



GeneBEcon

REPORT 1

System Approach

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Key messages of the report

Systems thinking is a tool that can support our holistic understanding of the various intended and unintended consequences, risks and benefits of introducing NGT-derived products in the bioeconomy. By using systems thinking, the different actors in the debate have the opportunity to see 'the bigger picture' and to connect with people with other perspectives. Thus, it could help in tackling the polarization in the debate.

Key messages about the results:

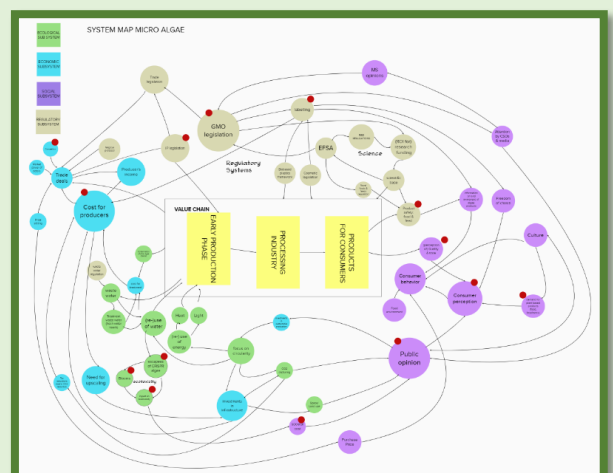
- There are many elements that are important to think about when introducing NGT-derived organisms in the European bioeconomy. These can be grouped in four subsystems: 1) Economic, 2) Ecological, 3) Social, and 4) Regulatory.
- Everything is connected. Elements influence each other within groups, as well as between subsystems. When one element changes, this will impact the whole system.

Key messages of the different subsystems:

- The regulatory framework affects all the other subsystems. In the gene editing debate, GMO legislation is of course central. Labelling and intellectual property legislation will also greatly impact production in the European bioeconomy.
- Economic factors are important in the European bioeconomy. Gene editing costs and the price for which products are sold are crucial. Changes in the European bioeconomy will impact these, which will indirectly affect many other elements in the system.
- The social system has multiple important elements to take into account, which all influence each other. Most importantly, the public opinion on gene editing and the perceived quality and taste of NGT-products will affect the consumer perception, ultimately influencing the buying behavior of people.
- The ecological factors depend on the way the product is produced. However, inputs (chemicals, energy, etc.) and emissions will always be very important to take into account when changes are made in the European bioeconomy.

Important note by the researchers:

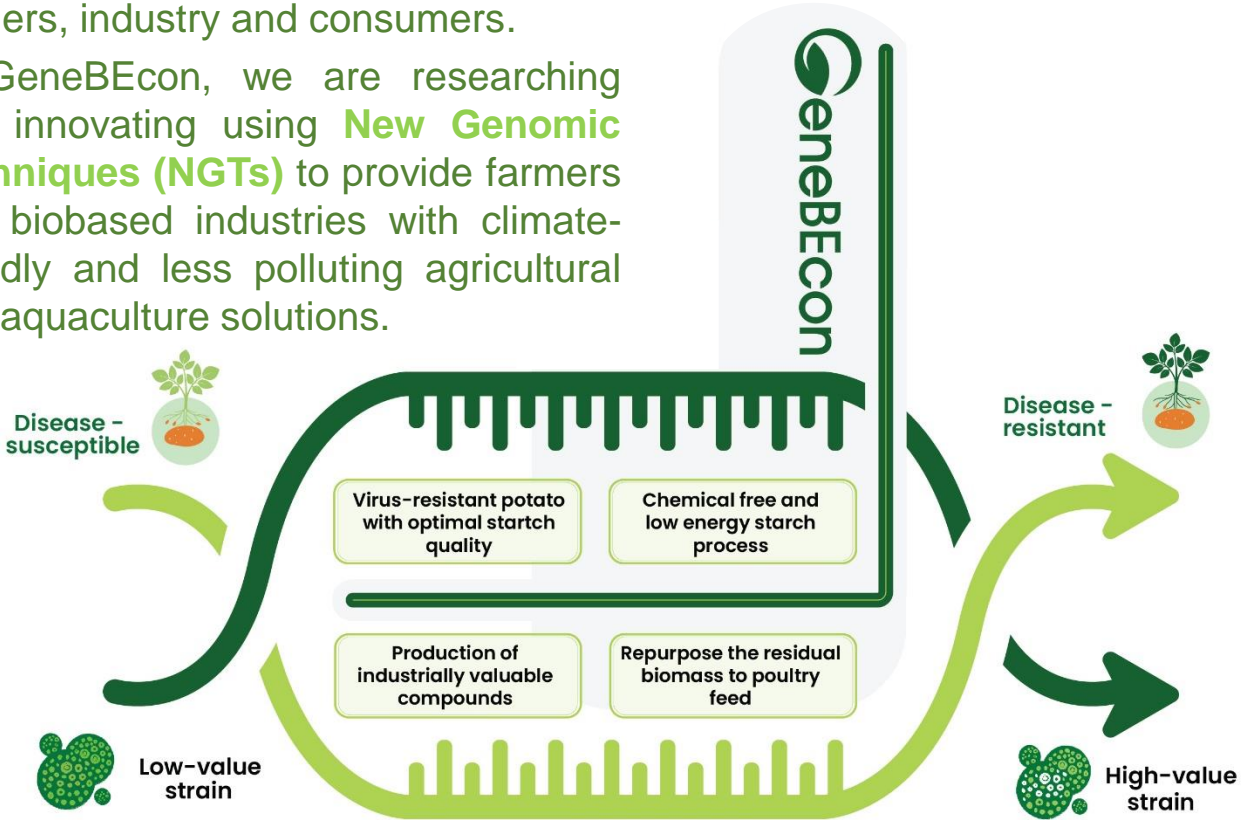
- **The systems maps are not final yet!**
- Our findings presented in this report are a first step and based on a workshop, organized in March 2023.
- Two more workshops and a literature review will be organized to further progress the system maps.



Capturing the Potential of Gene Editing for a Sustainable BioEconomy

GeneBEcon's results aim to support the **European Green Deal**, the circular economy action plan, and the **bioeconomy** strategy. We will use our project's results to inform scientists, policymakers, plant breeders, farmers, industry and consumers.

In GeneBEcon, we are researching and innovating using **New Genomic Techniques (NGTs)** to provide farmers and biobased industries with climate-friendly and less polluting agricultural and aquaculture solutions.



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