

## Webinar

# The future of meat: from trend analysis to policy action

May 13, 2020

## Plant-based meat, insect food & in-vitro meat

Results of a trend analysis study for  
policy makers about environmental  
impacts and required policy action

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Source: Pixabay/free commons

Webinar organized by the German Federal Environment Agency (UBA) and European Environment Information and Observation Network (Eionet)

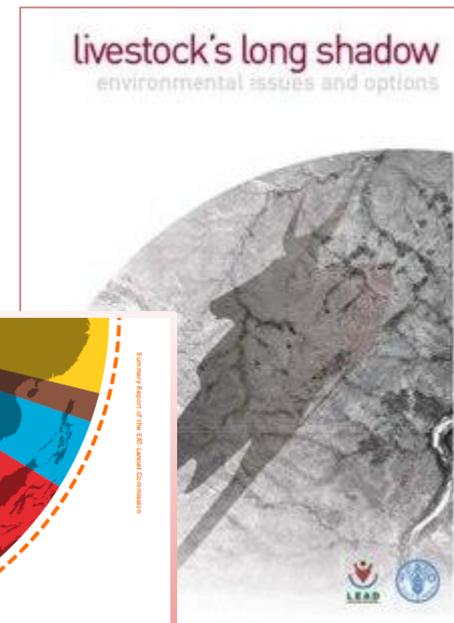
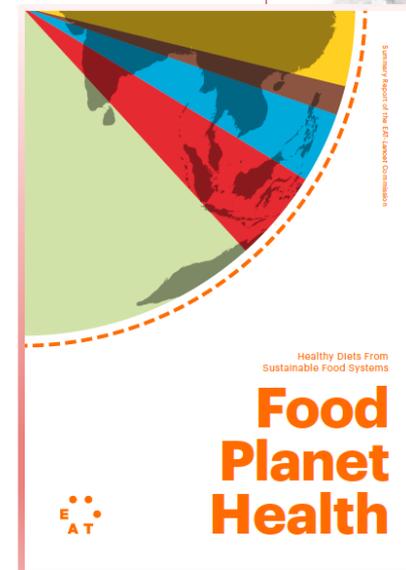
# Overview

- 1. Context and scope of the study**
- 2. Environmental & health impact of meat alternatives**
- 3. Options for policy interventions to support the shift towards healthy and sustainable diets**
  - Related to the three studied alternatives (in vitro, insects, plant based)
  - Supportive regulatory/ governance framework



# Context and scope of the study

- Project funded by UBA, conducted by: iit, Adelphi, Ecologic Institute (more see <https://www.ecologic.eu/16901>), report available in May 2020
- Key questions:
  1. Are meat alternatives a more environmentally friendly and healthier alternative compared to meat ?
  2. What role do meat alternatives play in the needed change for food system transformation?
  3. How can policy makers support this shift?



FAO Bericht 2006  
Bildquelle: FAO

„Planetary Health Diet“,  
EAT Lancet Kommission  
Quelle: Willet et al 2019

# Scope: Three meat alternatives

Plant based alternatives

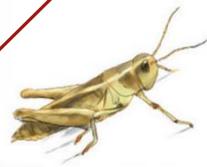


in-vitro meat



THE IMPOSSIBLE CHEESEBURGER

You've never had a burger quite like this. Impossible Foods has found a better way. We use plants to make the best meats and cheeses you'll ever eat.



Eadible insects  
(human consumption)

- legumes
- Algen
- Jackfruit
- fish alternatives
- Tofu etc.

Out of scope: Tofu, algae, fish alternatives...

**sources**

Quorn: [www.quorn.com](http://www.quorn.com)

Impossible Burger: <https://impossiblefoods.com/>

In-Vitro-Burger: © David Parry/PA Wirey

In-Vitro-Hühnchen: Ferrari/Zuma Press

Insekten: <https://thegatewaybug.com/wp-content/uploads/2015/10/Screenshot-2015-10-30-14.52.18.png>

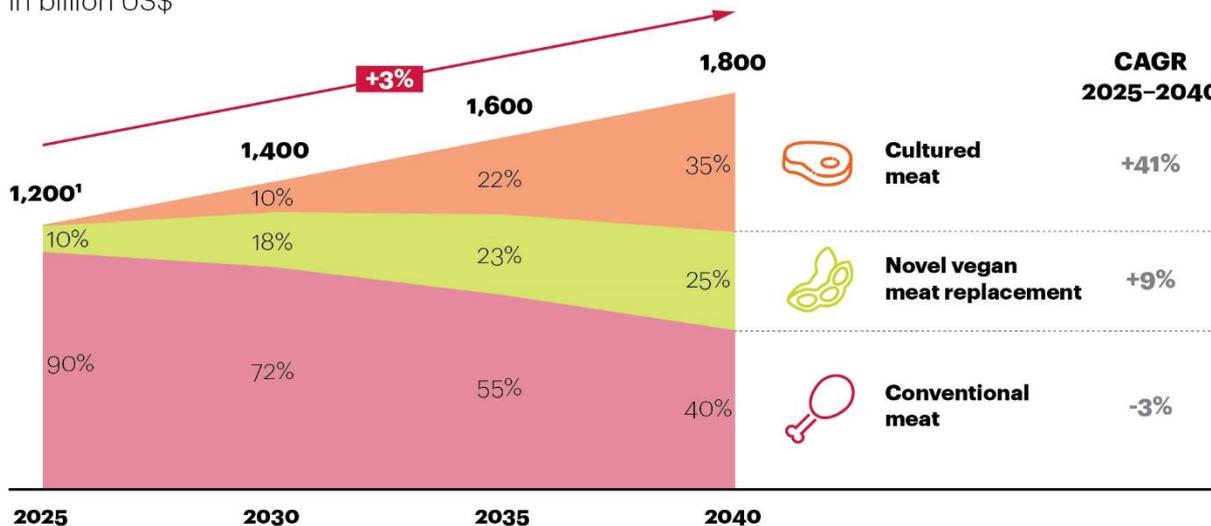
# Trends – all showing growth...

All studies show growth trends (globally/EU/Germany), but different scenarios, → those studies that predict a high(er) market share for meat alternatives assume a strong decline in „real“ meat consumption, e.g.

- Rethinkx
- AT Kearney:

**Global meat consumption: By 2040, conventional meat supply will drop by more than 50%**

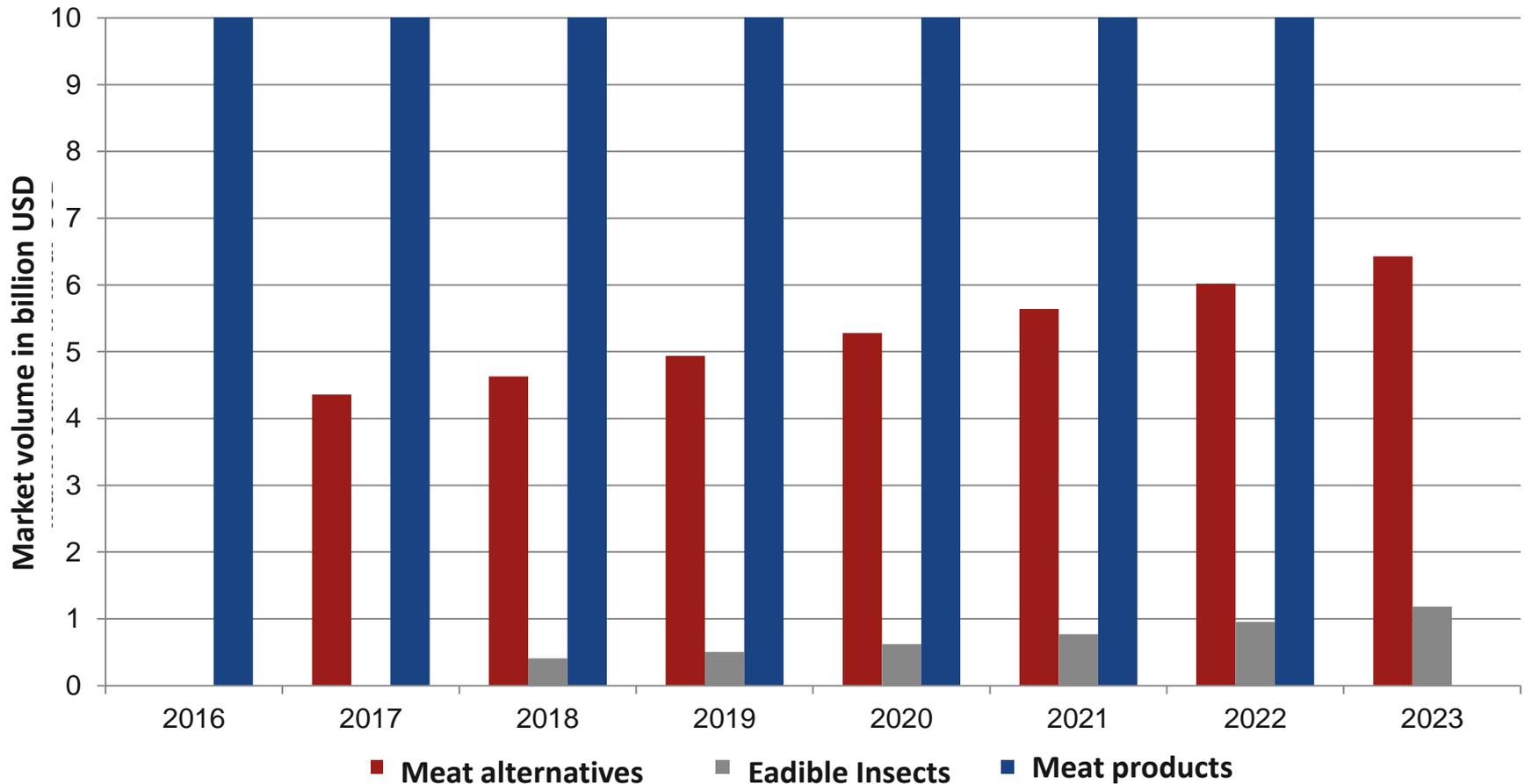
in billion US\$



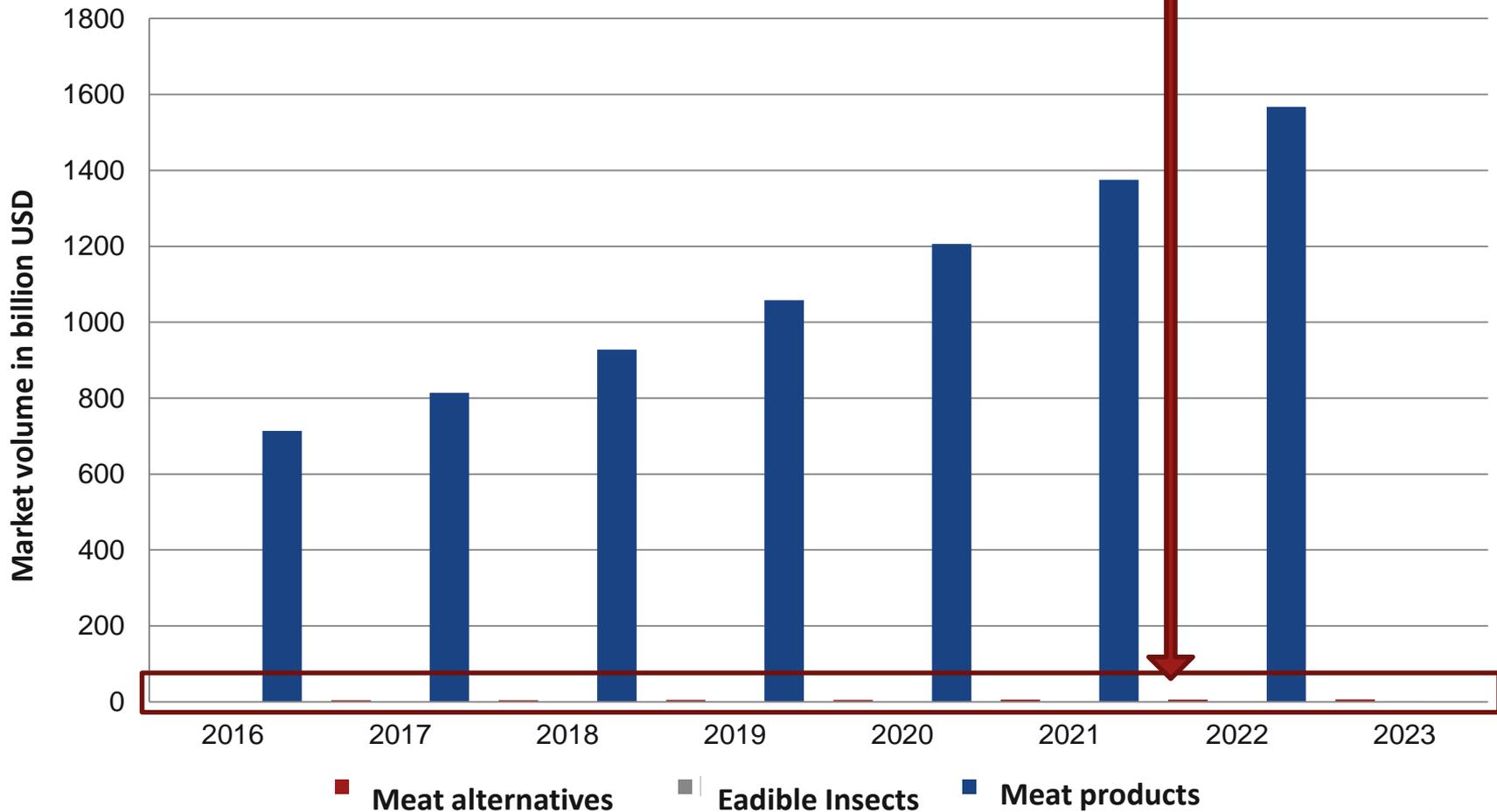
<sup>1</sup> Numbers are rounded to hundred billions.

Sources: A.T. Kearney 2019: "How will Cultured Meat and Meat Alternatives Disrupt the Agricultural and Food Industry?"

# ...meat alternatives with growing market share...



# ...but meat consumption might/will grow, too... so how big is the niche we are talking about?



Sources:

Statista (Hrsg.): Global Meat Industry. 2018  
Statista (Hrsg.): Meat substitutes market in the U.S. 2018  
Statista (Hrsg.): Edible Insects. 2018

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# Environmental and health impacts

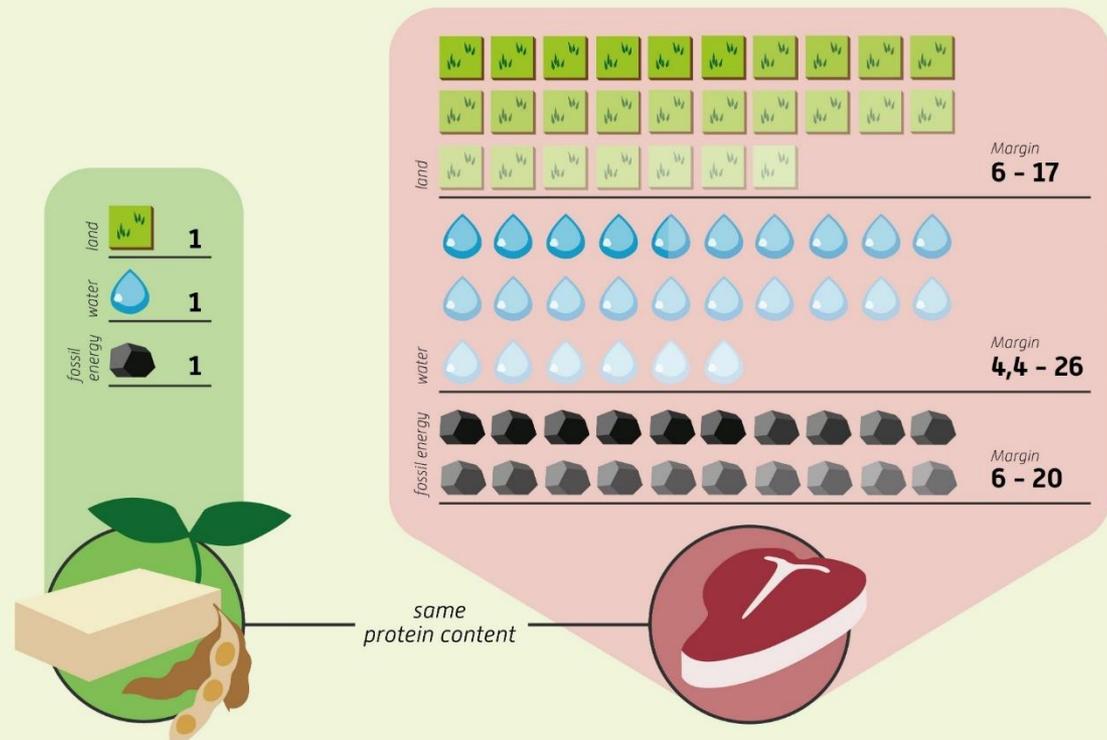
## 1. Plant based alternatives

- Plant based alternatives rank by far as the best compared to meat as well as to other meat alternatives:

- Least environmental footprint
- Low risk and readily available technologies
- Comparable protein content
- Less healthy: highly processed products

### Meat and soy products: Comparison of environmental effects

With the same protein content, much more land, water and fossil energy is consumed for the production of meat than for the production of soy-based vegetable products.



# Environmental and health impacts

## 2. Insects

- **Relatively good environmental footprint**  
as insects are very efficient „feed converters“, need less land and water, have a high share that is edible (no bones etc.)
- **Footprint differs extremely depending on what they are fed**  
they are very good „food waste converters“, too – this would be the preferred option from an environmental perspective (but is currently forbidden)
- **Healthy option (protein content), but low public acceptance so far, allergenic potential**
- **Open ethical issues (do insects feel pain?)**



## 3. In-vitro meat

### ■ Impact assessment not yet possible:

- In-vitro meat is not yet available on the market
- lifecycle assessments are not based on real data but anticipated data
  - large uncertainties about potential
  - Assumption so far: Less land needed, more energy needed, less or similar water needs

### ■ Large uncertainties if technology is scaled up:

- **Is serum free media** available (so far developed with fetal calf serum as culture medium)?
- „clean meat“ or need for **antibiotics**?
- Bioreactors run on **renewable** or fossile energy?
- **Health** impacts: likely similar to meat (quantity matters)



Quelle: nevodka - shutterstock.com

# Overview about specific entry points for improvements with regard to sustainability

Cross cutting issues	Plant based alternatives	Using insects as food	In-vitro-meat
	Regional, diversified key ingredients	Permission to be fed on surplus food/ catering waste	Research about serum free growth media
	Processing and packaging	Permission as feed	Better lifecycle assessment
Labelling	X		X
Public Procurement	X	X	
Organic certification		X	X
Eductaion and training (for professionals)	X	X	X
Acceptance for meat alternatives	X	X	X
Production plants and facilities		X	X
Need to undergo an Environmental Impact assessment		X	X
Providing energy for the production plants		X	X

# 1. Plant based alternatives: How to improve

## ■ Support use of diverse and regional ingredients

- Particularly pulses (improve soil, high in protein), regional soy etc.

Quelle: Pixabay, Katinka vom Wolfenmond



## ■ Support of products that are not highly processed/packaged in order to support healthier products with low resource footprint

- Though some unclarits still: Health recommendations for meat alternatives would need an (updated) comparison between meat and meat alternatives
- Needed dialogue with food processors and retailers



### VEGANE BURGER AUF ERBSENPROTEINBASIS

ZUTATEN: Wasser, Erbsenproteinisolat\* (18%), Rapsöl, raffiniertes Kokosnussöl, Aroma, Raucharoma, Stabilisatoren: Cellulose, Methylcellulose, Gummi Arabicum; Kartoffelstärke, Maltodextrin, Hefeextrakt, Salz, Sonnenblumenöl, Trockenhefe, Antioxidationsmittel: Ascorbinsäure, Essigsäure; Farbstoff: Beetenrot, modifizierte Stärke, Apfelextrakt, Zitronensaftkonzentrat.

## 2. Insects: How to improve

- Reconsideration to feed organic waste material (e.g. catering waste)
  - Environmental footprint strongly depends on the kind of insect feed used
  - Insects (like black soldier fly) can use all kinds of organic material
  - Currently feeding organic waste is not allowed (Regulation 999/2001)

Black soldier fly/Wikipedia

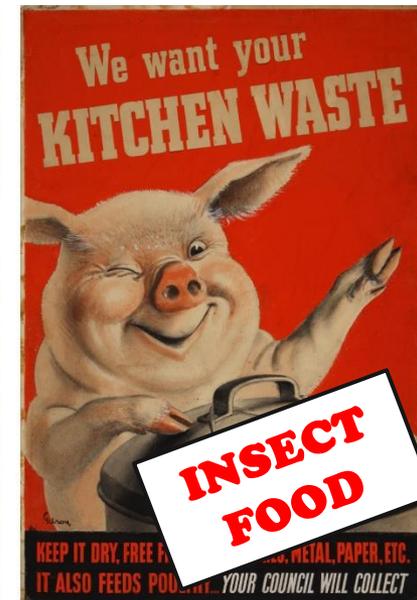


→ Would need updated risk analysis by EFSA to decide reallocation, while keeping high hygiene and food safety standards

➤ Reallocation would speed up the growth of the sector

24.06.2020

Künstler: John Gilroy/1940/UK



### 3. In-vitro meat: How to improve

- Support research for serum free growth media
  
- Support lifecycle analysis using real and up to date/open access data considering the most relevant parameters
  - Growth medium
  - Use of antibiotics
  - Energy use (renewables/fossil/quantities)
  - Production plant and size



Quelle: MosaMeat/NGinFood

## Cross cutting issues

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## Cross cutting: Labelling

- **Plant based alternatives:**

Ensure that labelling continues to allow using terms that refer to „meat“ (pending process by EP Agri Committee – to modify Regulation 1308/2013 about common organisation of agricultural markets and on specific provisions for certain agricultural products)


 “Veggie-Disc”?

- Also relevant once **in-vitro meat**

is available on the market/

gets allowance through novel food regulation (also depends on how the cells are taken from the animal: before or after slaughter)



Quelle: proVeg

# Cross cutting: public procurement, organic certification, education and training

- **Public procurement:** can support use of meat alternatives
- **Organic certification:** needed guidelines for insect production and in vitro meat
- **Education and Training:**
  - **Plant based alternatives:** Integrating knowledge on how to use in relevant job education (cooks, educators etc.)
  - **For insects and in-vitro-meat: capacity building in regulatory authorities and veterinary offices for production/production plants**



# Cross cutting: understanding/improving acceptance & requirements for production plants

## ■ Acceptance:

- Research to understand factors that influence uptake of meat alternatives



source: Pixabay/Katharina Vulkova

## ■ Production and processing plants/EIA

- Different rules/special requirements for allowance? (do these projects have significant effects on the environment and therefore require an Environmental Impact Assessment)



Source: Protix

# Open (research) questions with regard to indirect impacts

- What is the impact on **job** creation/ loss with changed production and consumption patterns
- How will **production and distribution patterns** change (diversification of producers? market concentration?)
- What are the impacts on **agricultural production** and **rural areas**?
- Are there impacts in **food literacy and food education**? (e.g. if food is more processed, highly processed etc.)
- Are there **gender/milieu** specific differences?



## Conclusions for policy makers (1)

- **Entry points to improve the sustainability performance of meat alternatives are in most cases not within environmental policy** (but within agriculture, hygiene, health, education, rural development, innovation and research policy)
- Policy options range from **local** and **national (public procurement)** to **EU (food safety)** and **international (trade)** and need to be **coordinated**
- Success/development of meat alternatives depends on the development and prices in the **meat market**

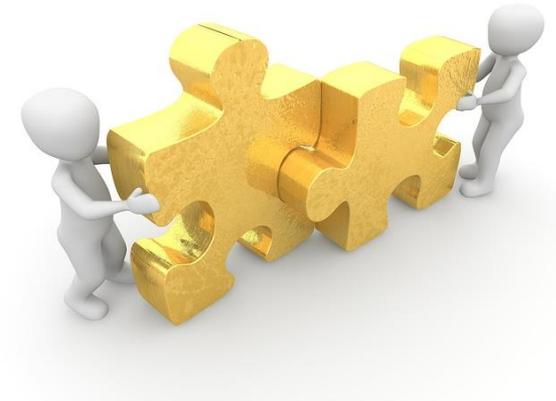
→ Strategies to support meat alternatives **need to be embedded in coherent strategies** for food system transformation



# Role of meat alternatives with regard to food system transformation

## Priority action points

- 1. Reducing meat consumption** (animal welfare requirements, internalizing external costs etc.)
  - 2. Support plant based diets**  
(special focus pulses)
  - 3. Development of national strategies for healthy and sustainable food**  
(implementing the EU Farm to Fork Strategy) including the role of meat
  - 4. Support research to clarify open questions and further develop the methods and technologies**
- Coherent action on EU (and international) level needed, particularly with regards to the CAP





**Ecologic Institute**  
Science and Policy  
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# Thanks! Any more Questions?

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