



Novel food technologies at scale – disruptive implications

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Europe

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For starters...

- With your neighbour, please discuss:
- What is your interest in the field of novel foods?
- What challenges and/or opportunities do you think novel foods might pose to sustainable food systems?
- What are some barriers to the introduction of novel foods at scale? How might that change?

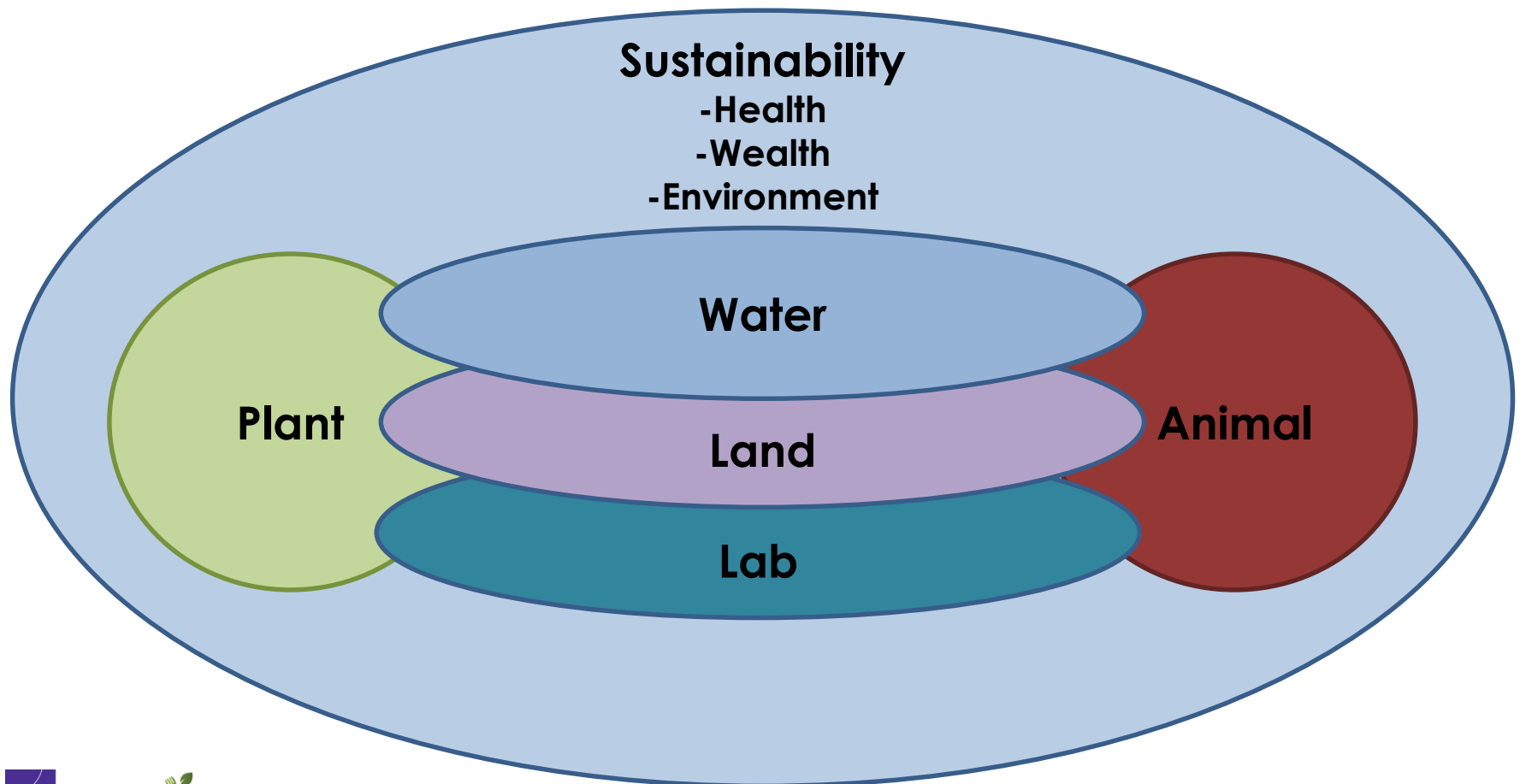




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We propose to use futures and foresight methods to assess how novel foods may be brought to scale

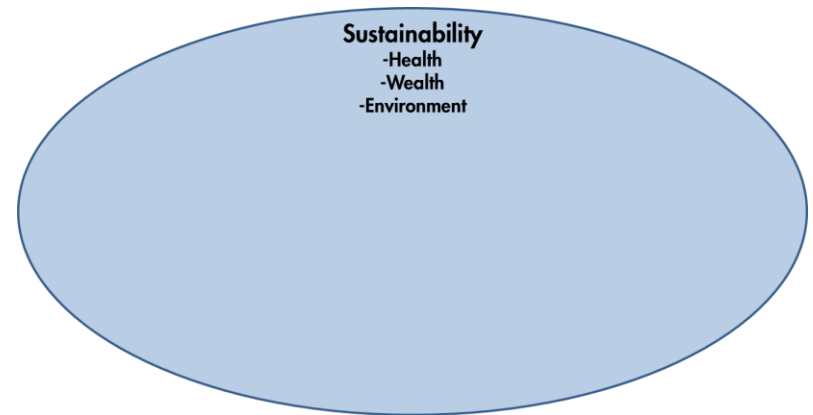
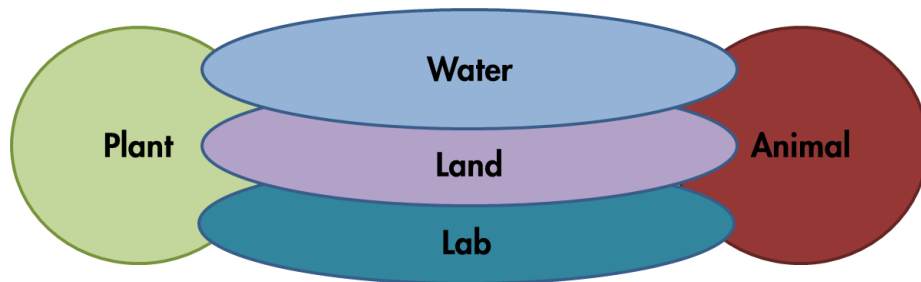
A macro-level systems map can help understand where disruptions may occur



The core assumption of the study

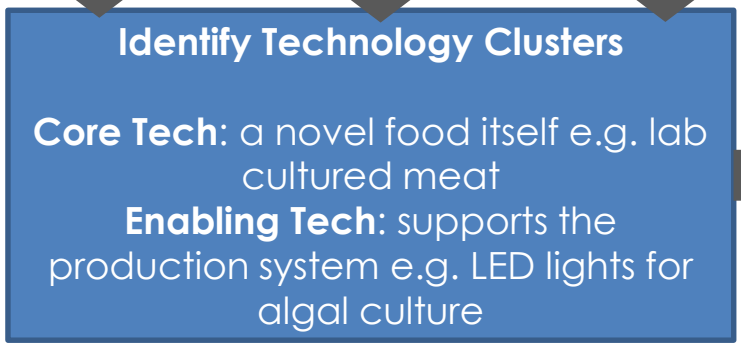
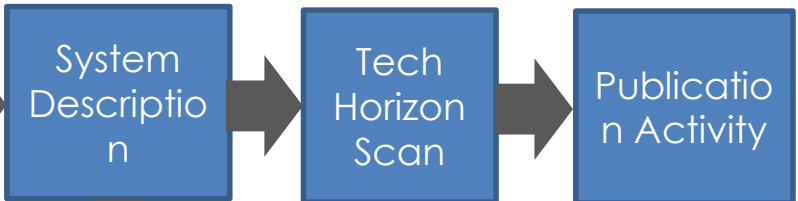
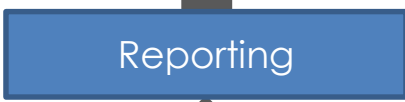
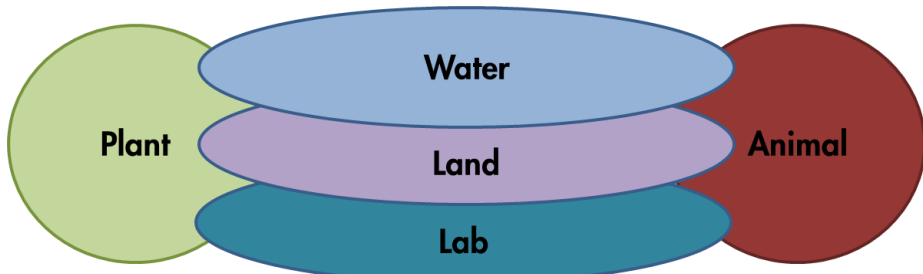
Changes in technology in the production base...

...could lead to improved sustainability outcomes inside and outside of the food system



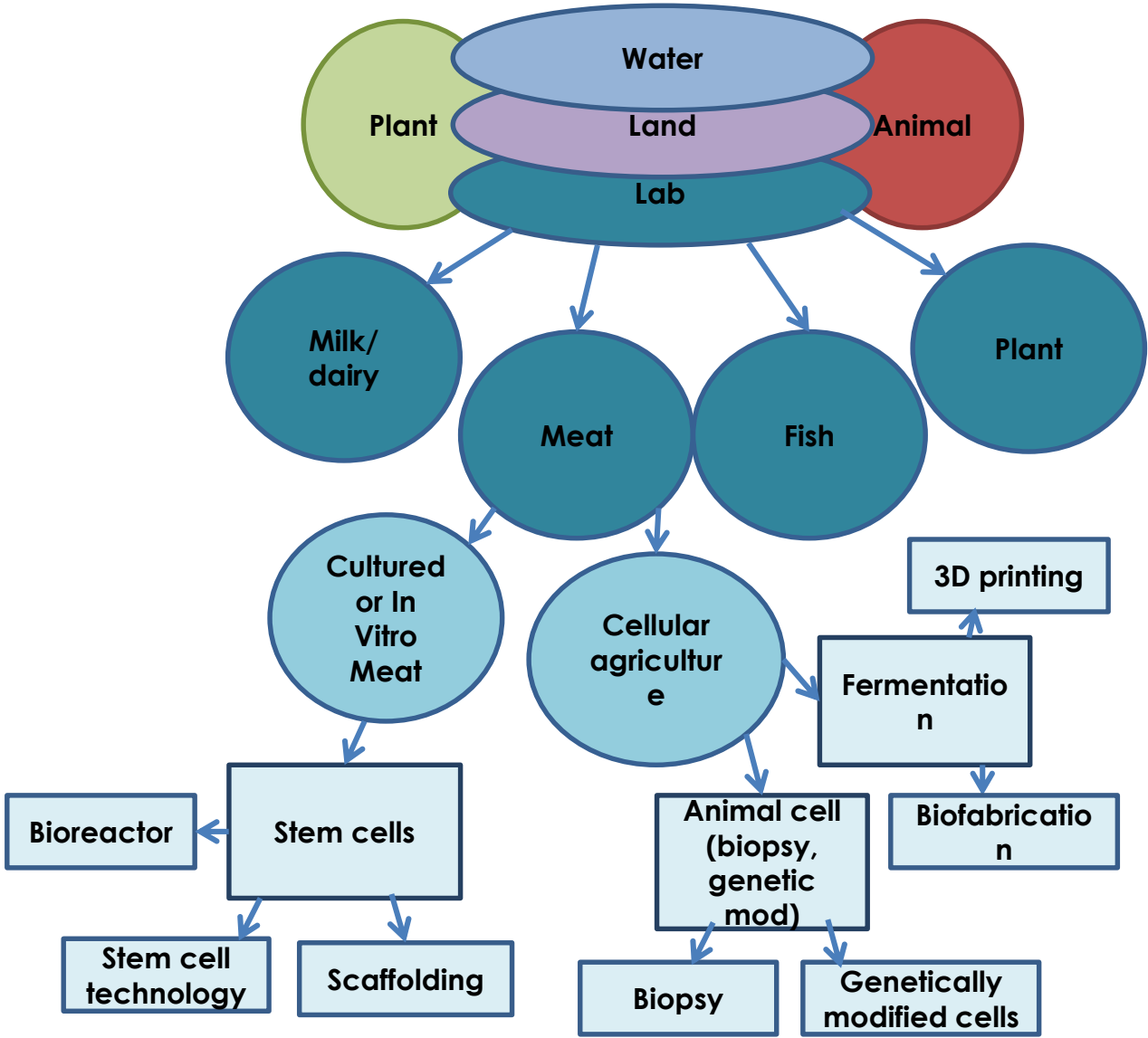
But it is quite hard to make direct link from a technology to sustainability impacts beyond the food system. We propose to break these topics apart to facilitate the analysis.

Overarching concept of analysis

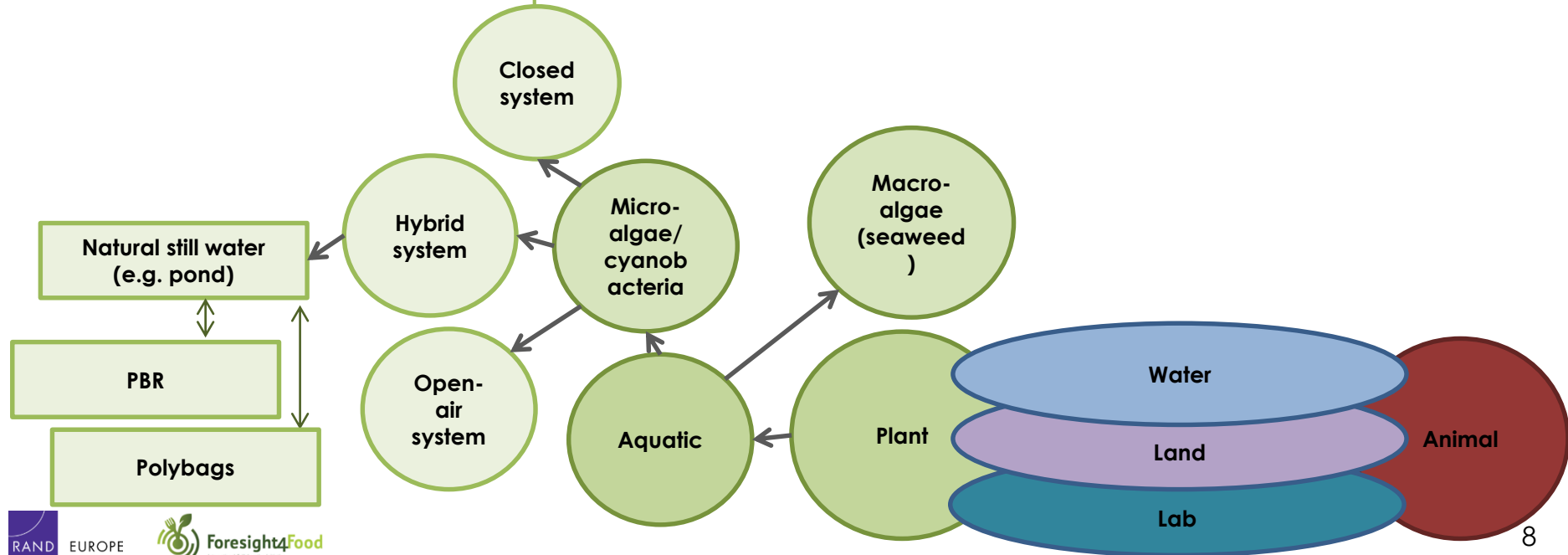
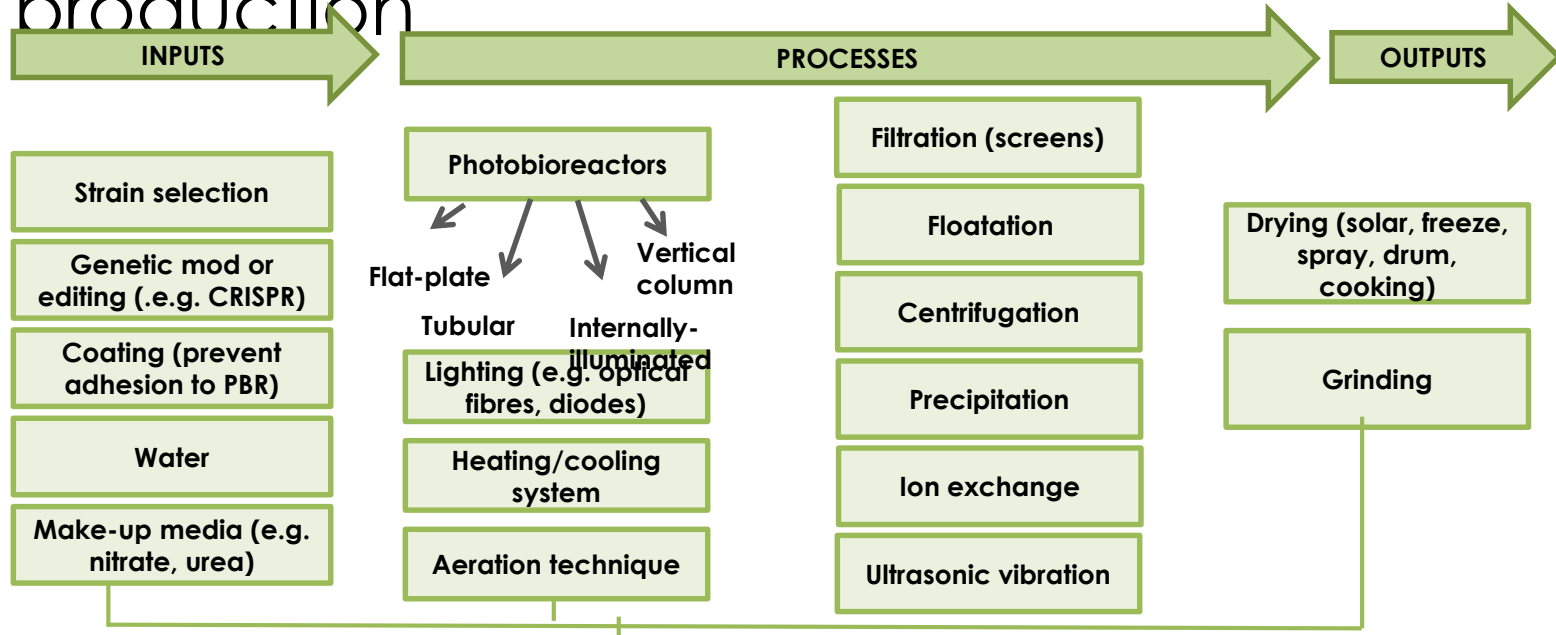


Example: extended map for cultured meat

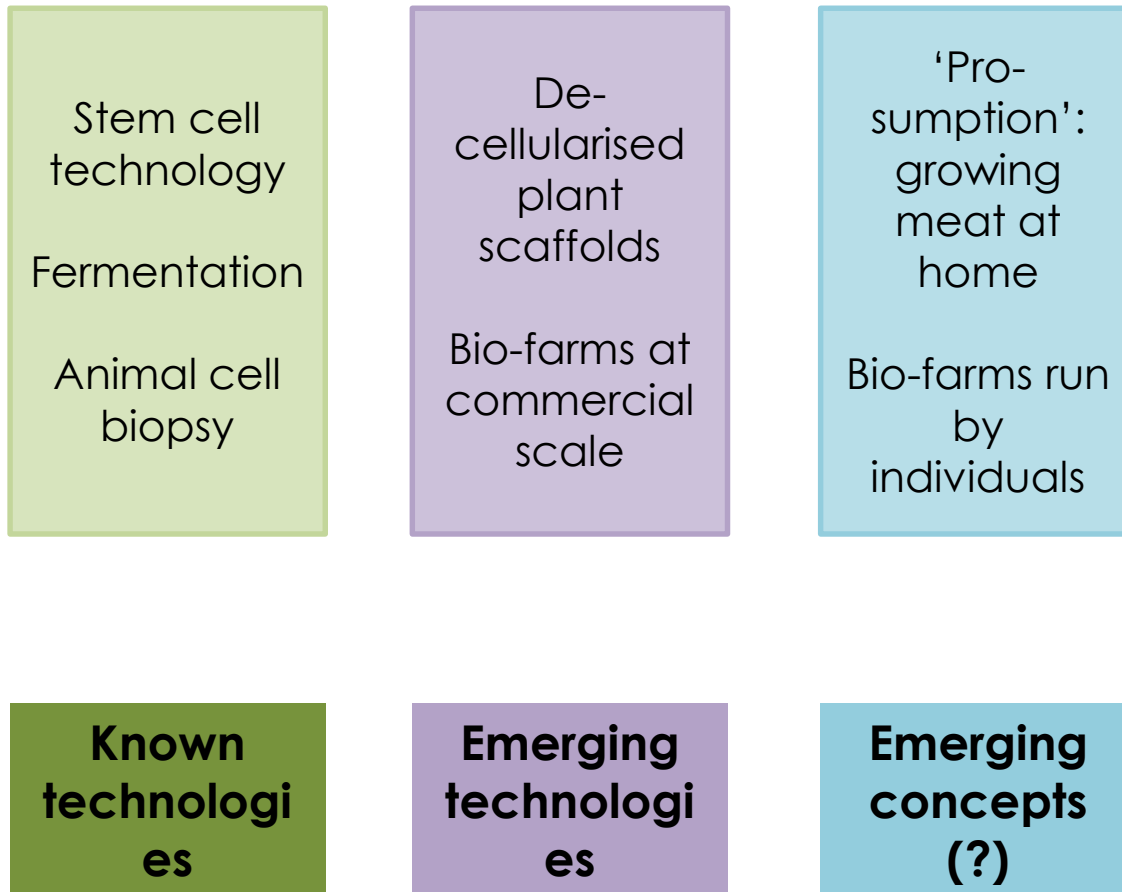
Expanded systems maps can help identify applications of core and enabling technologies



Example: expanded system map for algae production



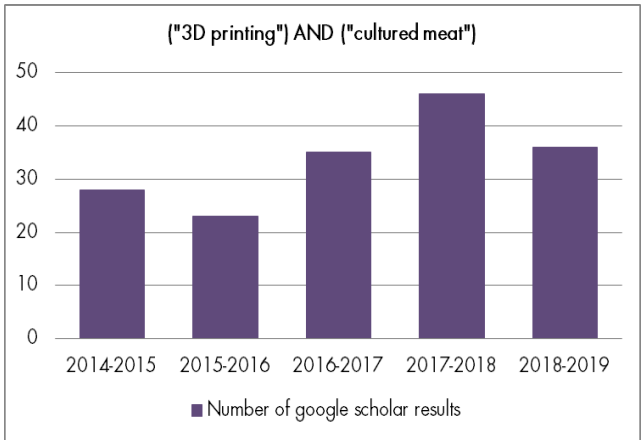
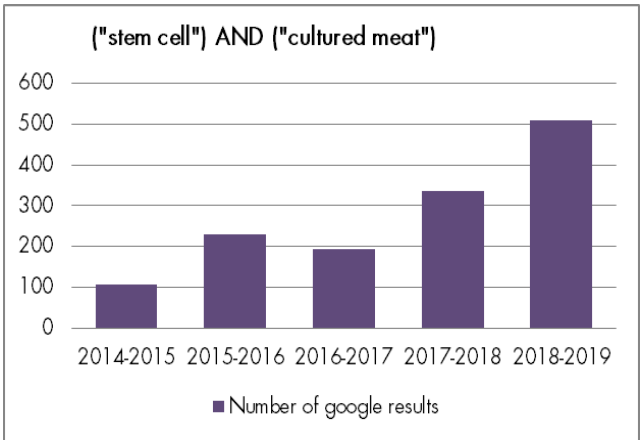
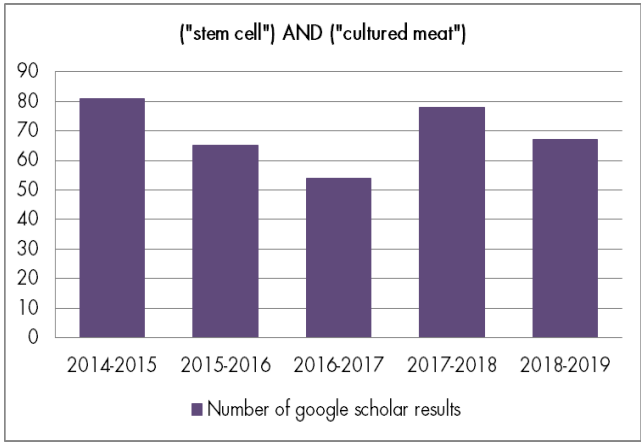
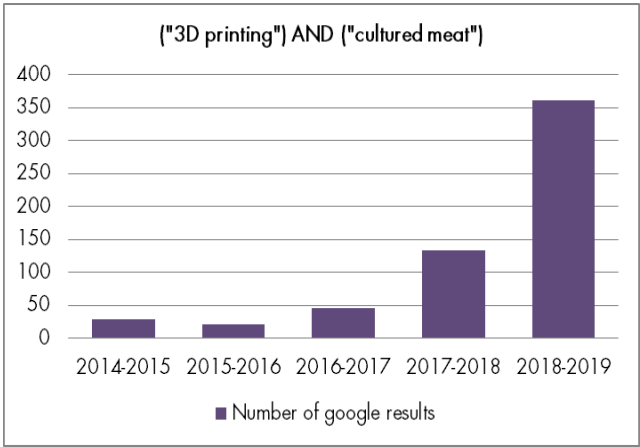
Cultured meat



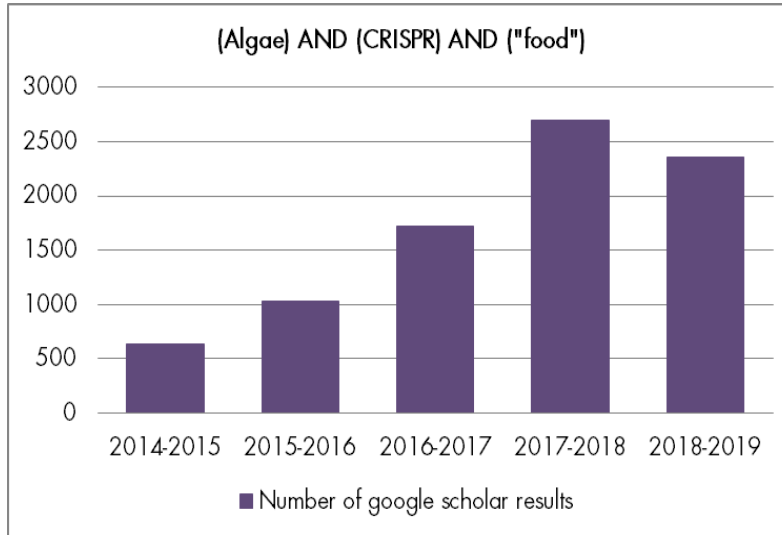
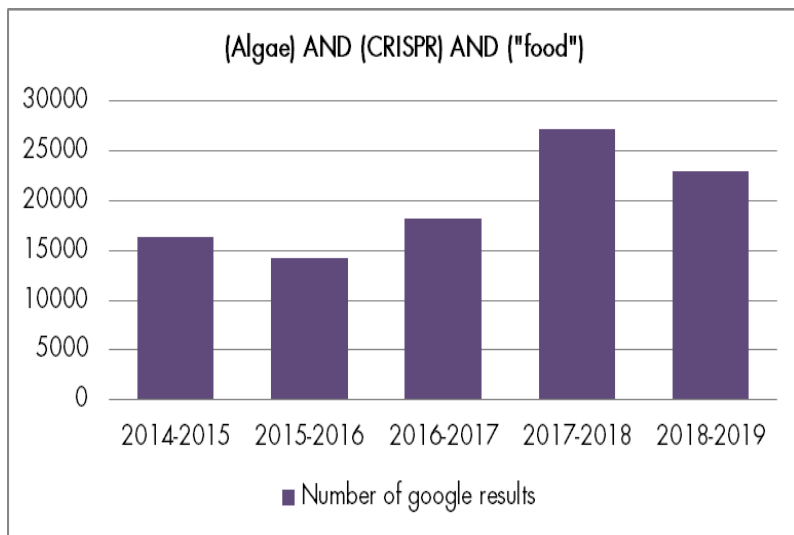
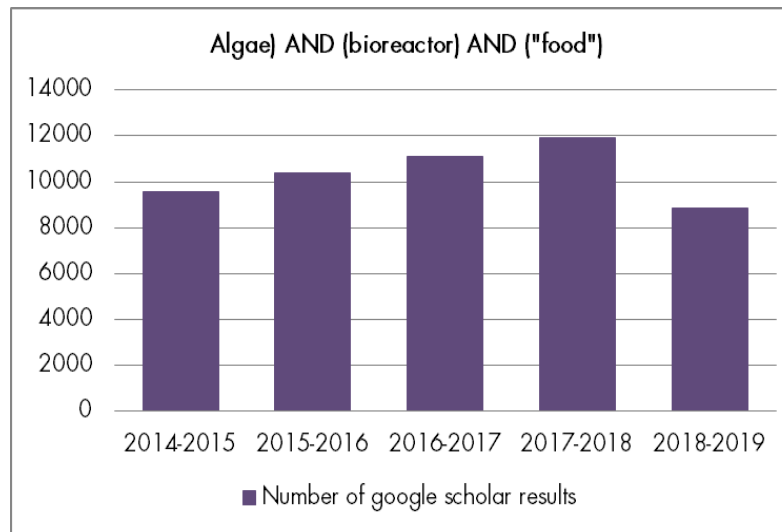
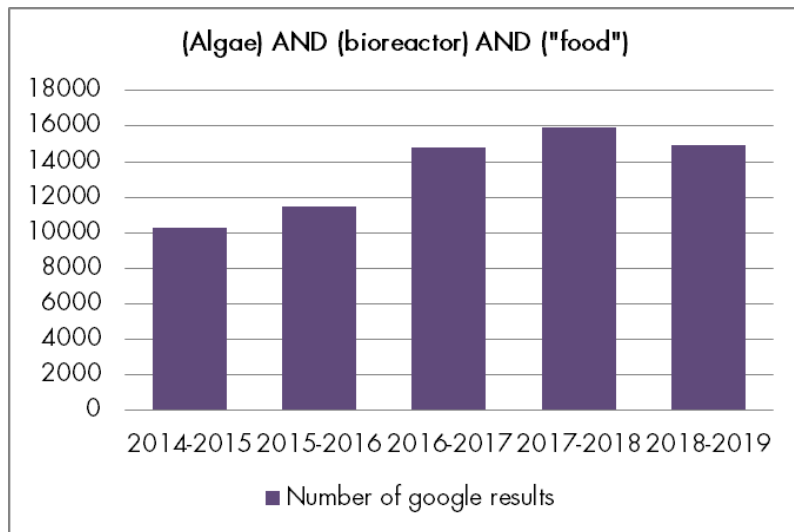
Horizon scanning methods help identify emerging novel food technology, trends and future concepts

Example: publication activity for cultured meat in the past five years

Analysis of publication activity indicates how emergent a topic is

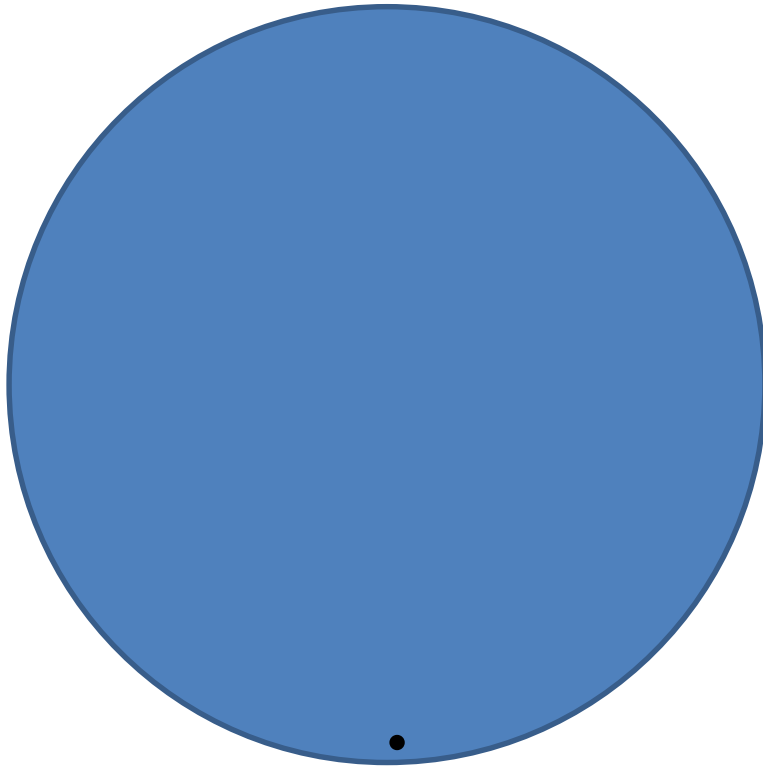


Example: publication activity for algae technologies and food in the past five years

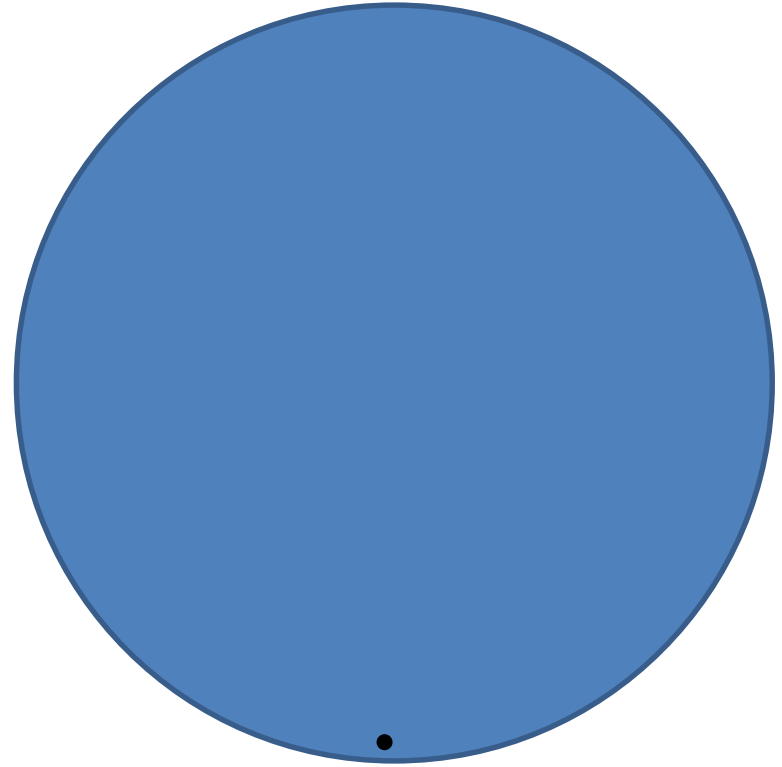


Novel meat technologies are relatively nascent in the context of the underpinning technology

Cultured meat examples – general publications



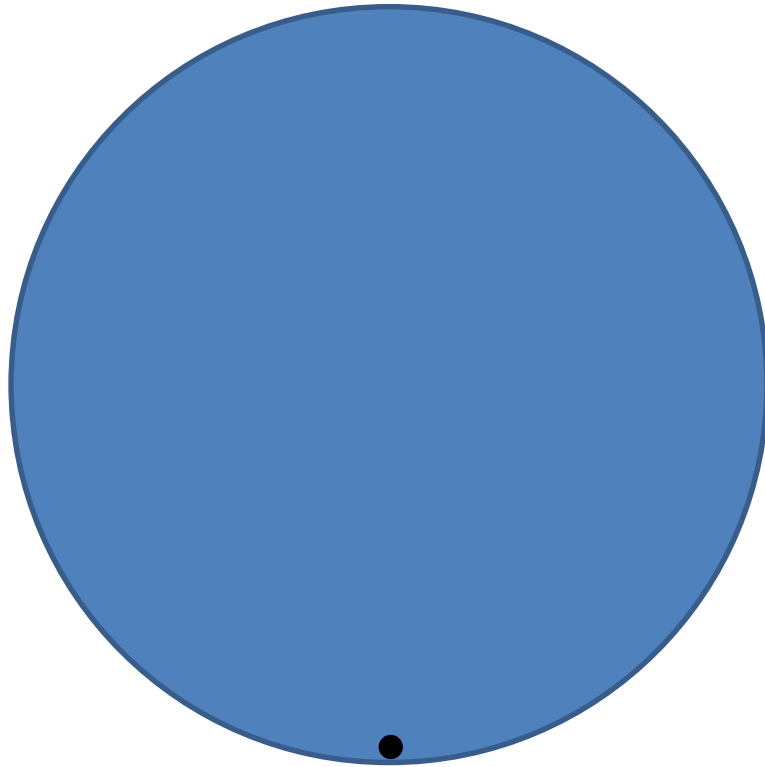
Stem cell and cultured meat



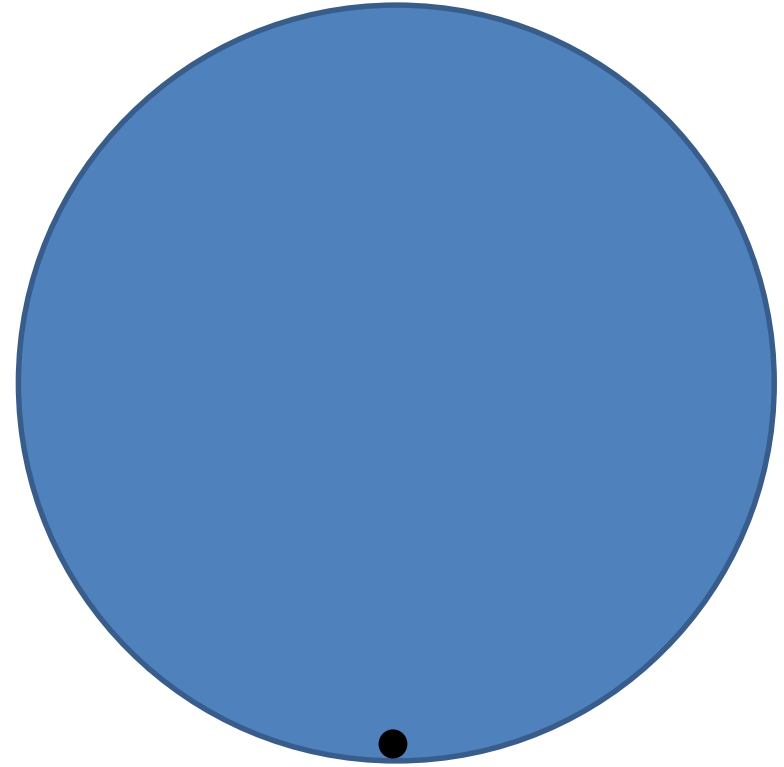
3D printing and cultured meat

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Cultured meat examples – academic publications



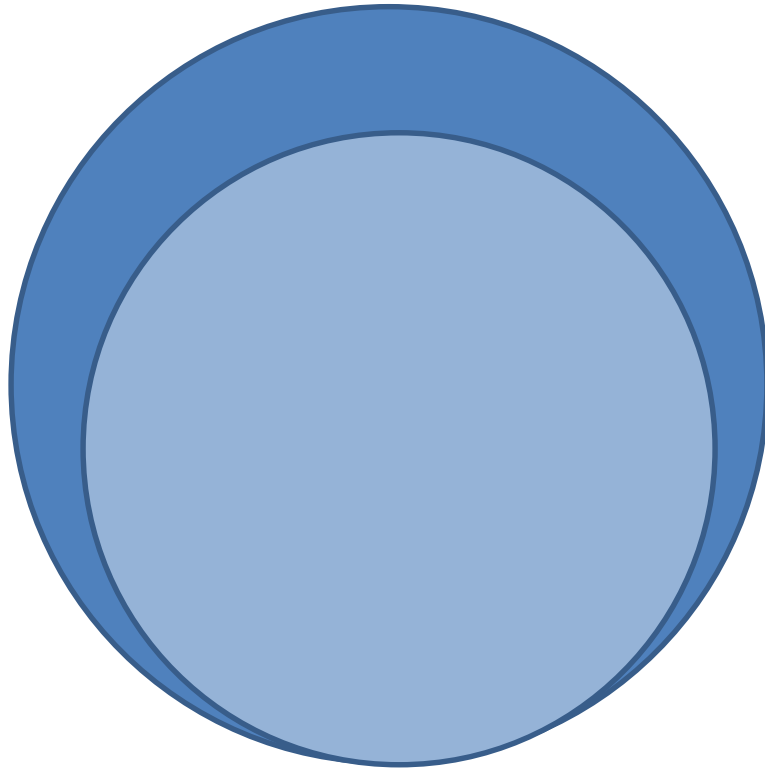
Stem cell and cultured meat



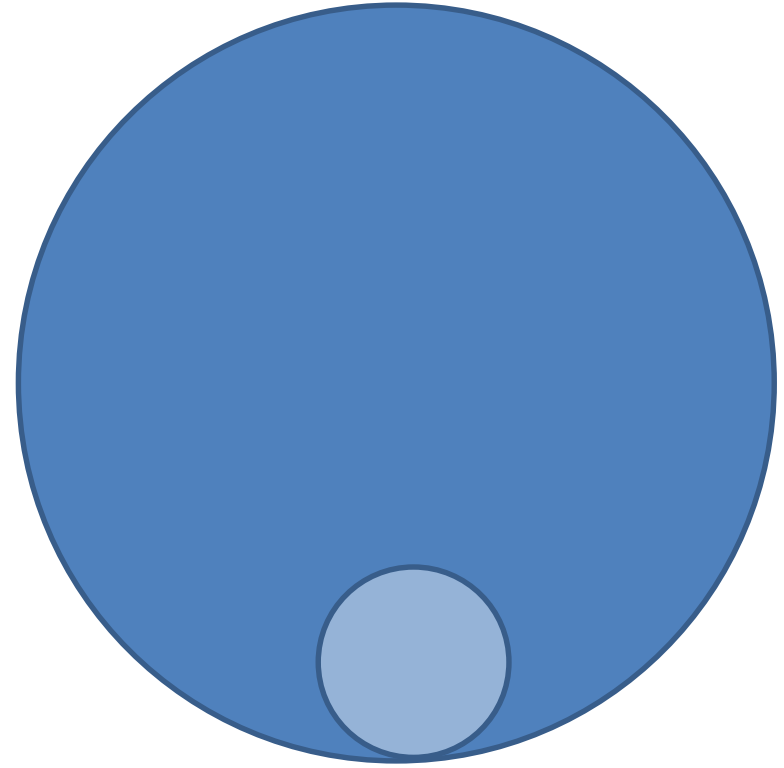
3D printing and cultured meat

CRISPR is a relatively emergent technology with respect to algae and food

Algae examples – general publications



Algae and
bioreactors and
food



Algae and
CRISPR and food

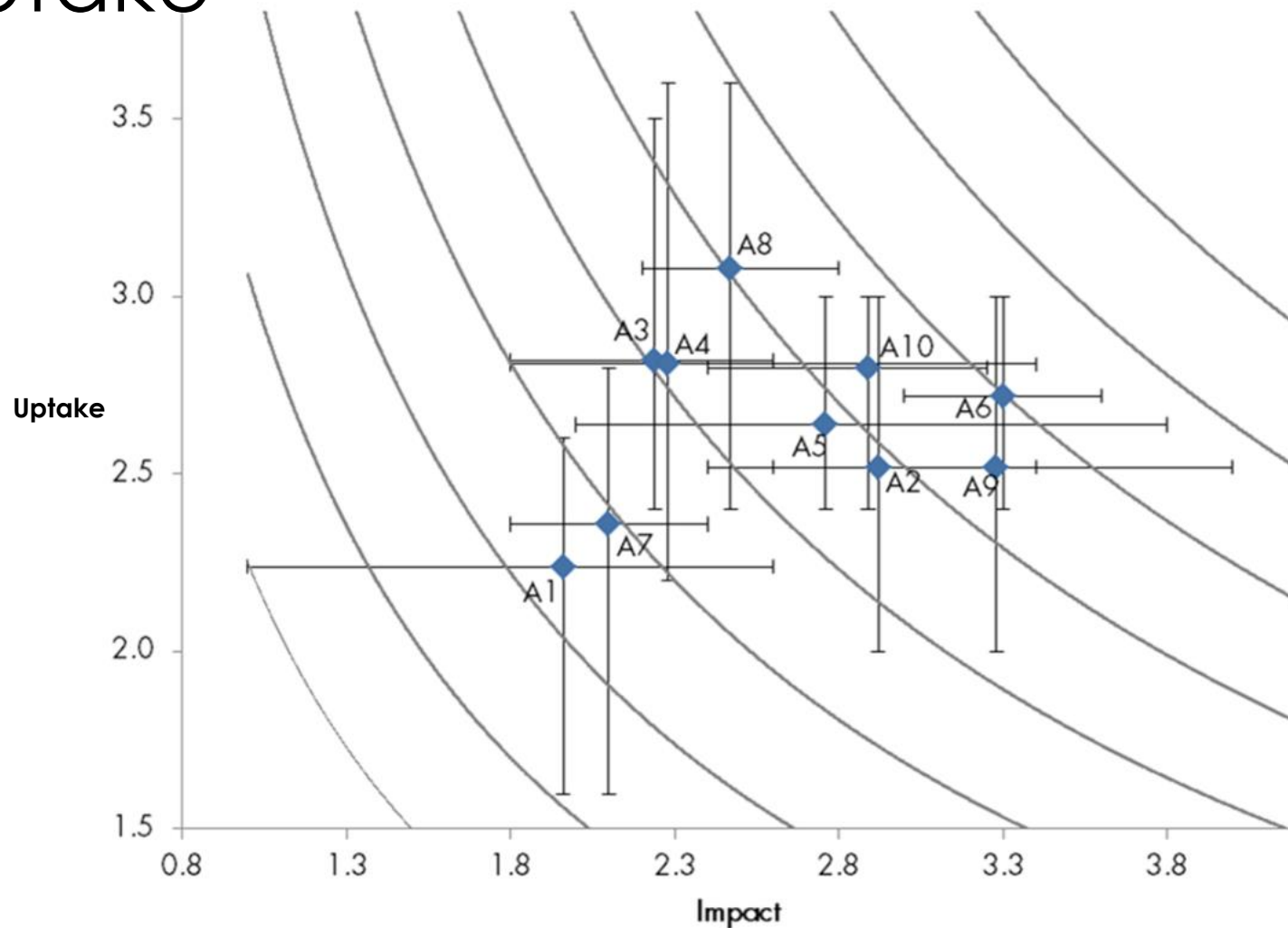
Combining this analysis enables clusters of technology to be identified

Core Technologies: a novel food itself e.g. lab cultured meat

Enabling Technologies: support the production system e.g. LED lights for algal culture



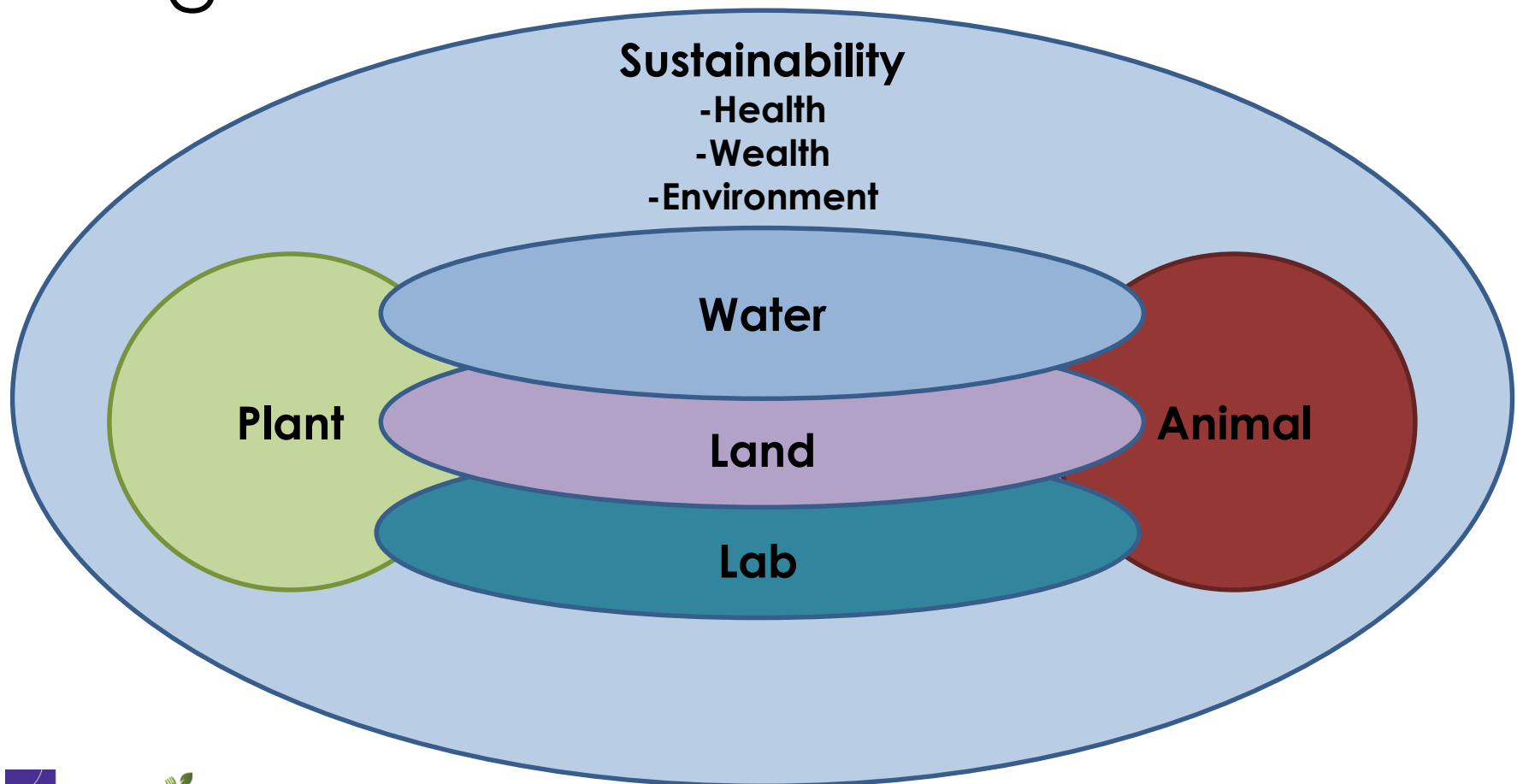
Technologies of interest can be analysed for impact and likely uptake



Scenario analysis explores the scale and implications of novel food uptake

- Futures scenarios allow the exploration of different ways in which technologies could be scaled, and what the beneficial or challenging implications of those technologies might be
- Workshop discussions with experts on food systems and technologies would , for example, discuss:
 - How could diverse technologies converge to support the food system?
 - What are the likely timescales and conditions for change?
 - What might sustainability impacts be?
 - What might the unintended consequences be?

Enabling a rigorous analysis of how novel food systems could be scaled, and what the implications might be





EUROPE



Foresight4Food

International Collaborative Initiative