



Segregation of GM and non-GM feed and food supply chains in the EU: future scenarios

Francesca Passuello, Stefano Boccaletti, Claudio Soregaroli

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Structure of the presentation

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- ❑ Relevance of the study
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Background



- ❑ The EU is a major importer of GM soybean; sourcing non-GM products is getting difficult and expensive
- ❑ The degree of acceptance of agricultural biotechnologies is not homogeneous

cautious approach in regulating trade and industrial use of GMOs
- ❑ A positive labelling system is in force
- ❑ Negative labeling is left to MS or private standards
- ❑ The EU market for non-GM IP soybean is an important niche

Relevance of the study

- Several issues are at stake when dealing with the segregation of GM and non-GM inputs in the EU feed and food supply chains
- Changes in social, technological, economic, environmental and political factors



relevant implications on the EU markets of certified non-GM food products

- Stakeholders and policy-makers should consider a set of alternative future scenarios in their strategic decision making

Objectives and Research Design



- Main objectives:
 - Determining and validating the key driving forces influencing future scenarios for segregation in EU feed and food supply chains;
 - Sketching alternative plausible scenarios;
 - Discussing their potential implications on supply chain actors.

- Research design:
 - Focus: organizational and operational aspects
 - Starting point: current situation
 - Framework for the analysis: Europe; 2022
 - Approach: explorative participatory; experts workshop

Methodology: scenario development in future studies



- Tool for strategic analysis supporting systemic investigations of determinants of a sector or business



drivers interaction + risks & opportunities + response strategies → plausible alternative futures

- Effective when addressing complex and controversial issues affecting many stakeholders & key drivers uncertainty is high
- Different approaches in building scenarios
- > heterogeneity of experts → < risk of narrow thinking

Criteria to evaluate scenarios effectiveness

- ❑ Scenarios cannot be evaluated on predictive accuracy

- ❑ Effectiveness criteria:
 - ✓ Plausibility
 - ✓ Internal consistency
 - ✓ Compelling narratives
 - ✓ Decision-making utility

Workshop Participants

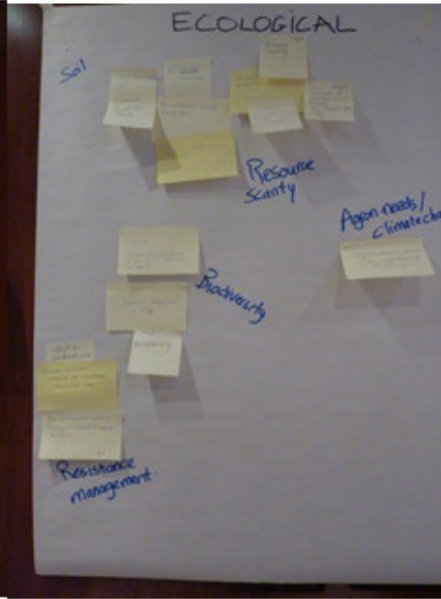
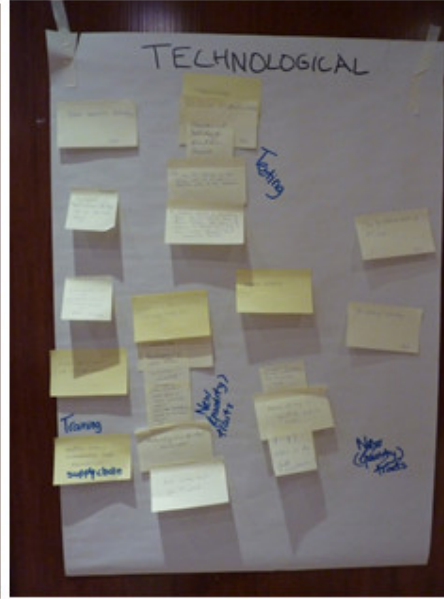
- Importance of selecting stakeholders:
 - Able to abstract from their background
 - Open for discussing new perspectives
 - Have a relevant decision-making position

- 6 researchers (PRICE project) + 1 general moderator + 20 experts in key positions

Place of work	N. of Respondents
Associations	6
Private companies	8
Universities	4
EU Institutions	2

Years of experience	N. of Respondents
< 5	6
5 - 10	1
10 -15	3
15 -20	2
> 20	7
not specified	1

Results

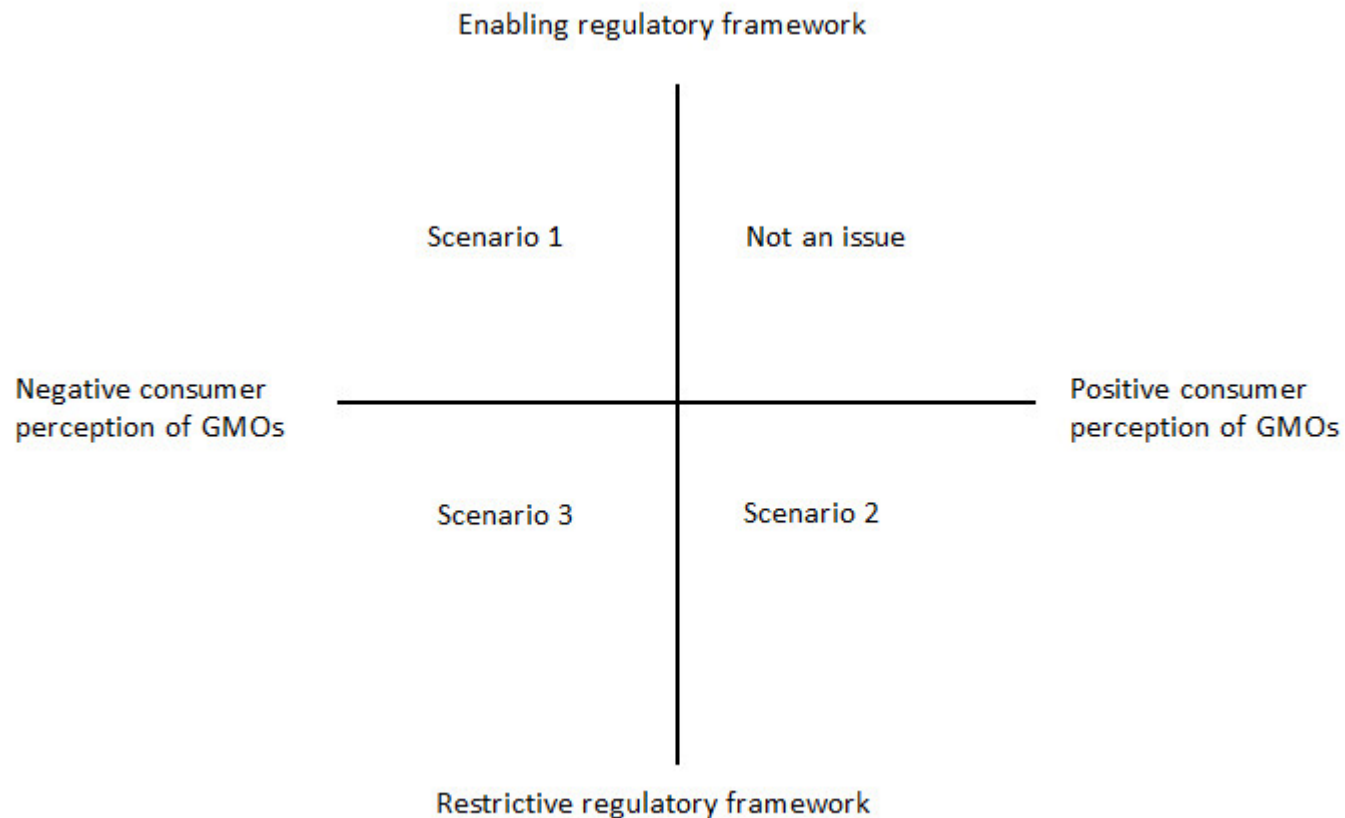


Key driving forces



Clusters STEEP	Very high impact (N. of votes)	Very high uncertainty (N. of votes)
Social		
Demographics and age of the population	1	0
Consumer perception of GMOs	8	7
Media and communication to consumers	6	2
Consumer awareness and science-based education	2	1
Lobbying and NGOs	2	2
Change in lifestyle	0	0
Religious aspects and ethics	0	0
Welfare and income	0	1
Technological		
Testing and analysis	1	0
Seed purity	1	1
New technology at farm level	0	2
Innovative traits	7	0
Training in the supply chain	0	0
Patents and royalties	0	1
Economic		
Consumer willingness to pay for non-GM	0	2
Trends in international trade: supply and demand	3	1
UE protein self-sufficiency	0	0
Availability in global supply	1	4
Premium cost of non-GM	5	0
Supply chain risk attitude	1	0
Market power	2	0
Economic crisis	1	0
Food as financial commodity	0	1
Governance/coordination of the supply chain	0	0
Commercial/marketing strategies	3	0
Ecological		
Pest management and plant resistance	1	2
Scarcity in natural resources (water, soil, nutrients)	2	1
Agronomic needs and climate change	0	0
Biodiversity	0	0
Political		
Public research	1	0
Labelling/claims	1	0
Regulatory framework (in EU or in third countries)	4	8
EU governance	3	6
Enforcement	0	0
International trade agreements (WTO)	1	4
Authorization of GM plants for cultivation in the EU	3	3
Role of Europe in a long term vision	3	5
Impact of NGOs	0	0
Logistics and infrastructures	0	0
Ideology	1	2

The matrix used to build scenarios



Scenario 2



- Stricter regulations: lower thresholds for labelling as GM + restrictions on imports



Autarchy in Europe



Negative consequences for feed/food industry competitiveness

- Consumers: more familiar with GM products; < risky



< WTP for the non-GM attribute

- Positive attitude reinforced by enhanced food products from 2nd gen GMOs with direct benefits for consumers



Segregation among different GM traits

Scenario 2: opportunities and risks for some actors



- Consumer's positive perception of GMOs → internal production and imports → uncertain adjustment of supply to demand → > price for GM products

Seed/biotech companies

Opportunities

No need for coexistence and segregation in the first temporal moment

New market for 2nd gen GMOs → increased market power for companies developing new traits; advantages for first movers; consumers actual WTP; prices might increase; premium price and segregation costs paid by consumers

Biotech companies become the new supply chain leader and set their private standards

Risks

High barriers for new/small companies willing to enter the 2nd gen GM market. Would EU companies be competitive?

Segregation costs to preserve the identity of 2nd generation GM traits.

Costly private research to prove health claims for products derived from 2nd gen GMOs. Different regulations in different markets.

Asynchronous approval of new 2nd generation traits among markets and potential trade disruptions

Scenario 2: opportunities and risks for some actors

Feed and food industry

Opportunities

No segregation needed in the first phase → no extra costs

Increase in cattle and pig farming (less dependent on soybean than poultry)

Research on alternative protein sources

Risks

Imports not allowed → part of the processing capacity is moved outside the EU → final products are then exported to the EU

Hard times for the EU feed industry, the EU livestock sector and meat processing industry.

Meat processing companies having to dismiss non-GM lines due to too high segregation costs and low demand

Retailers

Opportunities

New market for 2nd gen GM: growing demand, actual WTP, differentiation on new improved products to win over competitors

Entering in biotech companies' private standards to have their products on the shelves

Extra costs covered by the premium price that consumers are willing to pay for improved products

Risks

Having to dismiss non-GM private label lines due to too high segregation costs and low demand

They are not the chain leader anymore

Closing considerations

- ❑ Identified risks and opportunities for supply chain actors
- ❑ Asynchronous approval of GM traits + zero-tolerance policy → substantial trade disruptions and price increases
- ❑ Stricter EU policy on GMOs → > segregation costs → < international competitiveness for domestic feed and food industry
- ❑ Niche market for certified non-GM food products: sustainable in the long run?

Closing considerations



At present, the future of GMOs in Europe is a sensitive political issue



The results of this study are expected to be valuable for **policymakers** and **professionals** in envisioning:

- 1) managerial actions
- 2) reaction strategies
- 3) policy interventions

that might be needed in alternative future settings

Thanks for your attention!
