

Economic consequences of novel solutions to control production diseases in pigs and poultry

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Outline

- Economic consequences of production diseases in pigs and poultry
- Modelling economic consequences of novel solutions to control production diseases in pigs and poultry
 - Farm-level modelling
 - Value chain analysis

Background

- Intensive pig and poultry production systems are fairly efficient and well-controlled, but the competition is intense, so in order to maintain and improve the competitiveness it is essential to enhance the control of production diseases
- Although production diseases can have a substantial impact on farm economics, their overall impacts are not very well known.
- Changes in animal health can have wider societal consequences due to contributions to animal welfare and antimicrobial resistance
- The aim of this presentation is to highlight some of the modelling work we have carried out regarding interventions

**What is financial burden of
production diseases?**



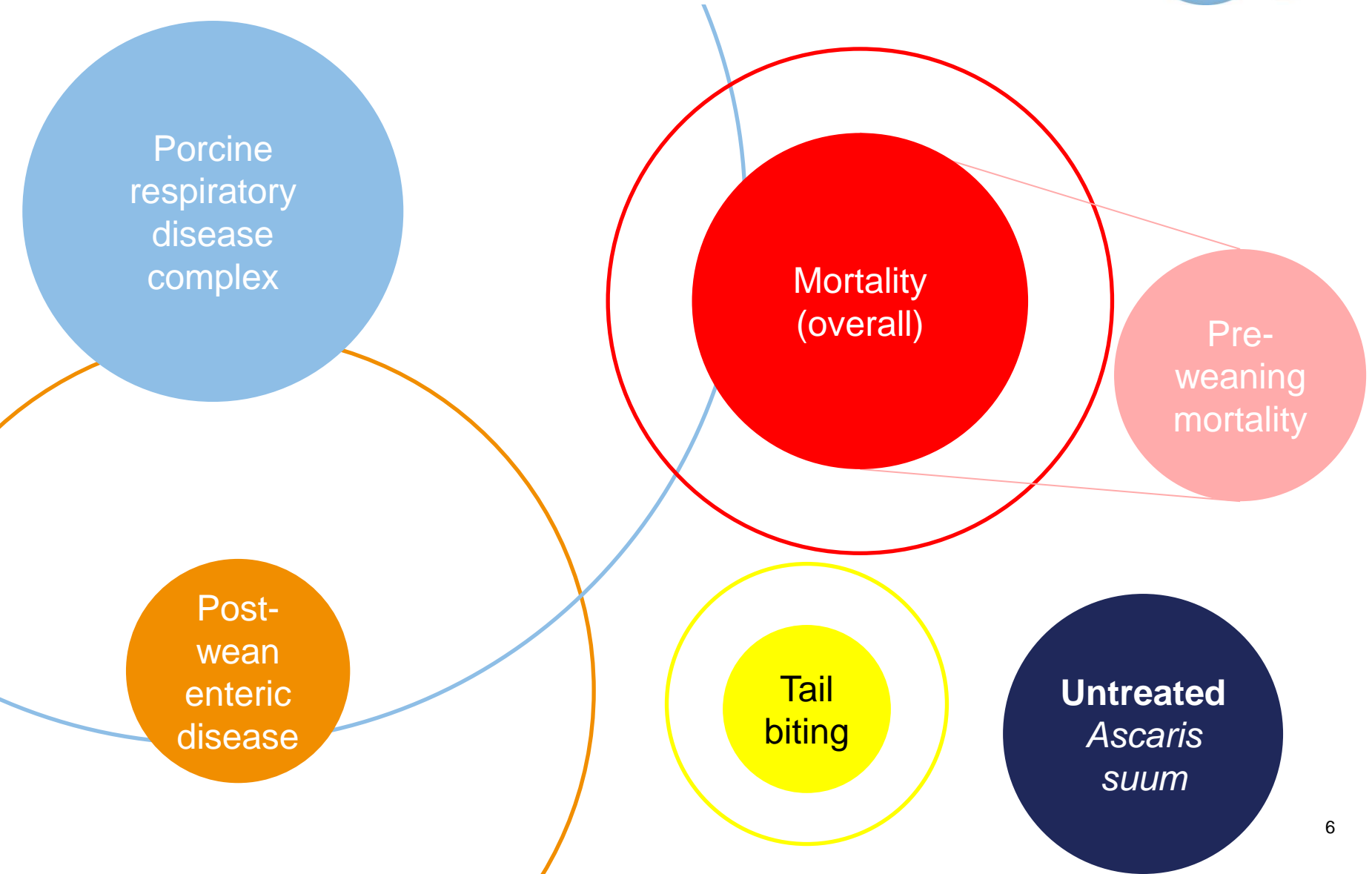
Some examples on the significance of diseases

Production diseases can cost up to €30-40 per pig

Necrotic enteritis can cost globally €2 to €5 billion per year

€3 billion is spent each year worldwide to prevent coccidiosis

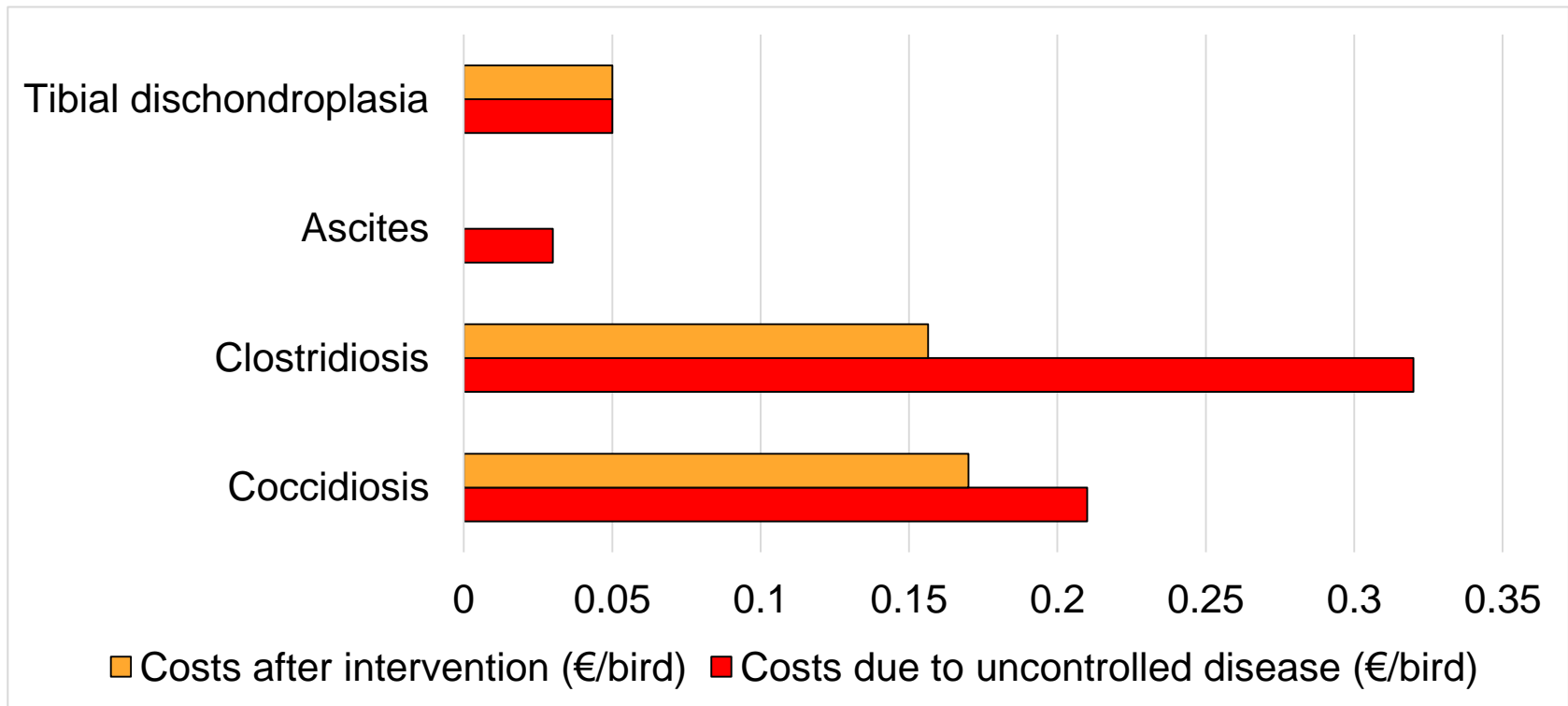
Some examples on the costs of production diseases in growing pigs



Production diseases cost money - even when the diseases are controlled



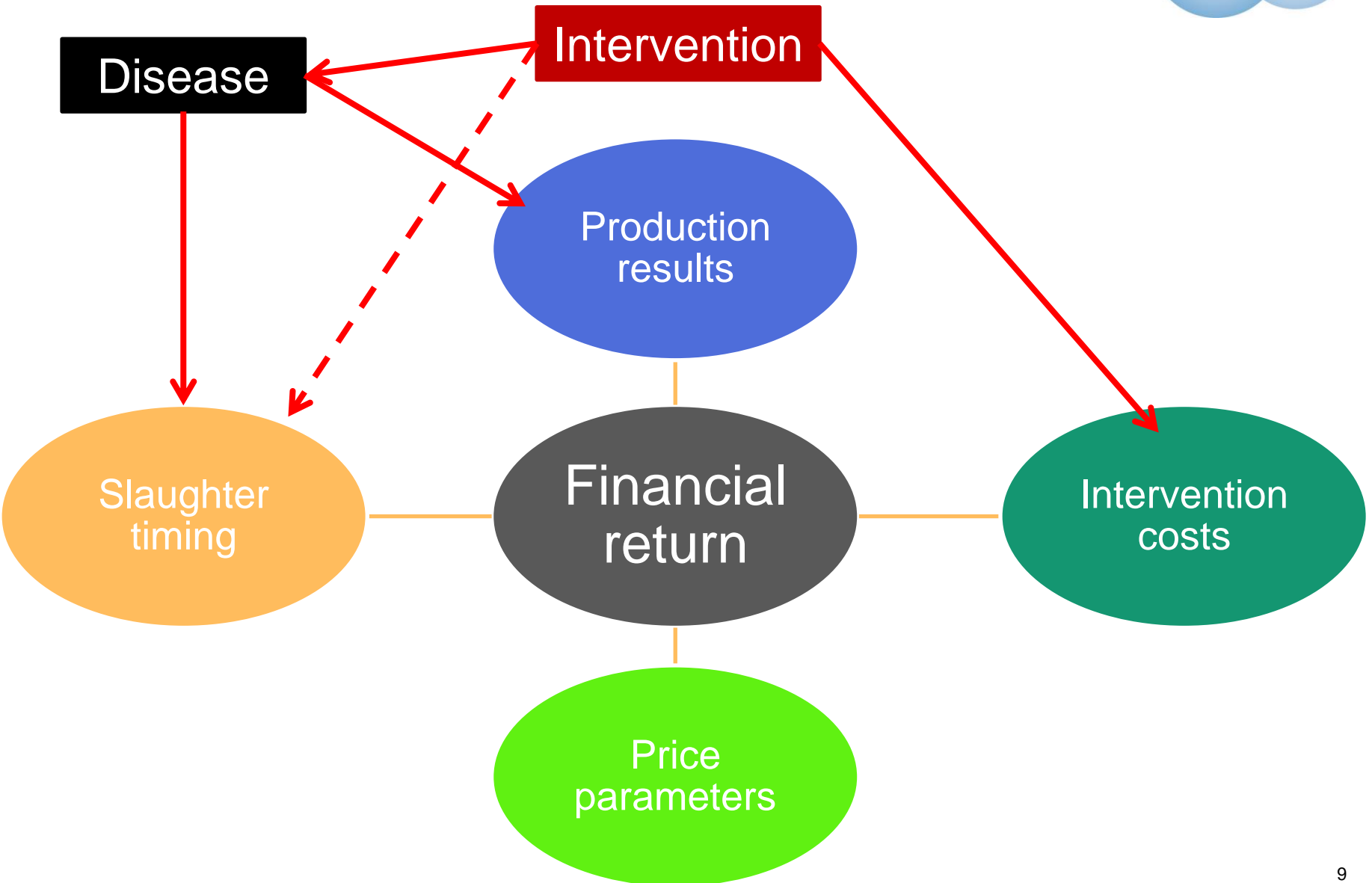
- Examples of the losses of net margin due to production diseases in broilers



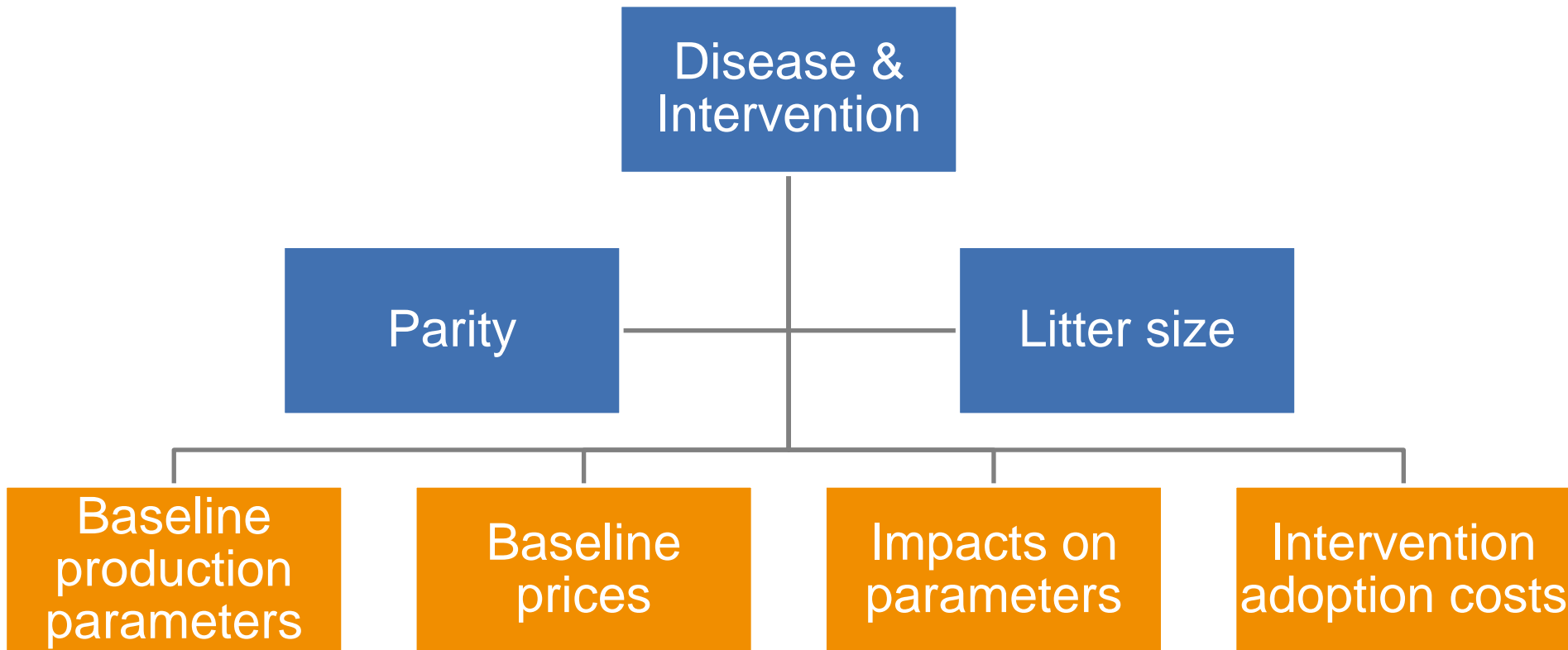
Modelling consequences of novel solutions to control production diseases in pigs



Dynamic optimisation model for pig fattening



Piglet production model accounted for events during the farrowing cycle (from farrowing to farrowing)

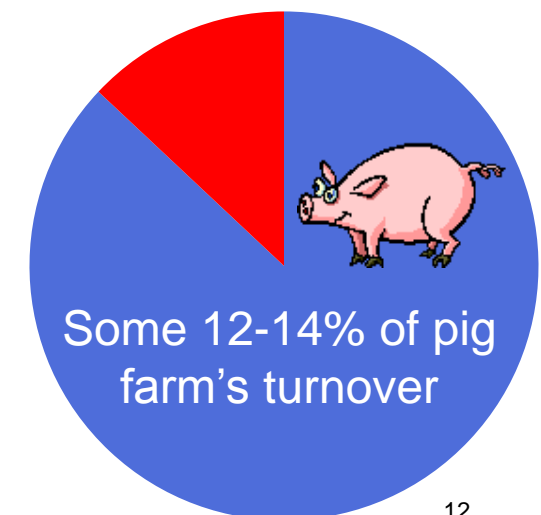


Interventions in pigs

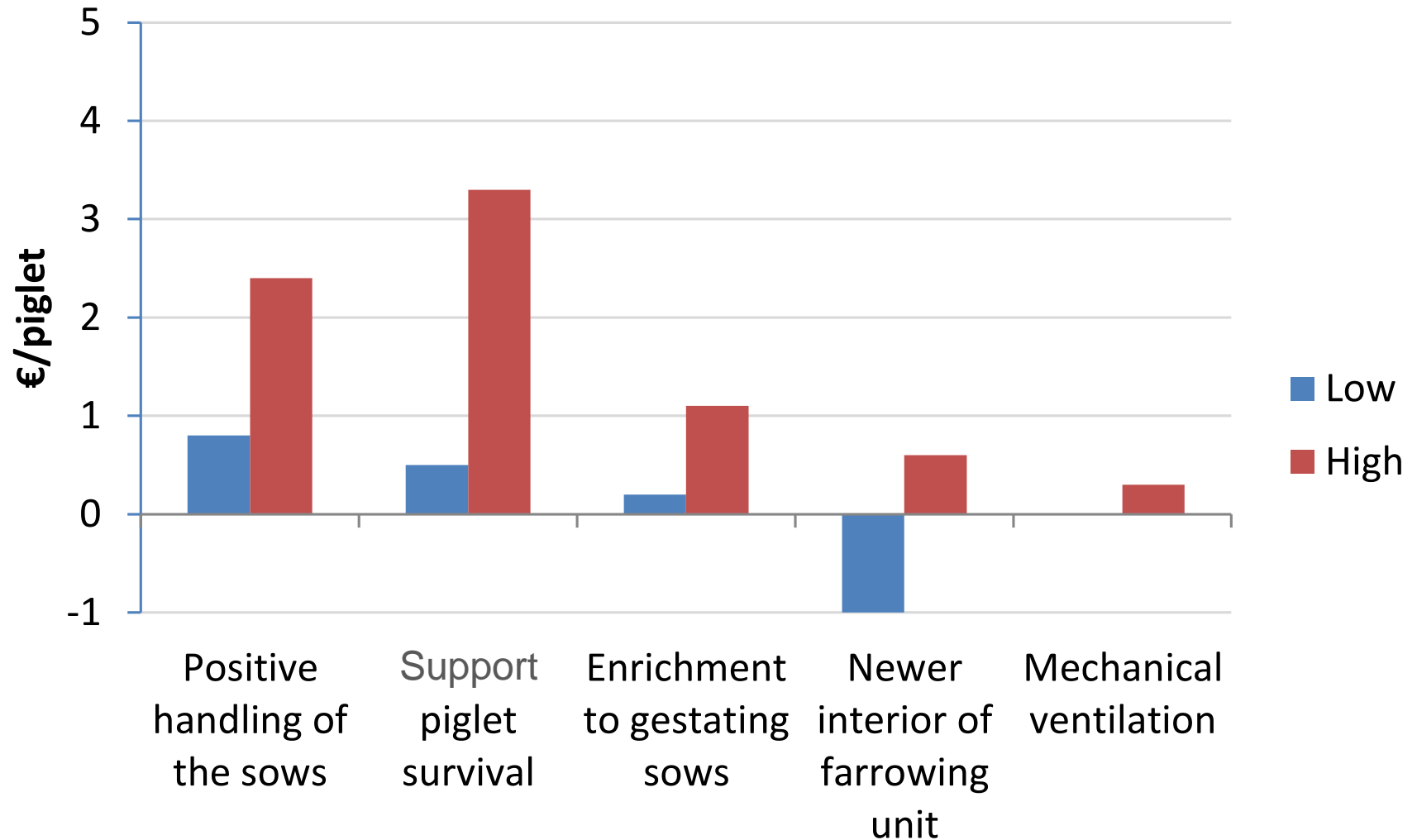


Disease associated with poor hygiene

- Lower growth rate
- Altered feed consumption
- Elevated incidence of respiratory lesions
- Annually, up to 18% less pigmeat per pig space
- Substantial financial losses, up to €15-23 per pig, depending on the scenario, which reduce farm income
- Disease costs correspond to 3-5% of consumer price



Net benefits of selected interventions in piglet production



Interventions in broilers

Bio-economic modelling

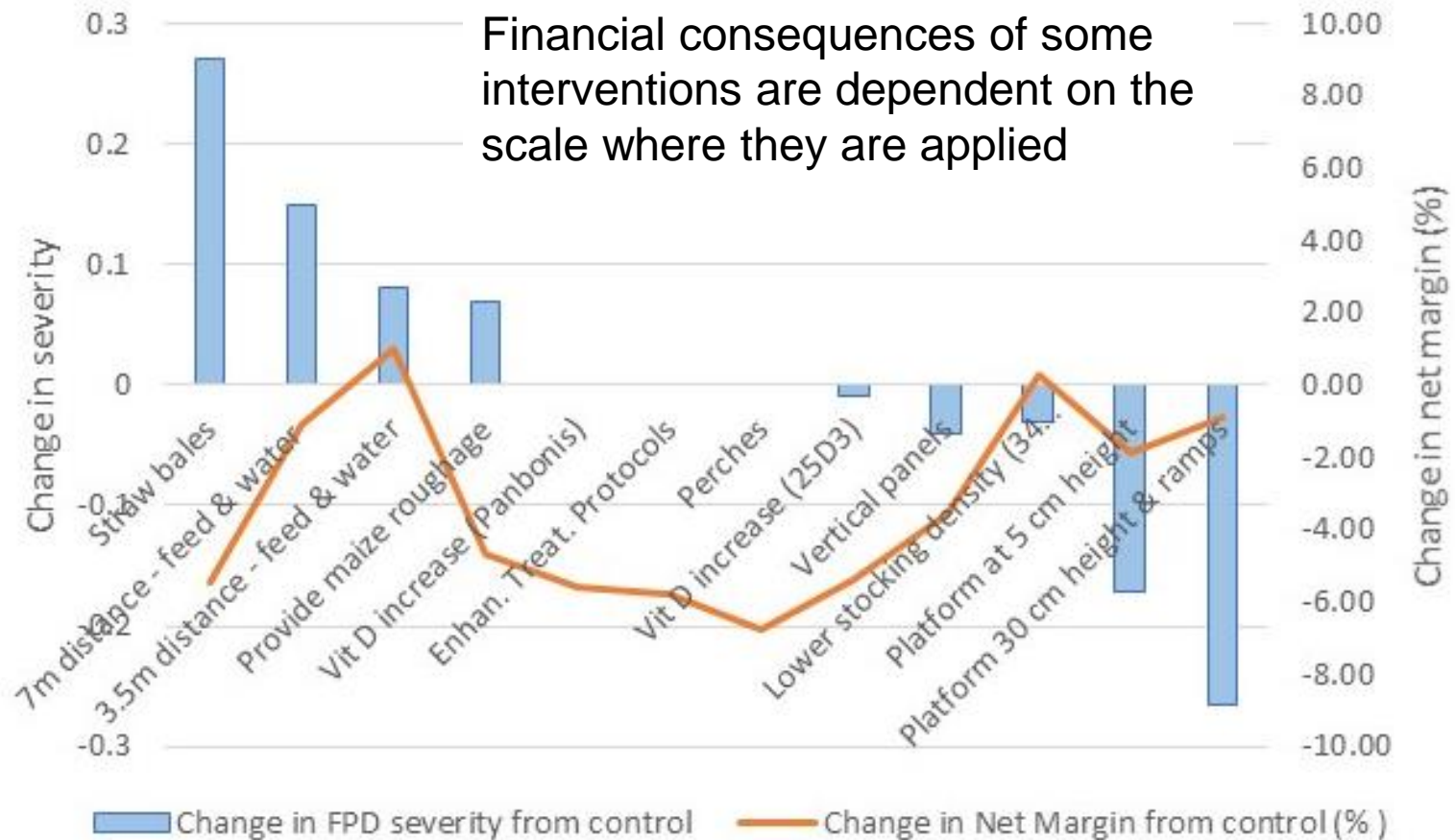
- Constructed a computer-based optimisation model to explore the economic rationale for adoption of health-improving interventions
 - Explored in the project (intervention trials)
 - Other recent trials
 - The scientific literature
- We focussed on trials with data on common leg disorders (FPD)
- Other interventions available in literature – not included
 - Don't provide productivity data (and/or)
 - Don't provide data on FPD

Types of interventions found

- Nutritional supplement (Vitamin D)
- Increased bird movement
- Physical separation from floor litter
- Better data on house environmental conditions (to vet & producer)
- 12 different interventions in total

Impact of treatments on FPD score and net margin

Control: 18.78 € cents per kg or €4543 per farm (10000 birds)

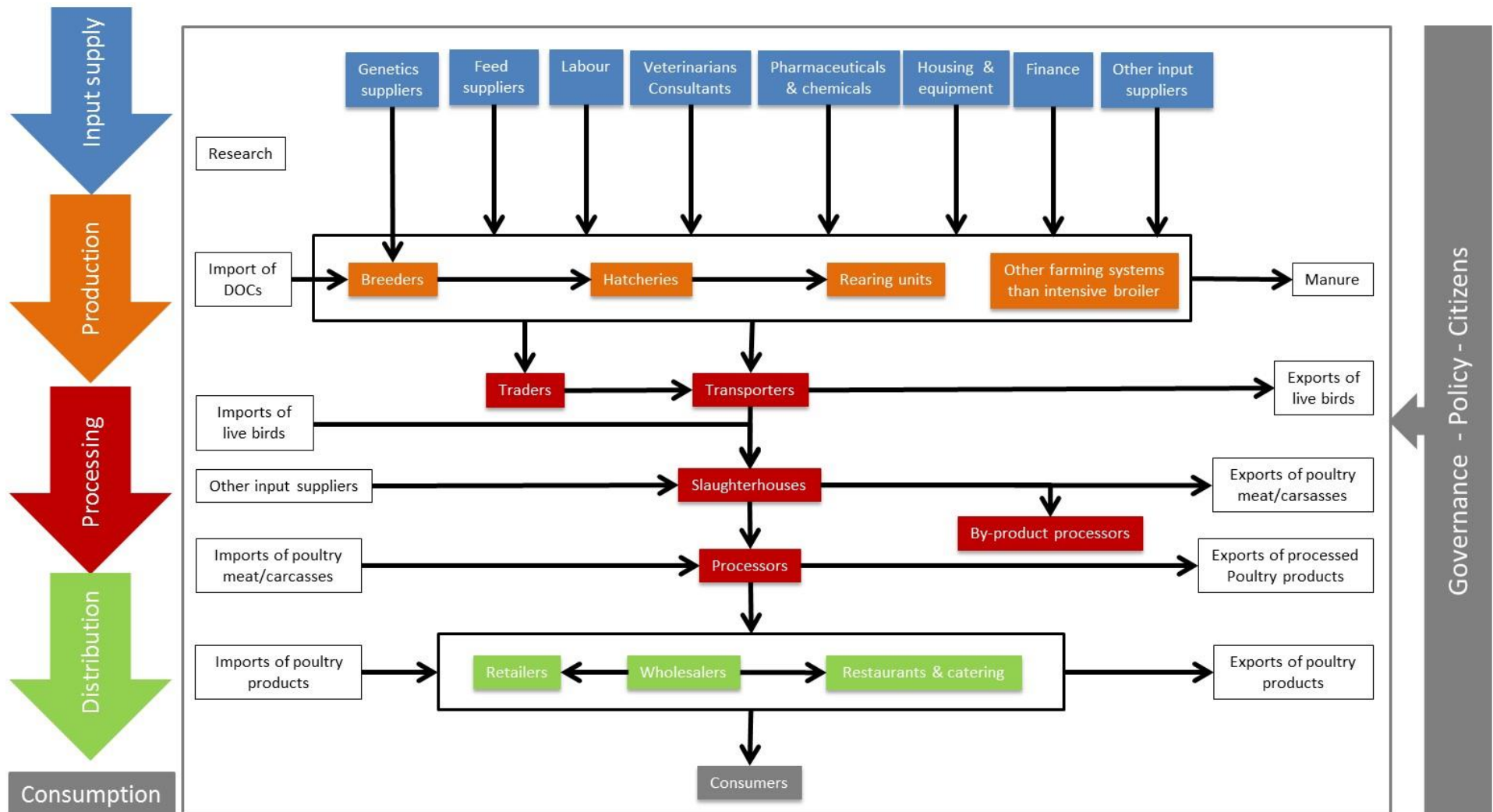


Value chain analysis

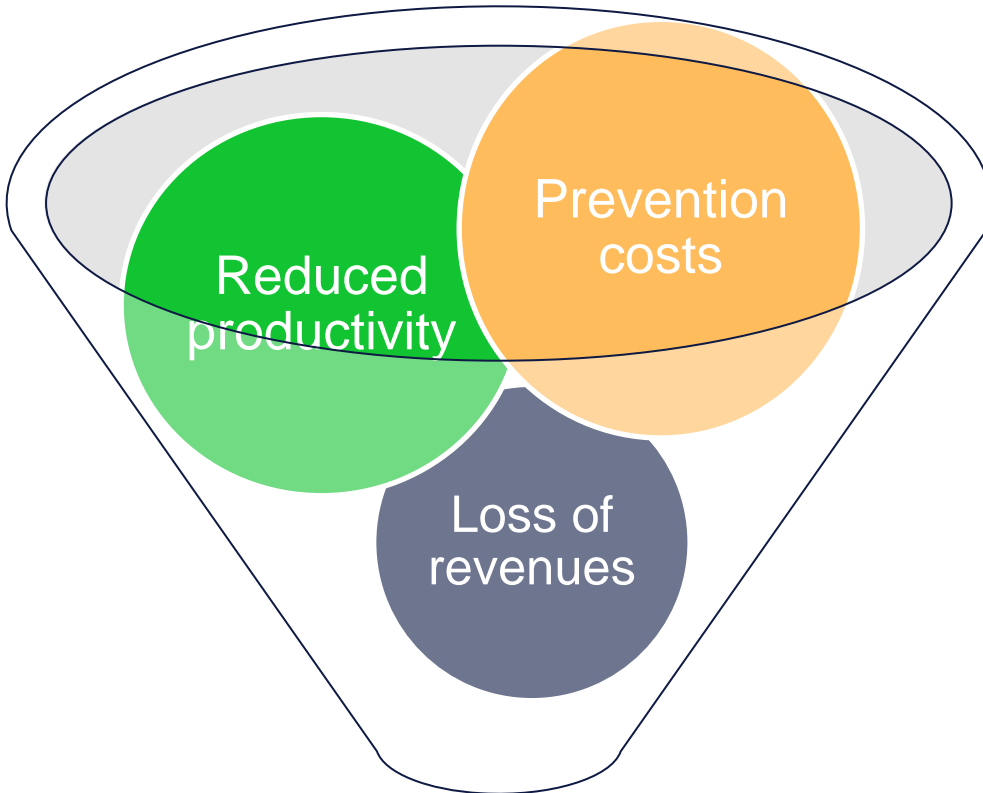
Several interventions were addressed

- Improved hygiene in pig fattening
- Enhanced care and handling of sows and piglets
- Increased distance between broiler feeders and drinkers
- Finland and the UK were used as examples to put these into perspective
- Value chains were characterised
- Potential impact to farms, consumers and the sector were quantified

Diagram representing a broiler value chain

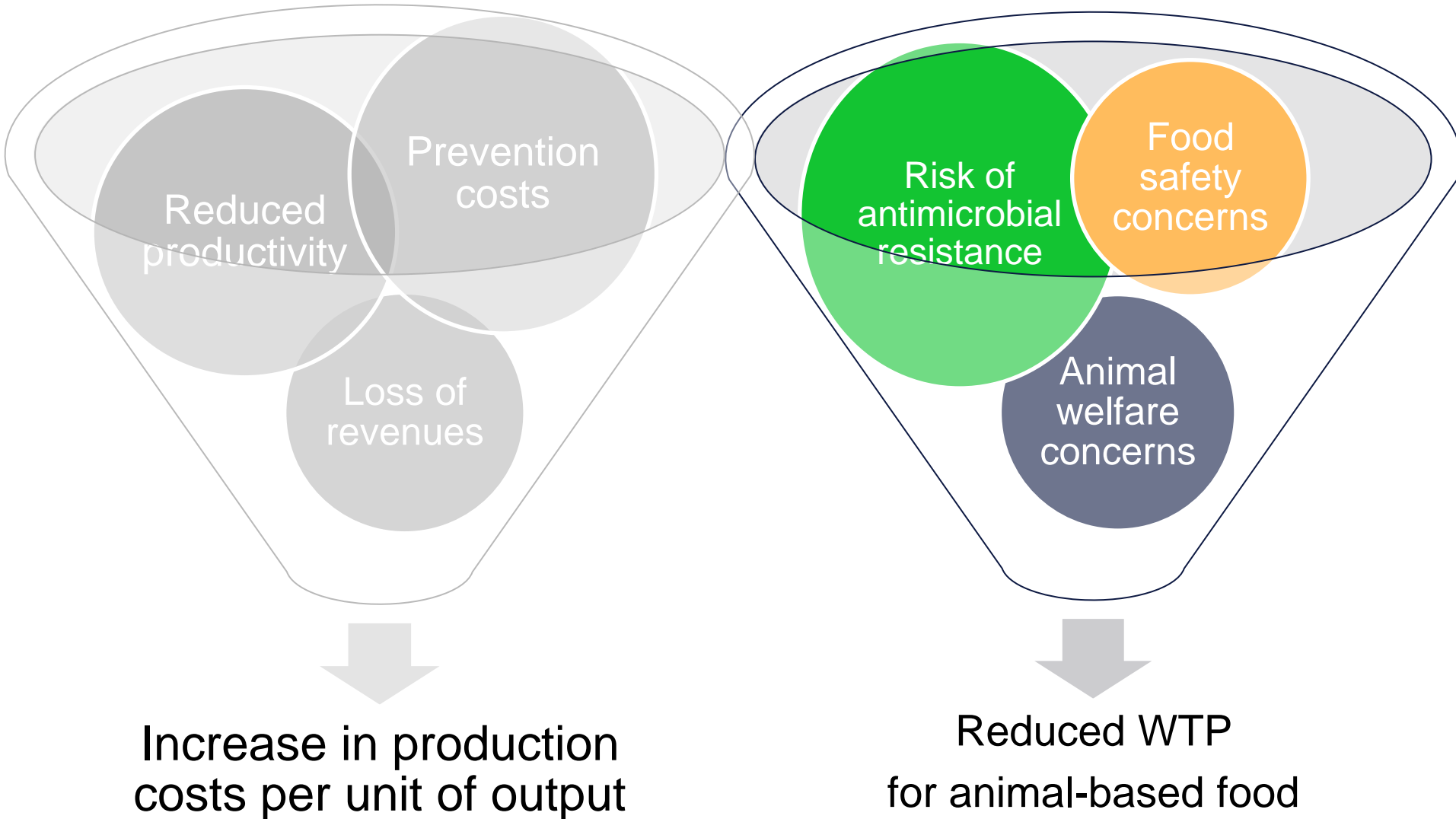


Risk of production disease can influence food price and supply



Increase in production costs per unit of output

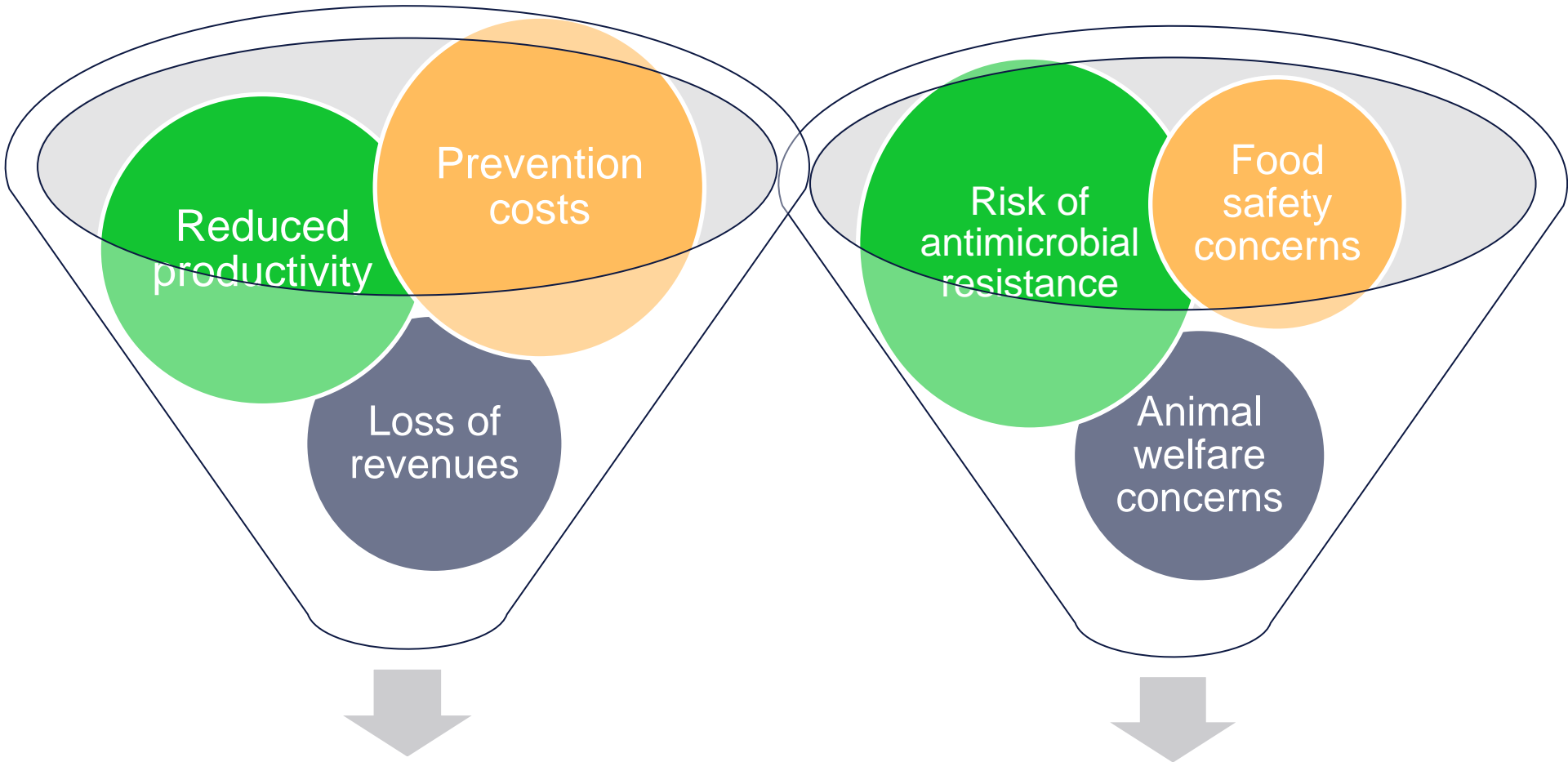
Risk of production disease can influence food price and demand



Increase in production costs per unit of output

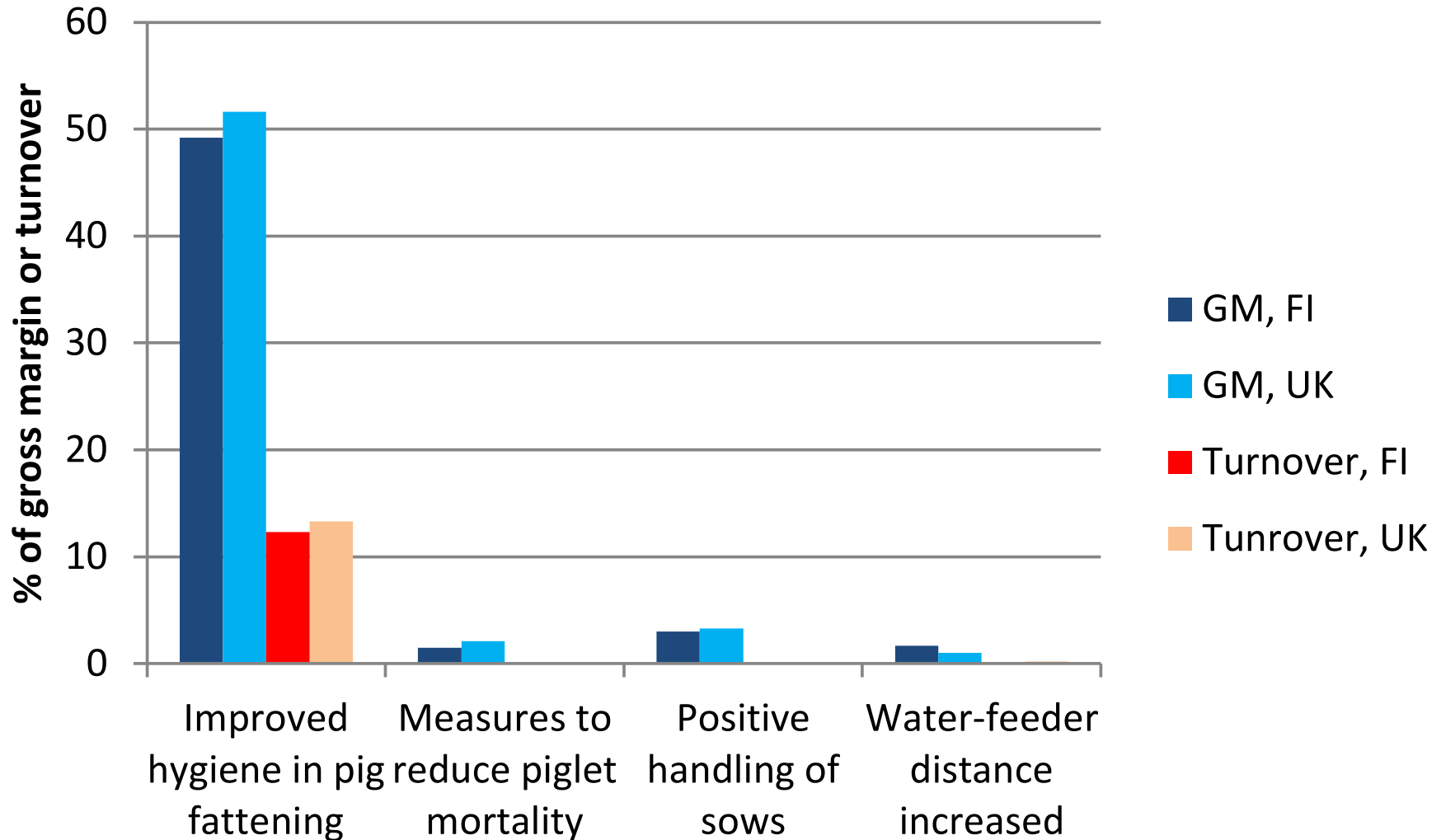
Reduced WTP for animal-based food

Risk of production disease can influence food price, demand and supply



Influences on demand for and prices of pig and poultry products

Estimated farm-level impacts of adoption % gross margin and % turnover



Interventions can have on business impacts

- Breeding companies: Market for more robust animals, getting the best performance from their products
- Veterinarians: Selling more advice, testing and systematic visits, less treatments
- Pharmaceutical companies: Market holistic health care protocols
- Farm workers: more/less work, better job satisfaction
- Housing and equipment suppliers: Develop new products
- Finance: reduced credit risk
- Logistics and slaughtering: Higher quality of products, potential for labelled products, potential for more production
- Retailers: Potential for reduced input price, wider choice of products

Three principal economic reasons why an intervention can be adopted

- It reduces production costs per unit of output leading to economic gains
- It increases demand for the product because it contributes valuable characteristics which are preferred by the consumers
- Policy measures or coordinated actions provide additional incentives which encourage farmers to adopt the measure

Concluding remarks

- Good hygiene, robust animals and their positive handling and good management are examples of interventions which can provide efficiency gains
- Interventions are *not* economically or societally preferred *per se*, because their financial and social viability is dependent on the case
- Both pig and poultry systems tend to be vertically integrated, this provides opportunities to adopt interventions which look at animal health from the system perspective.
- Evidence-based policy is needed to support public policies and business decision-making in these sectors.
- Distribution of value along the supply chain also matters
- Effective control of production diseases can benefit the consumer!

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[@fp7_PROHEALTH](https://twitter.com/fp7_PROHEALTH) is expected to increase competitiveness and resilience of EU pig and poultry systems. From this perspective it is important that strategies to control production diseases are economically viable and societally acceptable [@bethy_clark](https://twitter.com/bethy_clark) [@LukeFinlandInt](https://twitter.com/LukeFinlandInt)

