

## More local food supply or rather renouncement of consumption? Four agribusiness scenarios in 2035 show the future of food value creation - and how agriculture can help to shape it

**To ensure a high quality of life, especially for future generations, it is important to preserve natural resources along the entire food value chain. A new future study by the Fraunhofer Institute for Systems and Innovation Research ISI uses four different scenarios to provide insights into how natural resources could be used in agriculture in 2035 and what role digital decision support systems can play for farmers in this context.**

Climate change and scarcity of resources are the major challenges also agriculture faces in the coming years. The way natural resources are used is determined not least by the way food is produced and consumed. Accordingly, agriculture and the food industry are increasingly becoming the focus of political and scientific attention, and expectations of agriculture are rising.

In this context, the research project will develop a digital decision support system for agricultural enterprises that promotes resource-efficient, sustainable production and greater cooperation between farms. The focus lies on the integration of ecosystem services and biodiversity in management decisions of agricultural enterprises. The future scenarios of Fraunhofer ISI support the development of the digital system by showing different framework conditions, functions and requirements for such a system for four different future paths. To this end, technology experts, but also experts from environmental research and the food sector as well as farmers have been actively involved in the scenario development.

### What might the future of the agricultural industry look like?

One of the scenarios called "Environmental protection by local food circles and qualitative growth" is characterized by decentralization, diversity and sustainability. It describes a world in which consumers live health-consciously and attach great importance to food quality. They buy locally and appreciate the cultural significance of agriculture. Farmers know the majority of the people consuming their products personally and therefore want to provide them with high quality, healthy food. They feel supported by the local society and are pleased about the high social standing of their profession. Agricultural production is highly differentiated, and the value chains are regional, short and transparent. The direct link between society and agriculture is made possible not only by the large number and diversity of farms, but also by decentralized retailing. Furthermore, climate change measures that focus on preserving biodiversity are an essential part of agricultural land use and are implemented directly at local level.

Another scenario, "Reduced consumption and de-growth by necessity", shows a quite different future in which retail is the big winner within the global food systems. Consumers' purchasing decisions are primarily based on price and are strongly linked with their income. A secondary market has developed, which is geared to extending the use of products by upgrading, repairing, reusing or recycling them. However, consumer behavior has not changed by itself, but out of necessity. Nutrition has also had to be changed to a plant-based diet with reduced meat consumption. Climate change is having a serious impact on farms and retailers are exerting great pressure on them. Retailers exploit their information advantages from centralized and all-determining e-commerce. Only through high scaling and intensive agricultural specialization can farmers work as efficiently as possible. The entire agricultural sector is characterized by large, uniformly cultivated areas. Sensors, drones and other monitoring systems as well as new technologies based on artificial intelligence support farmers in achieving the highest possible efficiency.

Dr Ewa Dönitz from Fraunhofer ISI, summarizes: "The four scenarios have different perspectives on cooperation, transparency along the food value chain, the importance of efficiency in production or environmentally friendly consumption. With the help of the different futures, we can understand the needs of farmers better and make the decision support system for agricultural enterprises in the DAKIS project future-proof".

The scenarios have been developed within the project DAKIS, short for "Digital Agricultural Knowledge and Information System", which is funded by the German Federal Ministry of Education and Research (BMBF).

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## Press release

04-Nov-2020

Source: Fraunhofer Institute for Systems and Innovation Research ISI

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## Further information

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