

## Food for the Future

German Institute of Human Nutrition Potsdam-Rehbrücke (DIfE)

Freie Universität Berlin (FUB)

Fraunhofer Institute for Applied Polymer Research IAP, Research Division Polymeric Materials and Composites PYCO (PYCO)

Humboldt-Universität zu Berlin (HUB)

Integrative Research Institute on Transformations of Human-Environment Systems at HUB (IRI THESys)

Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB)

Leibniz Institute of Vegetable and Ornamental Crops (IGZ)

Leibniz Centre for Tropical Marine Research (ZMT)

pmp Projekt Gesellschaft für Projektentwicklung und Generalplanung mbH (pmp)

Technical University of Applied Science Wildau (TH Wildau)

In addition, experts such as ADM Wild Europe GmbH & Co. KG, InnoMat GmbH, OSRAM Opto Semiconductors GmbH, or Panta Rhei gGmbH will be included in the project.



As part of the funding programme



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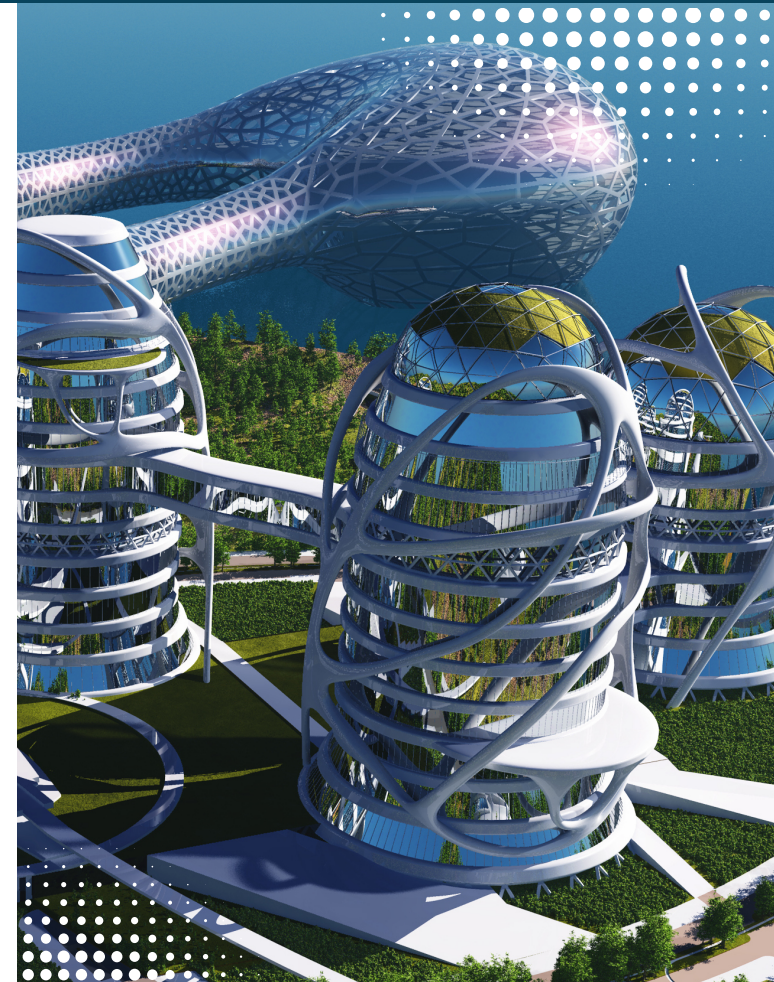
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## Research Fields

What happens to human nutrition when global food production reaches its limit due to climate change and a growing world population?

What do we eat, when the already limited arable land is further reduced and drinking water becomes scarce?

What happens if established channels of trade collapse due to climate disasters or trade embargos?

What are the effects of these changes on trade, society or culinary culture and eating habits?

Can we cultivate organisms such as crickets, macro algae, halophytes (salt-tolerant plants) or jellyfish (medusa) for novel, healthy food in urban environments?

Could a smart health app help us to maintain a balanced diet with „new“ foods based on these organisms?

Answers to these and other questions will be developed within the joint research project food4future (food for the future, f4f).

The four food4future Research Fields work together in an inter- and intradisciplinary approach:



**1 | ORGANISMS:** Research Field I develops closed saline production systems for marine and terrestrial organisms. The four model organisms in food4future are macro algae, halophytes (salt-tolerant plants), jellyfish, and crickets, which serve as healthy, but as of yet neglected alternatives for human nutrition. First in monoculture, these organisms will then be sustainably cultivated together in an urban setting.

Project partners: ATB, IGZ, ZMT

**2 | URBAN BIO SPACES:** Research Field II's aim is to develop Urban Bio Spaces using innovative polymer-based lightweight composite materials, i. e. fibre reinforced synthetic materials, in which (UV)LED lights can be integrated. The flexible bioreactors for the four food4future model organisms can be used in private households as well as in urban farming scale. Importantly, the Urban Bio Spaces do not compete with already limited living spaces, but rather concentrate on unused areas, such as urban wastelands.

Project partners: PYCO, pmp

**3 | SMART NUTRITION & SENSOR TECHNOLOGY:** In studies with individuals, health and nutrition parameters are tracked via non-invasive sensors, and will be used for a dietary intervention with protein-rich food in Research Field III. Suggestions for dietary scenarios and a mobile health app will be developed with the data obtained using artificial intelligence. The app will give recommendations based on the individual nutritional status.

Project partners: DiFe, TH Wildau

**4 | SOCIAL SCIENCE ANALYSIS:** Research Field IV addresses possible consequences of the two food4future scenarios "No Land" and "No Trade" on our society, institutions and individuals. The impact on German agricultural production or the institutional evolution for aquatic food production will be analysed. Using economic lab experiments, consumer decisions on dietary habits and related behaviours as well as the social impact due to new diets are investigated. Eating as a cultural technique will be explored. food4future also examines participative involvement of the public in research projects.

Moreover, food4future supports transfer of (food) innovations and evaluates future options for "future food" in parallel to the project.

Project partners: FUB, HUB, IRI THESys, IGZ