



REFRESH

Surplus food as animal feed

Risks, benefits and uncertainties

Karen Luyckx, Hannah Van Zanten, Jennifer Davis,
Fabio de Menna, Matteo Vituari

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ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA



WAGENINGEN
UNIVERSITY & RESEARCH



REFRESH is funded by the Horizon 2020 Framework Programme of the European Union under Grant Agreement no. 641933. The contents of this document are the sole responsibility of REFRESH and can in no way be taken to reflect the views of the European Union

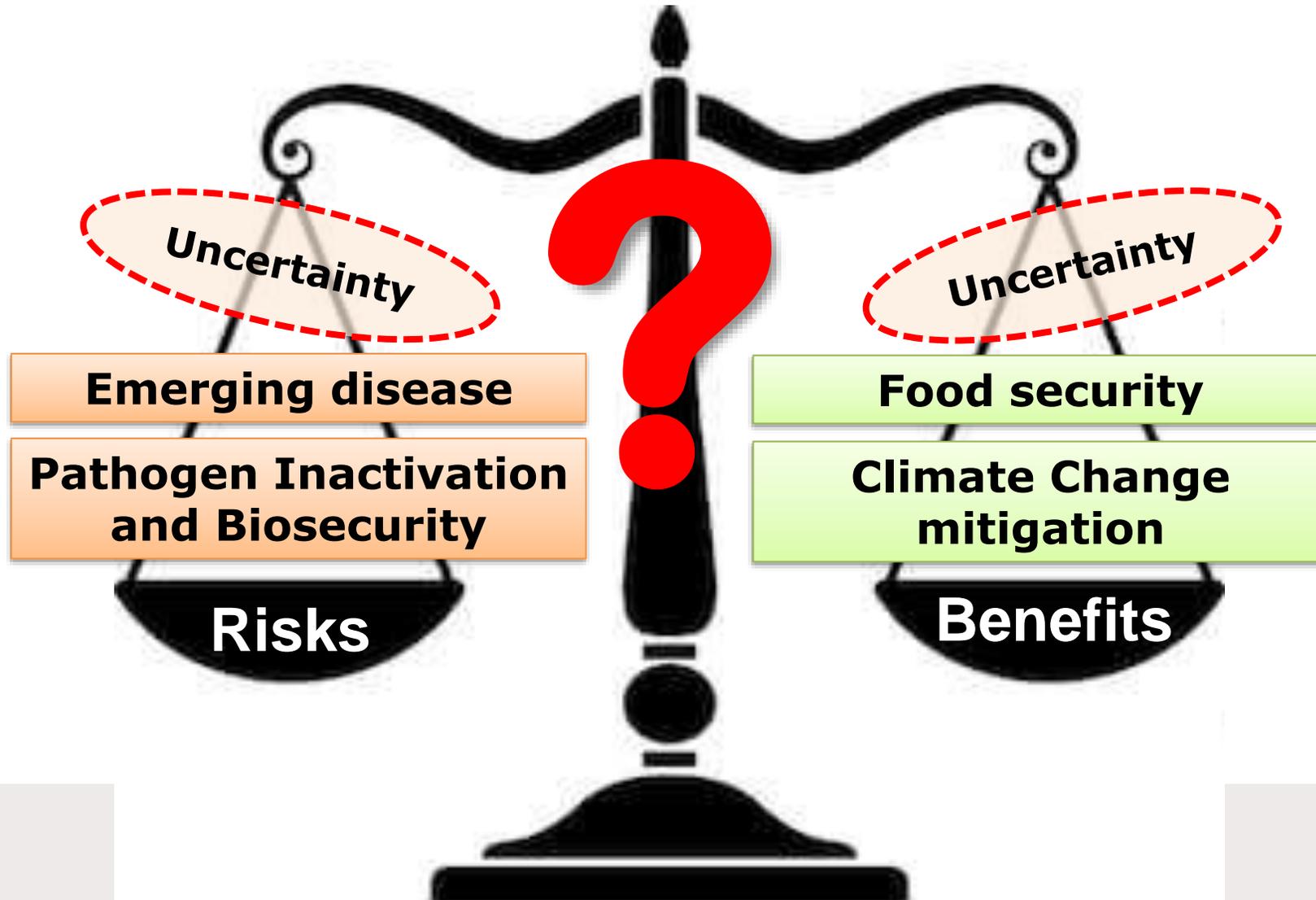


Scope of the proposed changes to TSE and other feed related regulations

- **Maintain** feed ban for
 - 🍷 Ruminants
 - 🍷 Untreated / raw surplus food
- **Lift** ban on meat-containing, heat-treated surplus food
 - 🍷 Only from licensed and tightly controlled facilities
 - 🍷 Only for non-ruminant omnivorous livestock on licensed farms
 - 🍷 Only surplus food from retail, manufacturing and commercial catering sources
- **No** on-farm treatment
- **No** surplus food from
 - 🍷 Households
 - 🍷 International catering, planes, ships, etc



Surplus food as non-ruminant feed: Key risks and benefits





Pathogen inactivation and biosecurity: Risk management strategies



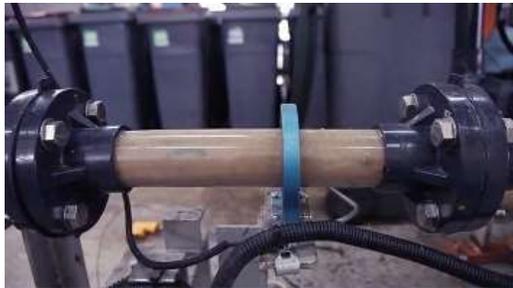
Heat treatment to achieve Feed Safety Objective

- Infectivity, controls and severity in case of outbreak
- Foot and Mouth Disease / African Swine Fever



Acidification

- Additional inactivation and shelf life
- Prevent outgrowth of human pathogens such as Clostridium spores
- Fermentation: nutritional and probiotic benefits



Biosecurity to prevent cross-contamination

- Measures as described in ABP legislation (zoning, one directional process flows, temperature monitoring)



Pathogen inactivation and biosecurity: **Uncertainties**

- **Heat treatment** to achieve Feed Safety Objective
 - Infectivity, control and severity in case of outbreak
 - Food safety objective: 5 log / 99.999% reduction
 - Estimated volumes of infected meat
 - Tiny fraction of surviving organisms, e.g. 0.0000000000000001%
 - Additional inactivation and shelf life
 - Prevent outgrowth of human pathogens such as Clostridium spores
 - Fermentation: nutritional benefits
- **Biosecurity** to prevent contamination
 - Measures as described in HACCP (zoning, one directional process flows, temperature monitoring)
 - Human error / deliberate breaking of the law



Emerging disease, TSE and intraspecies recycling



● **Transmissible Spongiform Encephalopathies (TSE)**

- “No TSEs have been identified as occurring in pigs or poultry under natural conditions” (EFSA BioHaz Scientific Opinion, 2007)
- Intraspecies recycling ban remains in place as precautionary measure
- There is no intraspecies recycling ban for non-ruminants in the US, New Zealand, Australia and Japan

● **Emerging disease**

- Epidemiologist concern with the “unknown unknowns”
- High density, intensive farming and novel disease outbreaks



Uncertainties, precautionary principle and ethics



Transmissible Spongiform Encephalopathies (TSE)

How do we balance the ethical and precautionary questions?

Intraspecies recycling is permitted outside the EU

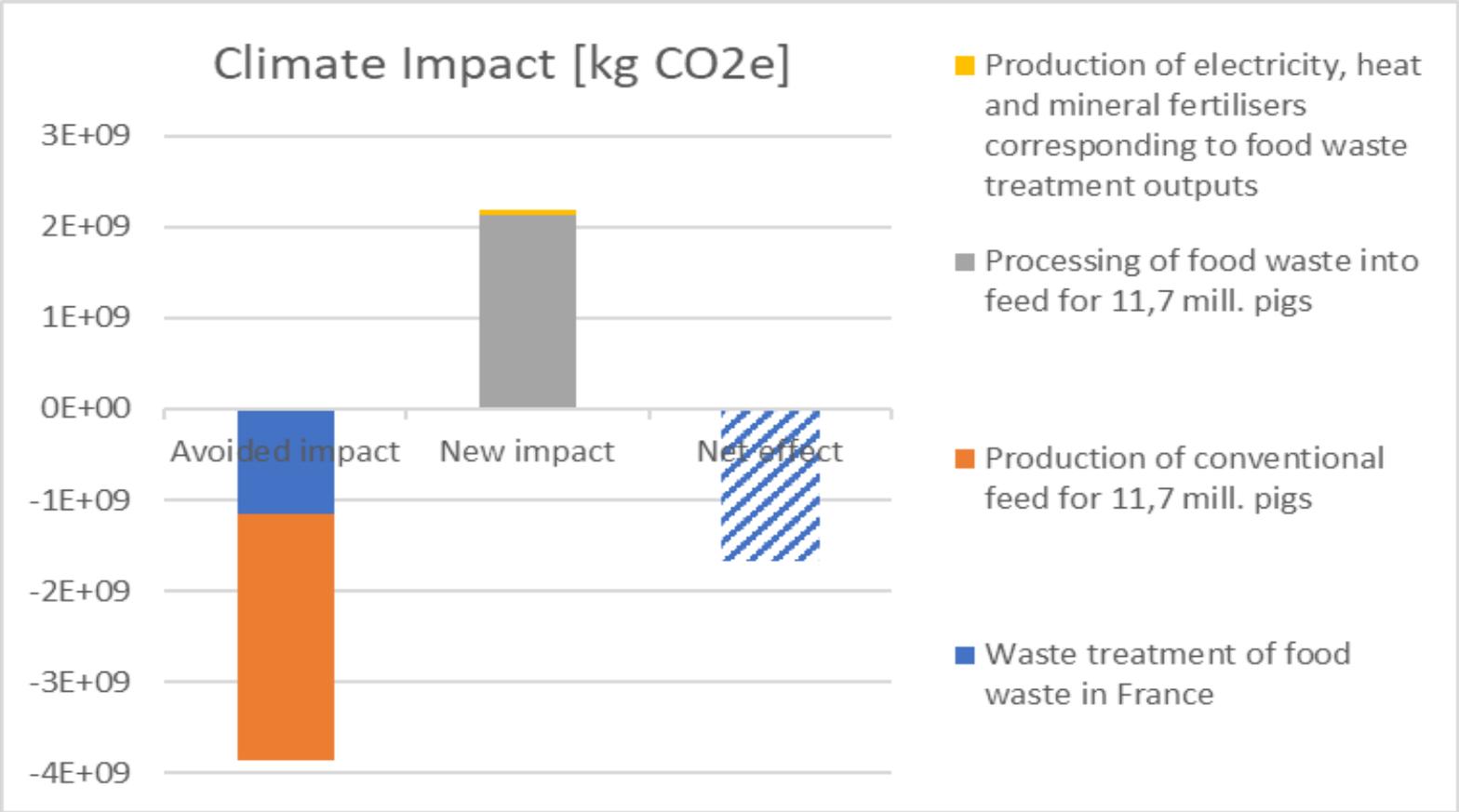
Emerging zoonoses

- Epidemiological
- High density

- Novel disease and uncertainty:
- intensive farming
 - intraspecies recycling

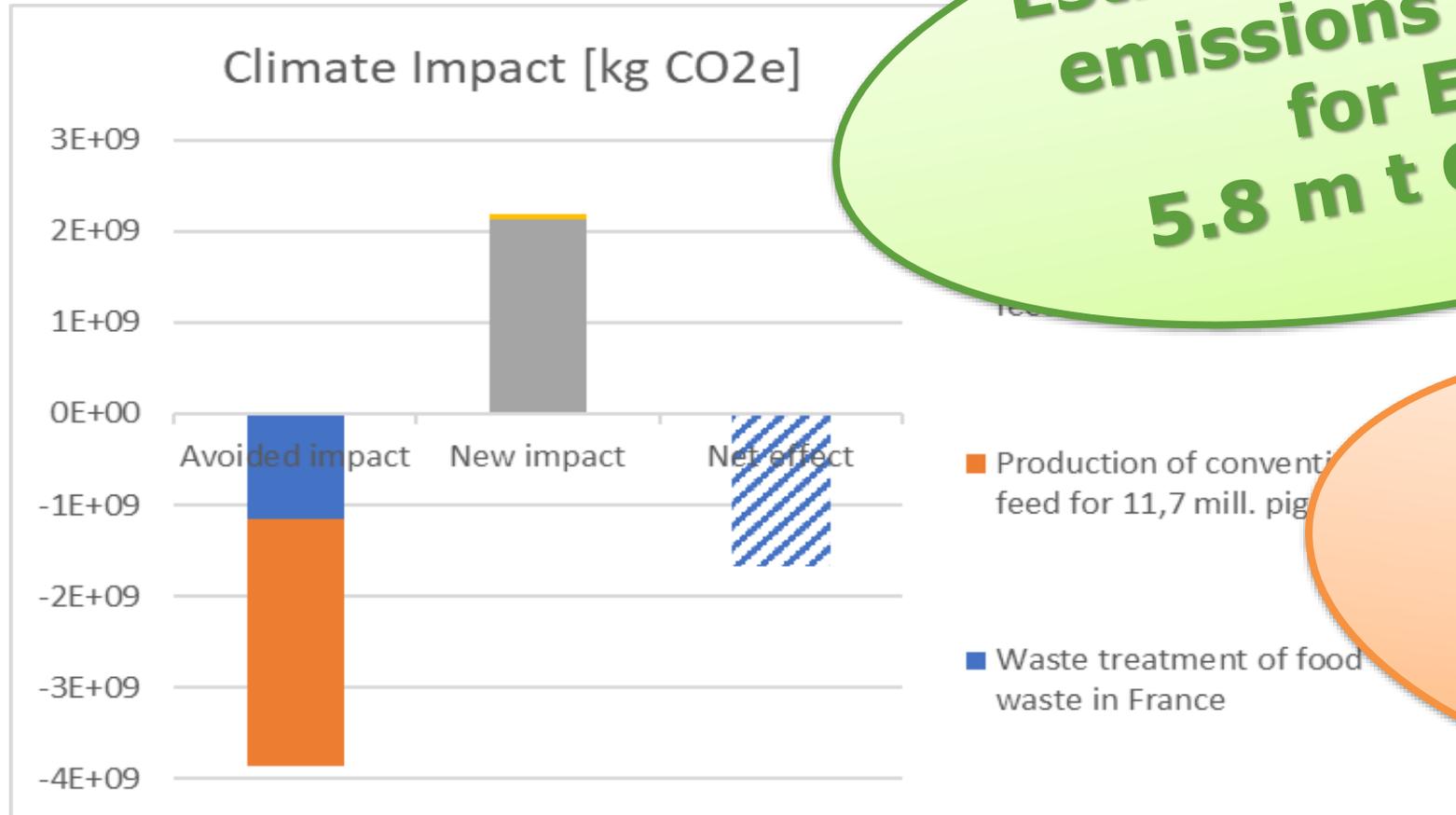


Net climate impact of using processed surplus food as pig feed in France





Net climate impact of using processed surplus food as pig feed



Estimated minimum emissions savings for EU: 5.8 m t CO₂ eq.

GHG emissions of 670,000 EU citizens



Climate change mitigation and food and feed safety

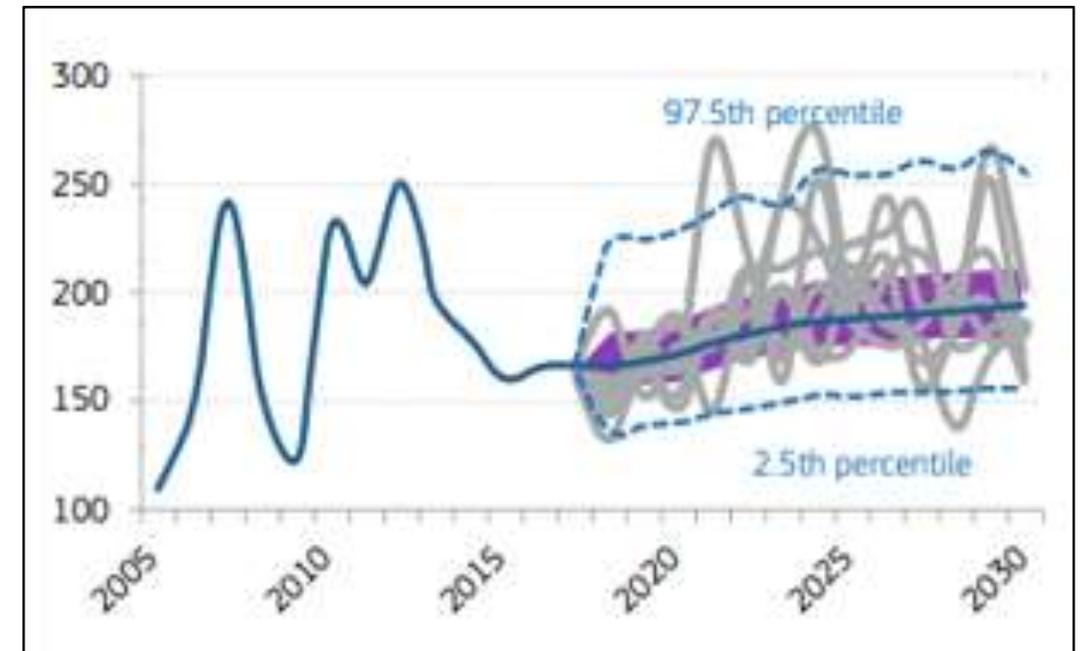


- Salmonella risk is estimated to increase by 10-15% for every degree increase in temperature (Beghian, 2018)
- Mycotoxins likely to increase due to climate change (EFSA, 2017)

Food security within planetary boundaries

- Diet for human and planetary health: drastic reduction of animal source food
- Avoid competition for arable land between feed and food crops (Van Zanten et al. 2018)
- Reduce impact of agricultural commodity price volatility: **reduce uncertainty?**

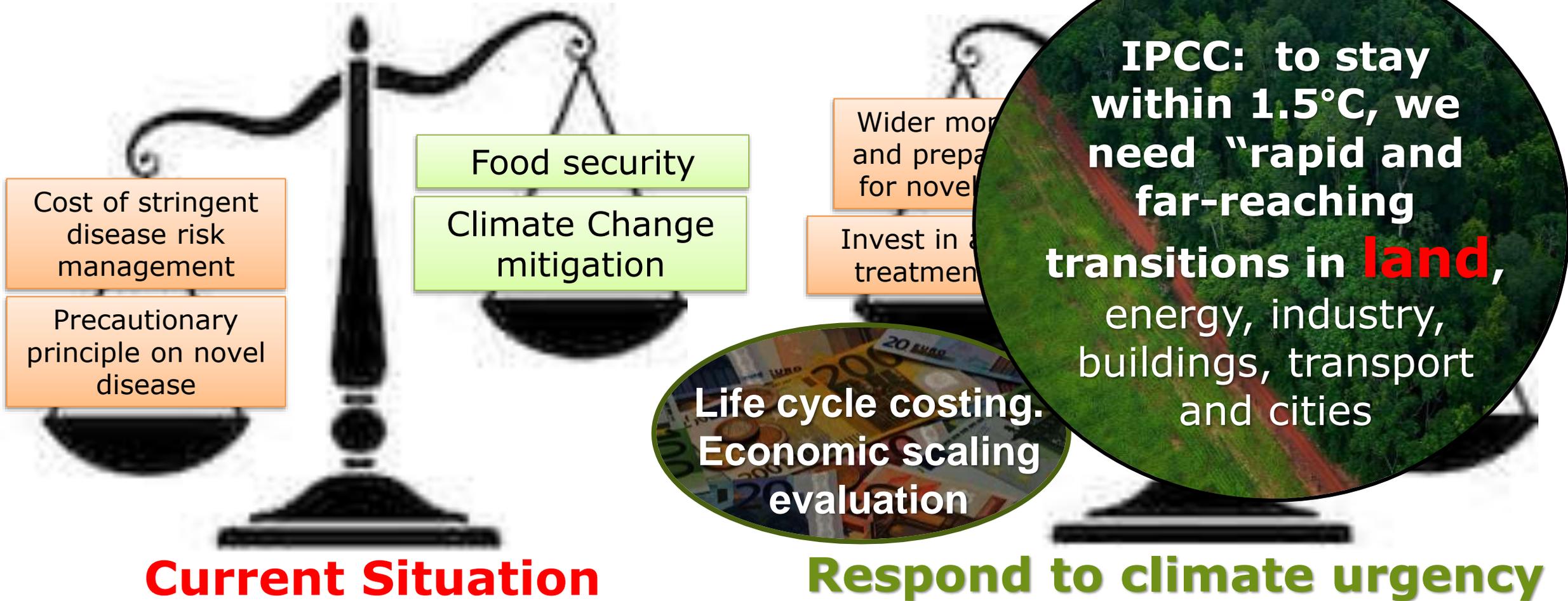
Possible price paths for common wheat in the EU (Euro / tonne)



EC, 2017. EU Agricultural Outlook.



How to determine which way the scales tip?



Thank you & Questions

Contact

Karen Luyckx

REFRESH Animal Feed Lead

karen@feedbackglobal.org

Full REFRESH report on animal feed will be published on <https://eu-refresh.org/results> by May 2019

War-time Advertisement:

"Swill is more appetising when steam-cooked in an Alfa-cooker and the nourishment value is increased. The pigs like it, thrive on it, and it takes less time to prepare. The waste food is sterilized, all bacteria killed, by steam cooking – a big safeguard against Swine Fever, Foot and Mouth diseases, etc."

"I wish I had seen it years ago," writes a delighted user.

KEEP THE PIGS A-GROWING!

SWILL is more appetising when steam-cooked in an Alfa-cooker and the nourishment value is increased. The pigs like it, thrive on it, and it takes less time to prepare. The waste food is sterilized, all bacteria killed, by steam cooking—a big safeguard against Swine Fever, Foot-and-Mouth diseases, etc.

The Alfa-cooker has many uses—boiling clothes, heating water for the dairy. Portable, burns wood, coal or coke. Container tips to empty. "I wish I had seen it years ago," writes a delighted user.

ALFA COOKER
WILL BOIL OR STEAM