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Make a difference to agriculture internationally using science & technology

The importance (or otherwise) of government investment in genetic improvement programs

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The goal

- Survey people from across industries and species
  - Breeding co., evaluation providers, scientific institutions, industry…
  - Cattle, sheep, aqua, poultry…

- Gain understanding of:
  - Market failure causes and adoption challenges
  - The value (or not) of government investment in genetic improvement programs

What is market failure?

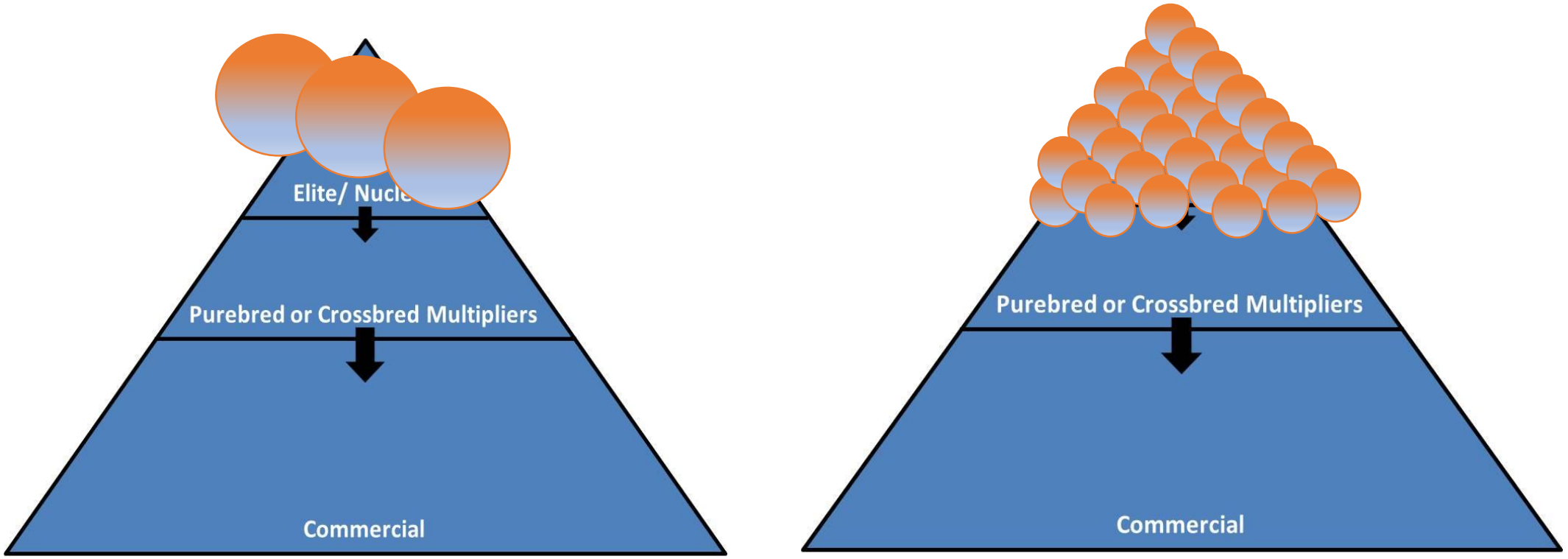
- When the free market fails to efficiently allocate resources
- Animal breeding context:
  - Fail to deliver genetic improvement (trait improvement potential) to the supply chain
- The reason that governments or institutions intervene in a particular market
  - Common in ruminant genetic improvement programs

Causes of market failure

Diversity of breeding objective

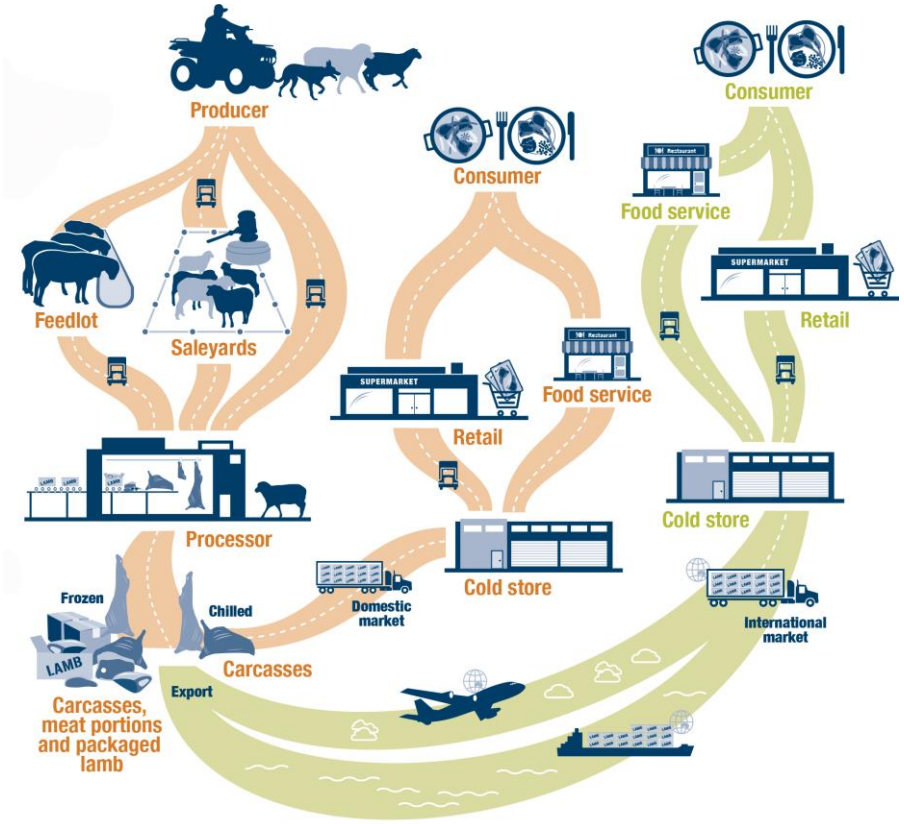
- Challenge to generate genetic improvement for all products and farming environments – improvement may not be seen (GxE)

Number/ diversity of breeders



- Fragmented and small scale (under)investment - Difficult to create collective goal

Lack of supply chain integration



- Value not shared across the supply chain & lack of price signals – particularly if lots of animal owners

Reproductive rate and dissemination

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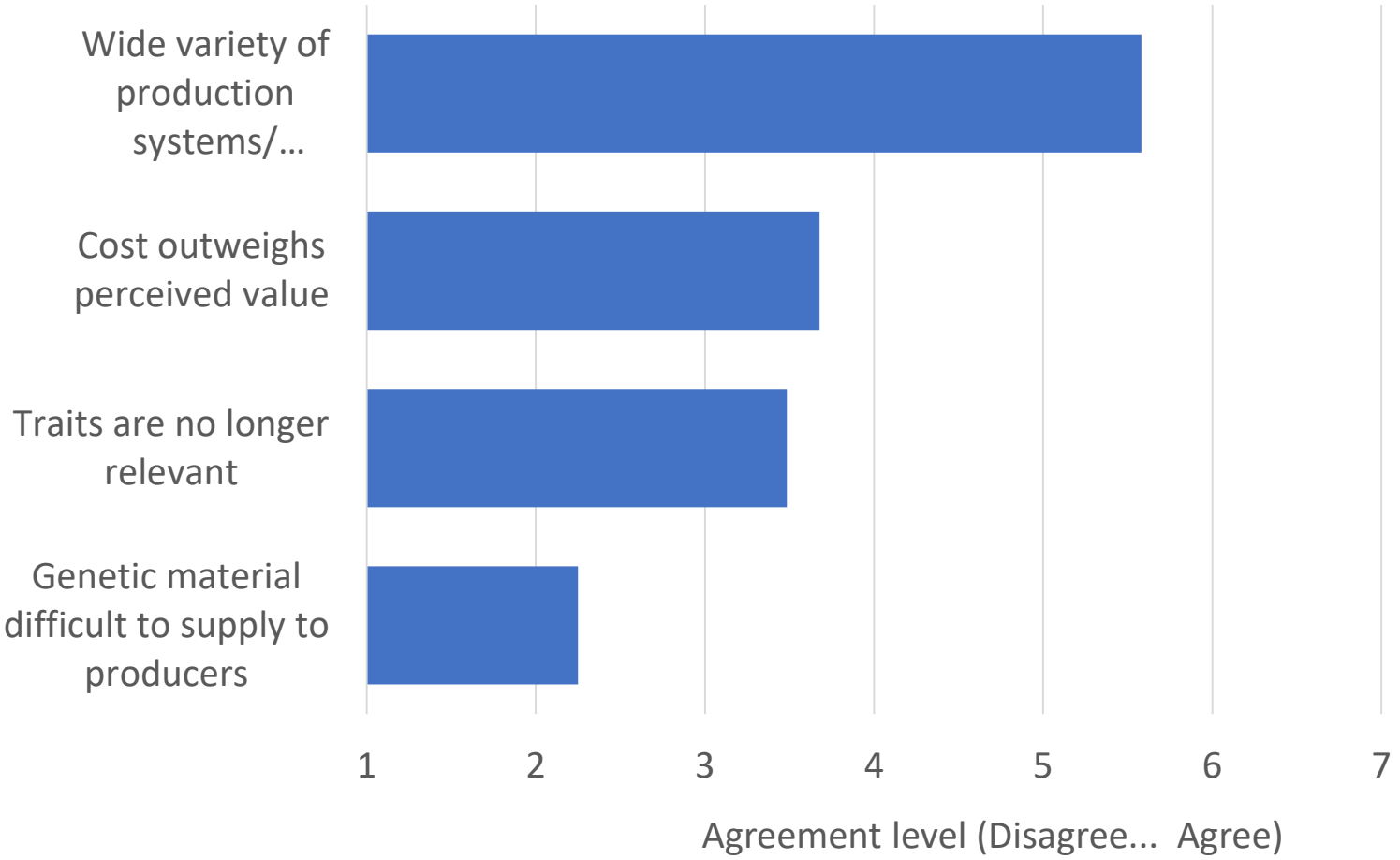
Comparing species

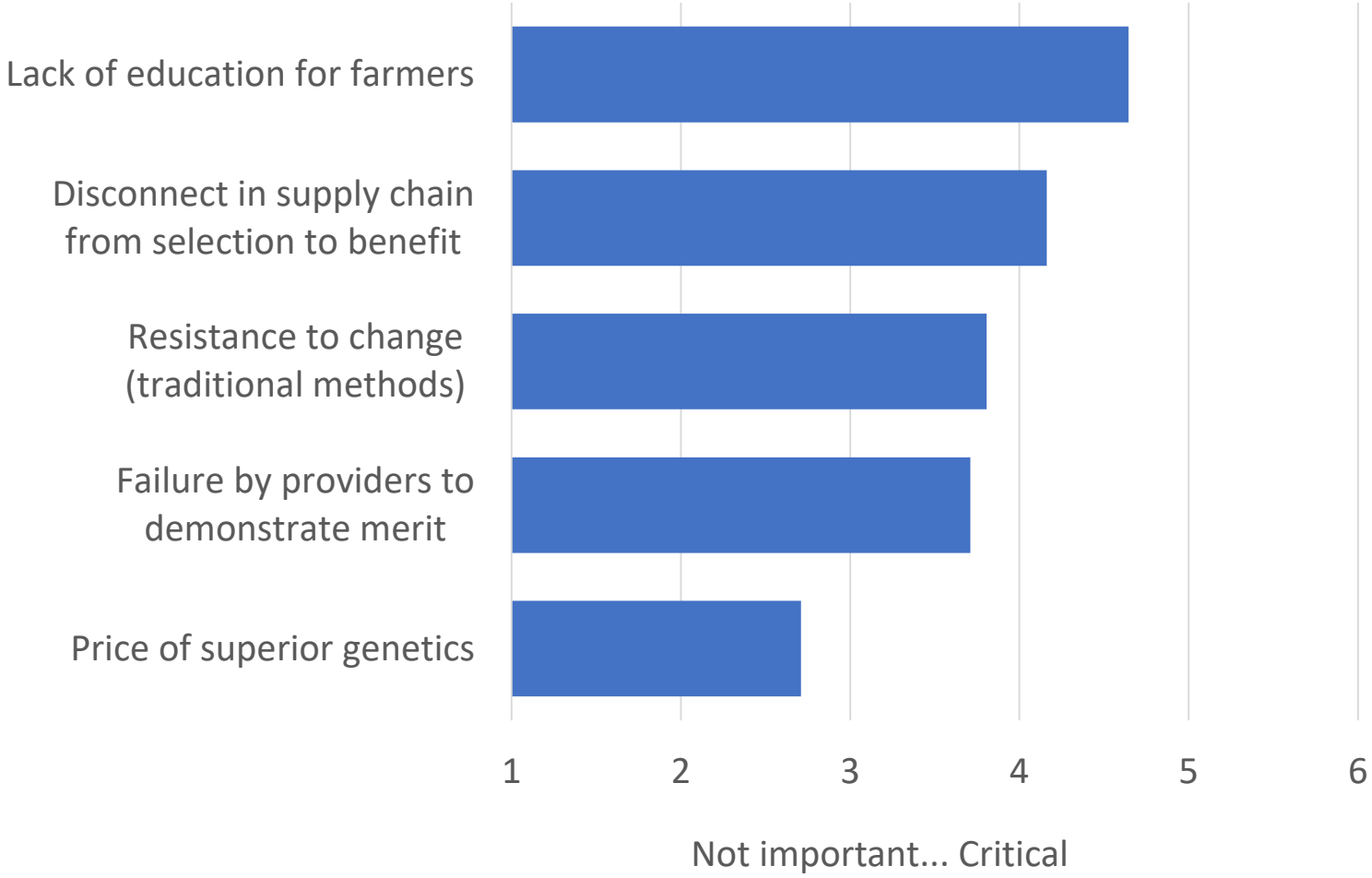
Livestock species	Genetic gain per year[1]	Uniformity of breeding objectives	Level of vertical integration	Number of breeders	Reproductive rate	Effectiveness of dissemination
Beef Cattle	low/ moderate	low	low/ moderate	high	low	low/ moderate
Dairy Cattle	high	high	high	moderate	low	high
Pigs	very high	very high	very high	low	high	very high

Survey results – market failure drivers



- Agree: Wide variety of productions systems
  - Lots of dairy respondents
- Not price
- Not that traits are irrelevant
- Not supply genetic material
  - Makes sense due to AI

Survey results – uptake issues



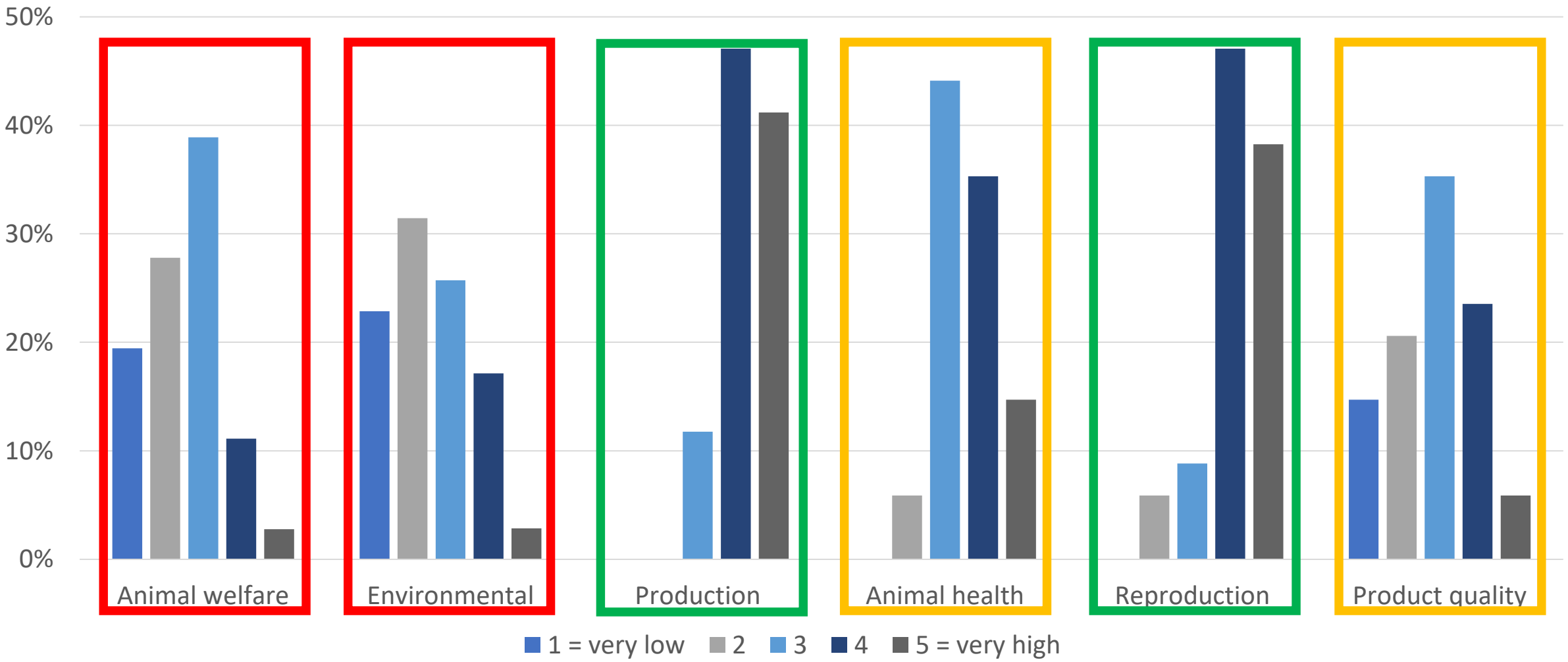
- Important: Farmer education/ knowledge
- Important: Disconnect in supply chain
- Price (again) not a factor
- No critical factors

When is govt needed/ what for?

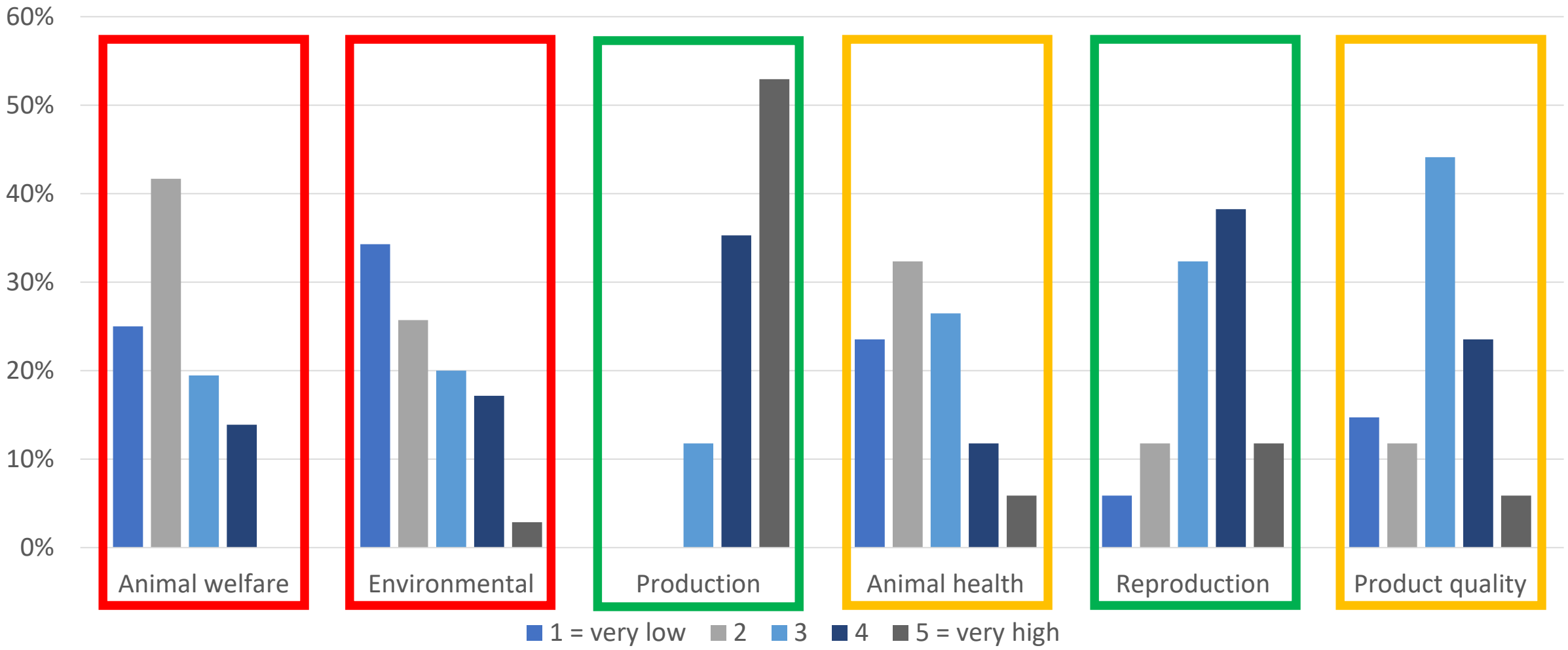
- For each trait group asked:
  - Economic value today
  - Data quality today
  - Economic value future
  - Potential for government investment to increase realised improvement

- Compare species
  - Most responses are from individuals commenting across species
  - Expect same pattern when get more responses from within each industry

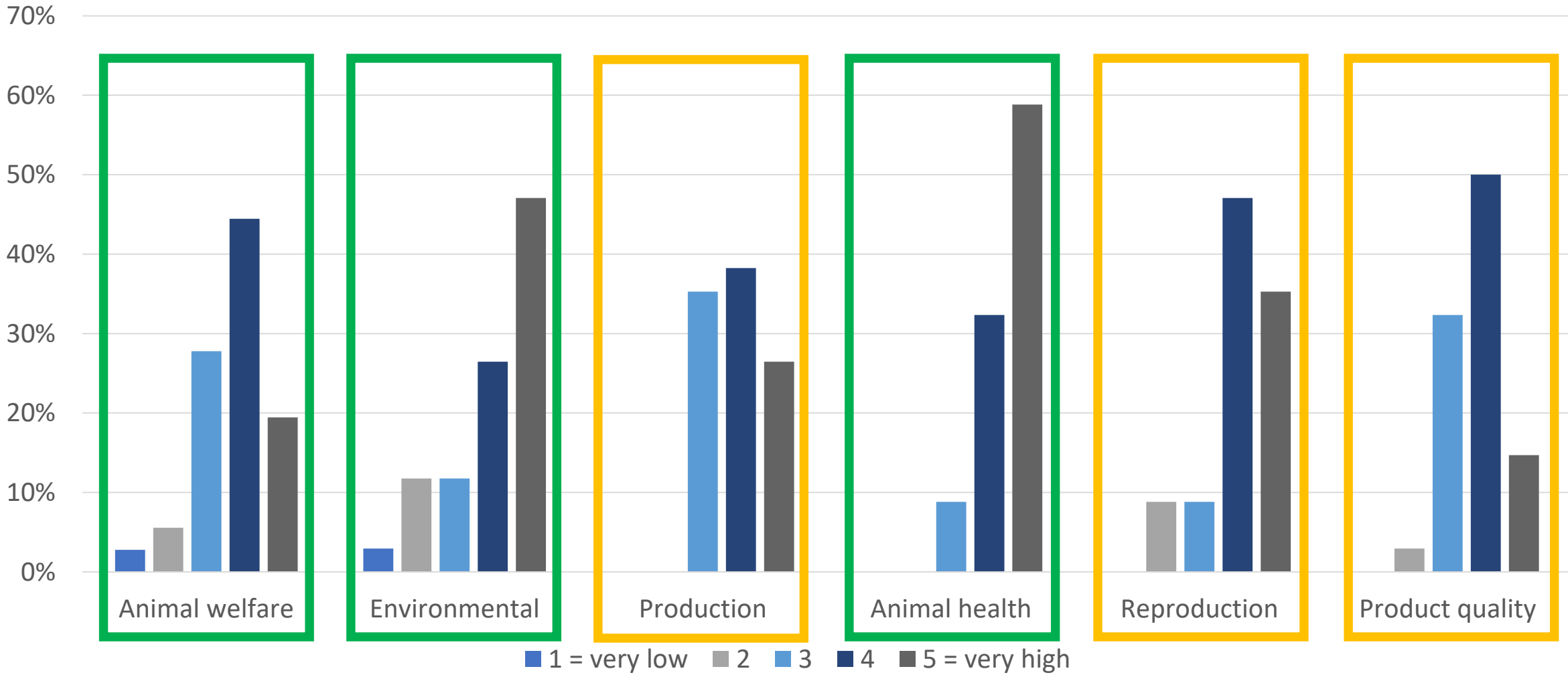
Economic value today



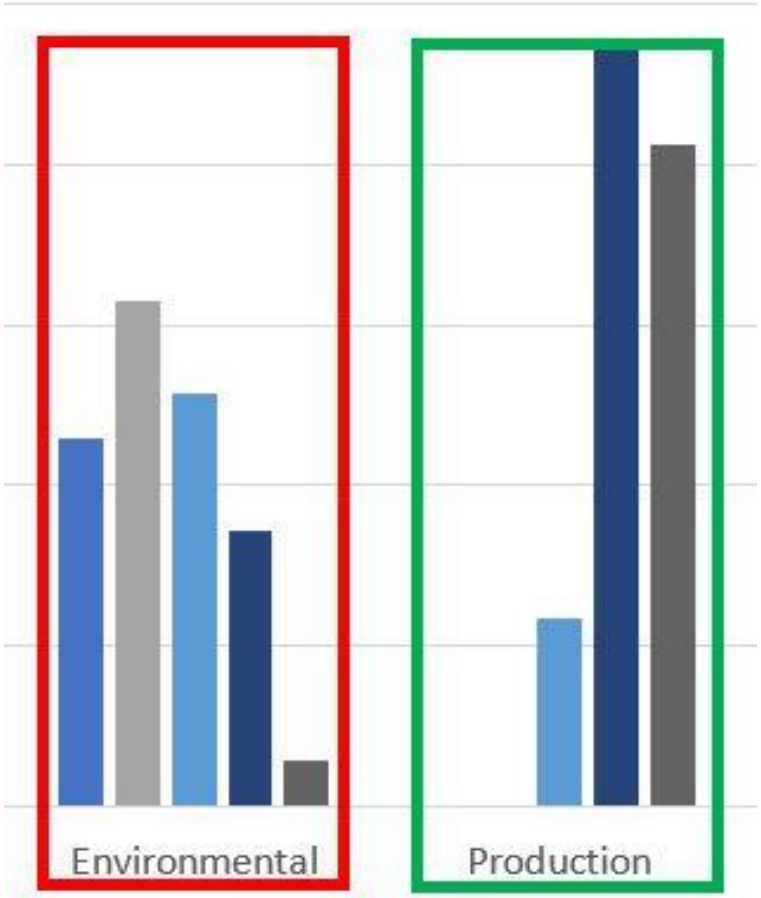
Data quality today



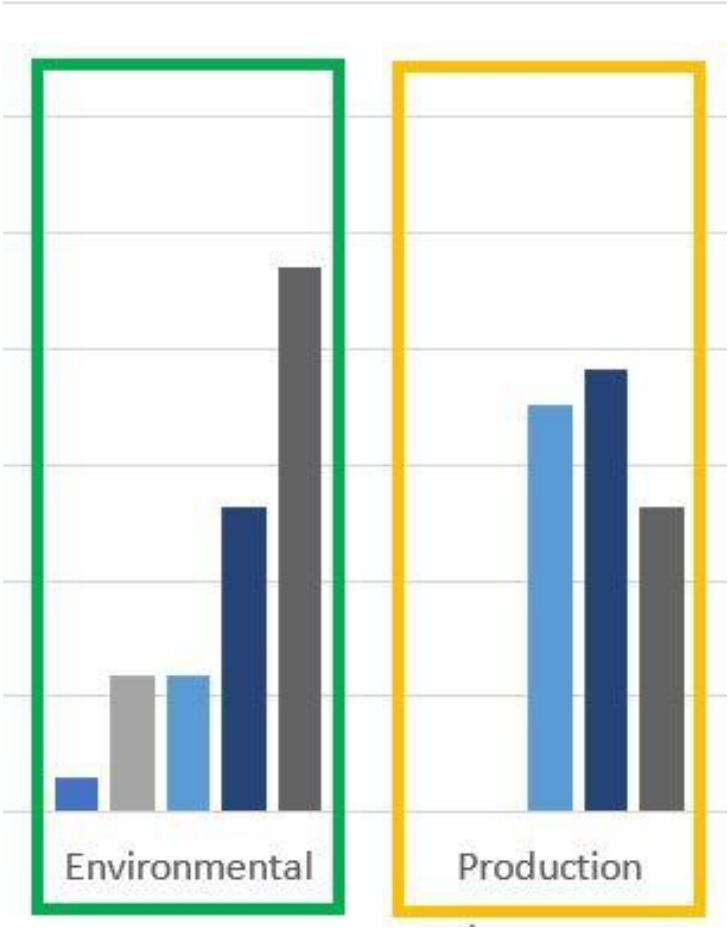
Economic value 5-10 years



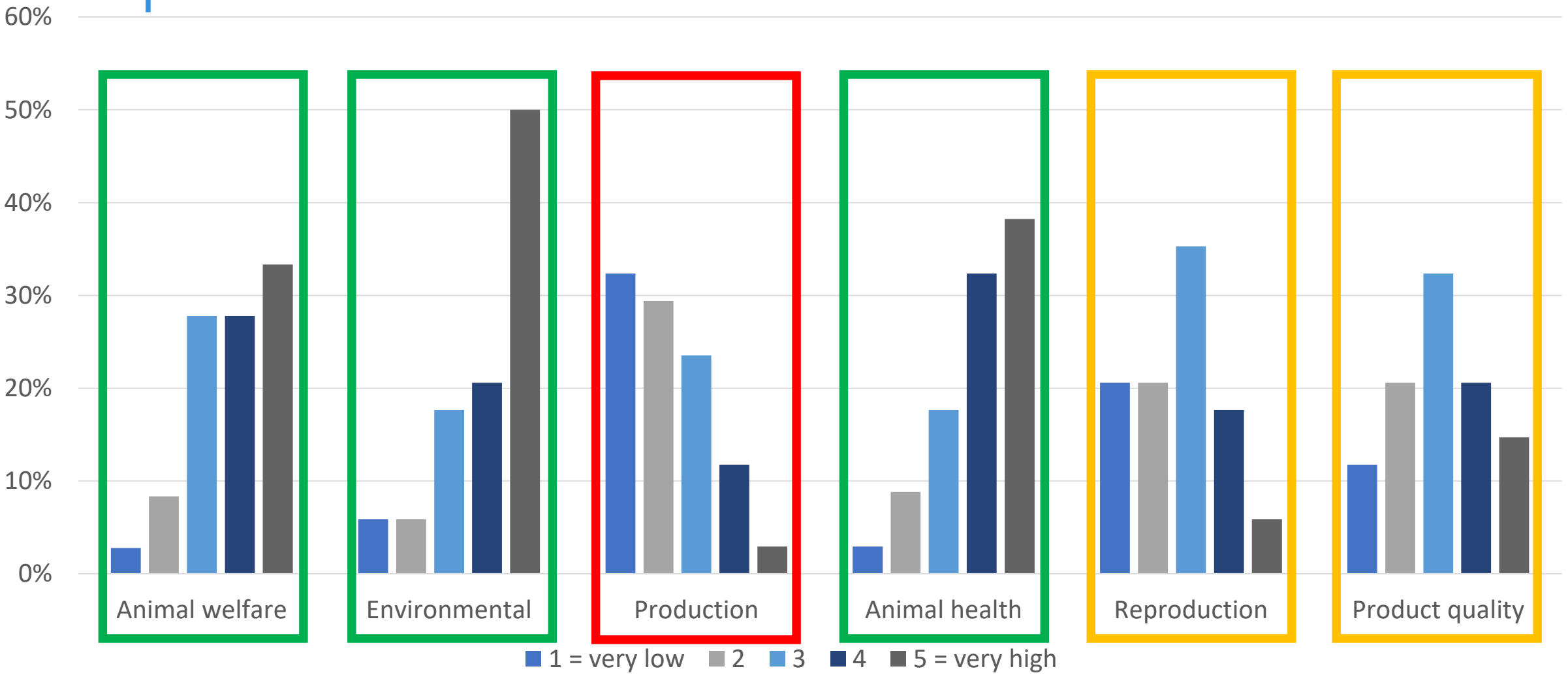
EV today



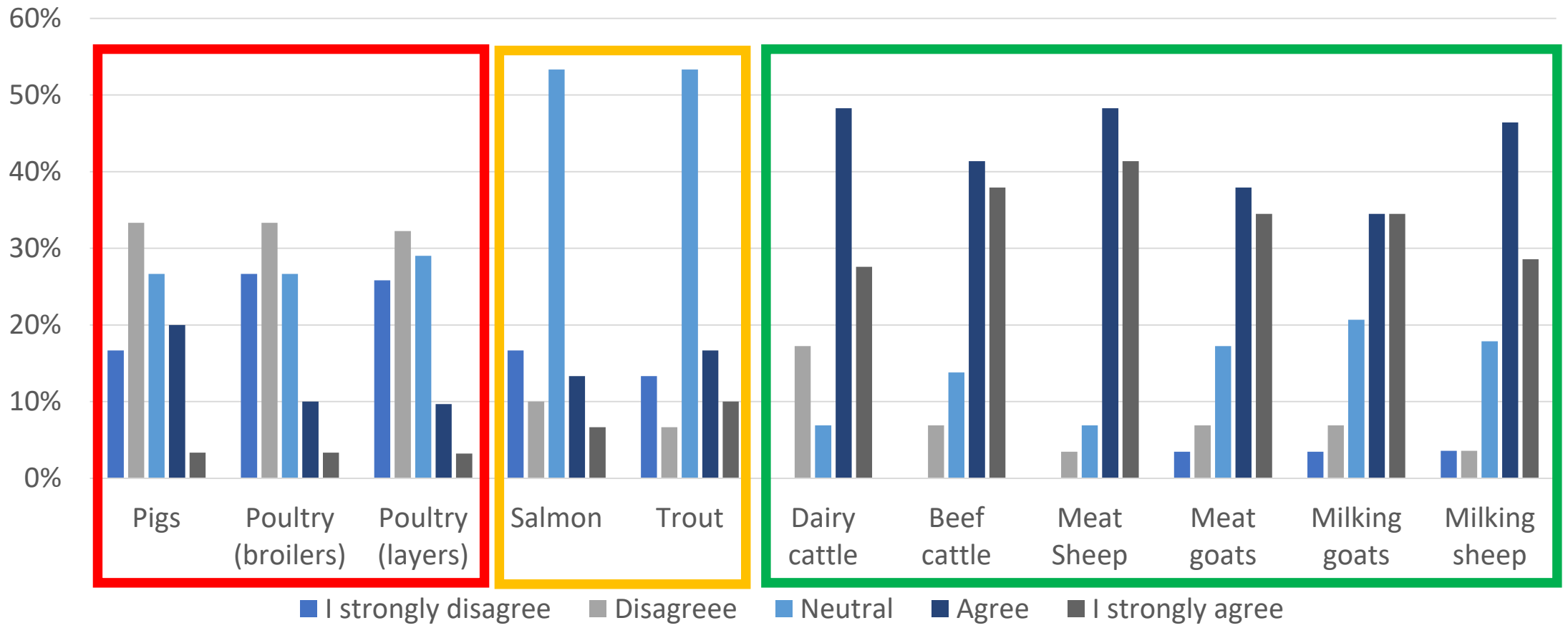
EV 5-10 years



Potential for govt investment to have impact



Potential for govt investment to have impact – by species



A good scheme…

- Be fit for purpose, economically efficient, and not crowd out or distort private activity
- Great care and continual diligence, transparency, engagement are needed to manage function
- Must have stakeholders at the table

From here…

- A new iteration of the survey
- Wider audience
- A closer look differences between industries and species
  - For market failure drivers and adoption issues
- To understand the circumstances under which government investment could/should be made
  - What's the best approach for effective investment
- Peer-reviewed paper

Survey

- ~8 minutes
- Thank you

- https://www.surveymonkey.co.uk/r/AbacausBioSurvey

Survey

- iPhone
  - Point & wait for notification
- Galaxy
  - Photo & select “options”

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