

FRAUNHOFER GREEN DEAL SERIES – IMPULSE

»Combining efforts – Alternative Proteins and Smart Farming for Europe’s sustainable food production«

In a nutshell:

- Innovative and coordinated solutions and marketable products will enable a highly efficient, climate-neutral, and resilient food system.
- We need close collaboration throughout the whole value chain to tap the full potential of innovative solutions for the agriculture sector.
- Higher investments, reduced administrative burdens and clear-cut regulative and political frameworks will provide a better basis for future research and the viable transfer of research results into commercial applications and suitable tools for entrepreneurship.

The Farm to Fork strategy is in the heart of the European Green Deal and envisions the reconciliation of our food system with sustainability and eco-friendliness. Even though EU agriculture has reduced its greenhouse gas emissions since the 1990s, food systems are still a major contributor to climate change and environmental degradation.

For the first time in history the man-made matter, like buildings and infrastructure, is larger than the biomass on earth.

Stefan Schillberg, Member of the Institute Management and Head of Division Molecular Biotechnology, Fraunhofer IME

During the 5th Fraunhofer Green Deal Webinar, our researchers presented innovative and concrete solutions and marketable products that will enable the sustainable and just transition of our food system.

The challenges in agriculture are manifold – excessive water consumption, food waste, overfertilization, pesticide use, soil erosion and greenhouse gas emissions. There are various approaches to overcome these challenges, not least in the areas of technological innovations and management practices.

Drawing on the Fraunhofer projects [COGNAC](#) and [FutureProteins](#), our experts presented their research in the areas of smart farming, contained agriculture as well as smart processing and sustainable products.

As stated in the [FOOD 2030 Pathways for Action – Alternative proteins and dietary shifts](#), dietary shifts towards alternative sources of proteins can contribute to one fifth of the two-degrees target. Together with four other Fraunhofer institutes, the Fraunhofer Institute for Molecular Biology and Applied Ecology IME and the Fraunhofer Institute for Process Engineering and Packaging IVV investigate alternative protein sources from plants, insects, fungi, and algae, which can be produced highly efficiently and year-round in contained facilities, whilst complying with the need for climate neutrality and resilience. Apart from the reduction of the water consumption and fertilizer use, any by-product of the cultivation process is put to valuable use. The alternative protein sources are optimized for industry and commercial use, simultaneously future customers’ acceptance and dietary shifts are taken into consideration.

To enable climate-neutral and resilient agriculture, MEP Norbert Lins highlighted digital technology as key in the transformation towards a sustainable agriculture sector. The Fraunhofer Institute for Experimental Software Engineering IESE facilitates this transformation by developing new technologies and solutions to improve productivity, sustainability and resource efficiency with data driven services. The necessary data is combined in an “Agricultural Data Space”, after having been collected via “Digital Twins” of physical assets. This widely applicable method of creating a digital data set for every step along the value chain is complemented with cognitive services to provide decision support and process automation as well as novel sensor technologies and automation concepts for safe and autonomous agricultural robotics.

*Good policy is about balancing interests, listening to science and working together based on trust.
Our aim should not be environment versus economy, but to combine the two.*

Norbert Lins, Member of the European Parliament

MEP Norbert Lins underlined the need for scientific policymaking and for suitable tools for farmers to adapt to the future. He emphasized the contribution of both presented projects to the demands stated in the Farm to Fork strategy for a sustainable and climate-friendly European food production.

To make sure that we tap the full potential of the cutting-edge innovations presented by the Fraunhofer researchers, there are still challenges within research and innovation to overcome.

Gaps between individual research areas, like raw materials, processing and applications must be closed by fostering a tight collaboration throughout the whole value chain. This should be complemented by open-mindedness and further education of all stakeholders involved. To develop the full potential of available innovations in the agriculture sector, administrative burdens on research projects need to be reduced and simplified, whilst a more transparent, open, and straight-forward process will provide a better basis for future research. This should be supported by a suitable regulative framework for new technologies, e.g., new breeding technologies and novel foods, which creates legal certainty. Higher investments and the viable transfer of research results into commercial applications and suitable tools for entrepreneurial thinking and action is crucial to fill these gaps and overcome the challenges. We will make this possible by **sharing our knowledge and uniting our efforts to spark innovations for our future as a climate neutral and sustainable continent.**