more on economic impacts.

Figure 1. Overview of possible social and economic impacts of commercial cultivation of GMOs. The circular presentation reflects the non-hierarchical and qualitative nature of the SE impacts.

3. Experiences with socioeconomic assessments in other policy areas

The European Chemicals Regulation REACH includes an SEA to determine the costs and benefits of the restriction or continued use of specific chemicals. The REACH legal framework differs in three aspects from the proposed application of an SEA for GMO cultivation:

- The SEA applies to chemicals that are already in use.
- Only when a health or environmental risk exists for a certain chemical, the SEA will underpin the continued use or restriction.
- The public and policy discussions have a lower level of public sensitivity compared to the field of GMOs.

Still, experiences with SEA under REACH present valuable insights in the organization and operation of a SEA framework. First, the **availability of information** presents a true challenge. It is costly to identify and analyse relevant information and information on costs is more readily available than information on benefits. Also, the comparing and impact assessment of qualitative versus quantitative is difficult. Second, **no standard SEA** methodology is available. The approach taken is case-specific and depends also on available data. Third, a sound SEA requires **multidisciplinary expertise**, including experts in economics, sociology, chemistry and risk assessment. At the same time, the SEA should be **proportionate**, unbiased and **transparent**, in particular with respect to the uncertainties enclosed in any SEA. This presents a very demanding situation for collaboration between experts and stresses the need for clear and trustful internal and external communication.

Biomass[3] is increasingly used for the production of energy and biobased products. Key condition for these applications is the sustainable nature of the biomass and the greenhouse gas performance of the overall value chain. Voluntary product standards and third party audited certification schemes are tools to account for the **sustainability**, measured against the 3Ps of People, Planet, Profit. Criteria for the People and Profit dimensions are partly based on existing regulatory frameworks and address e.g. labour conditions, land use rights, business practices (financial risk management, anti-corruption), competition (with natural resources like water, food security, existing use of raw materials) and contributions to local population. Besides **administrative controls**, auditing activities may include **interviews** with local stakeholders and on-site inspections. Also in this context, the availability and **reliability of information** present difficulties. In addition, it is challenging to determine whether a **causal link** exists between observed SE impacts and the activities of an economic operator.

4. Other considerations

Mutual consent on adjustment of geographical scope of GMO cultivation

It is important to be aware that a first step in the proposed authorization procedure for the cultivation of GMOs provides an opportunity to EU Member States and the applicant to mutually agree on adjustment of the geographical scope (exclusion of territories) of the notification. Such an agreement would avert the execution of restrictive measures by Member States based i.a. on socioeconomic grounds. Serious concerns exist if such measure will hold in court when they were

[3] Biomass includes raw materials from forestry and tree plantations, as well as agriculture products and –residues and organic waste.

legally challenged. It may thus be worthwhile to consider institutional solutions that take due account of the mutual agreement provision.

GMOs as part of a broader bioeconomy context

Agriculture plays a crucial role in feeding a biobased economy, in which both food, feed and industrial applications like energy, chemicals and products are made from biomass and replaces our current use of non-sustainable fossil fuels. The discussions on a SEA framework centre on the cultivation of GMO crops in the EU. This scope implies certain arbitrary boundaries. One is the distinction it makes between the cultivation of GMOs and non-GMO (also often called conventional) crops. A second is disclosed with the introduction of new breeding techniques and what may be defined as genetic modification and what not. A third is the import of products that are made from GMOs cultivated outside the EU. And a fourth is the non-agricultural (or land-based) cultivation of GMOs and use as e.g. enzymes, additives and nutrients in food, feed and industrial applications. These considerations illustrate the potential reach and impact of a SEA framework, not just on the cultivation of GMOs but on the development of a biobased economy in general.
