



Global Burden of Animal Diseases (GBADs)

J. Rushton, M. Bruce, C. Bellet, P Torgerson, A.P.M. Shaw, M. Herrero, T. Marsh, D. Pendell, T. Bernardo, D. Pigott, M. Stone, J. Pinto, S. Mesenhowski, T. Leyland, M. Peyre, K. Watkins, V. Kapur, A. Havelaar, D. Grace, **B. Huntington**, P. Wood and GBADs collaborators

b.huntington@liverpool.ac.uk

Acknowledgements

- FAO – Melba Reantaso
- OIE – Monique Eloit, Matthew Stone, Emily Tagliaro, Stian Johnsen
- Bill and Melinda Gates Foundation – Sam Thevasagayam, Shannon Mesenhowski, Belinda Richardson
- UK's Department of International Development – Alan Tollervey, Tim Leyland
- N8 Agrifood – Katherine Denby
- University of Liverpool – Nigel Cunliffe, Matthew Baylis, Nicola Williams and our research group
- GBADs collaborators

Agenda

- What is the impact of disease in livestock and aquaculture for producers, consumers and the environment?
- The use of economics in animal health
- Why is a systematic approach needed?
- The Global Burden of Animal Diseases
- Closing questions

Importance of livestock and aquaculture

- Societies are dependent on livestock and aquaculture for high quality protein and micronutrients
- The changes in our food system have allowed a significant increase in the number of animals we keep and maintain in farming systems
- And the way these animals are managed has meant a significant increase in the availability of meat and fish in both rich and poor countries
- **However malnutrition continues generating negative externalities that demand societal coordination**



There are billions of poor consumers who have micronutrient and protein deficient diets



Importance of livestock and aquaculture

- A major proportion of the livestock and aquatic species we keep are in large farms under controlled and intensive conditions
 - They are major users of pharmaceuticals
- Yet the majority of the livestock keepers and aquatic farmers have small scale enterprises
- These people are poor and in many situations have poor access to veterinary services and veterinary technologies
- **The inadequate distribution of animal health systems is a market failure which needs societal intervention**



There are hundreds of millions of poor producers who have poor access to animal health services and technologies



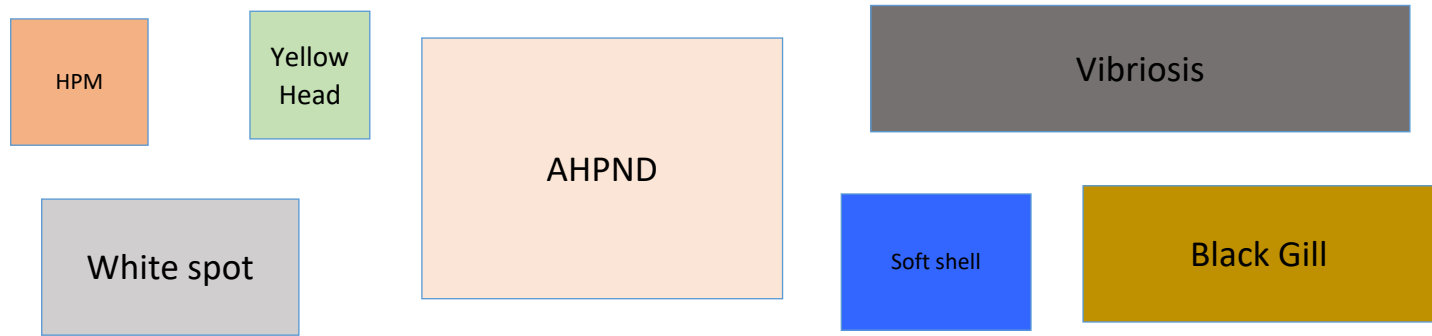
Livestock and aquaculture dominate resource use

- Livestock and aquaculture have become dominant:
 - Land use – it is estimated that two thirds of land is dedicated to livestock (Wirsenius et al, 2010)
 - Water use – agriculture takes between 70% and 90% of the freshwater (Comprehensive Assessment of Water Management in Agriculture, 2007) and a third is used on livestock (Gerben-Leenes et al, 2013)
 - Environmental emissions with livestock being a major source of methane and indirectly CO2 emissions and local pollution (FAO, 2006)
- **Land, water and air resources are largely public goods – they need to be managed and controlled with societal oversight**

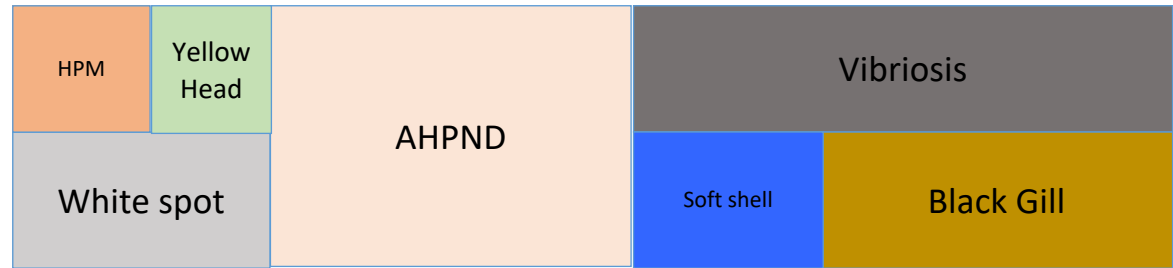
Our livestock keepers, consumers and the environment need:

- **Investment plans** which ensure there are adequate animal health systems
- **Allocation of resources** to problems that most affect their health and wellbeing
- **Evaluation** of animal health investments to ensure they are delivering on societal outcomes

How are we currently using economics in animal health?



Developed countries impact exaggerated as individual studies combine to suggest a loss that is greater than the reality



Actual Size of the Opportunity Cost of the Health Loss
No attribution

Illustrative

The use of economics in animal health

- Economics is used in animal health to demonstrate the dramatic impact of specific diseases, and to show that strategies to manage and possibly eradicate disease are economically profitable
- Therefore the emphasis of the current use of economics is for **advocacy** around individual diseases and their control
- The focus on individual diseases provides us with only a **partial assessment of the burden of animal diseases**
- Such partial analysis **leaves us vulnerable** because it is not sufficient to support business cases for effective investment in animal health

Juanita Pérez

- The problems of a woman livestock keeper living on the *margins*



Juanita has animal health problems and we assumed we knew what they were (we didn't)

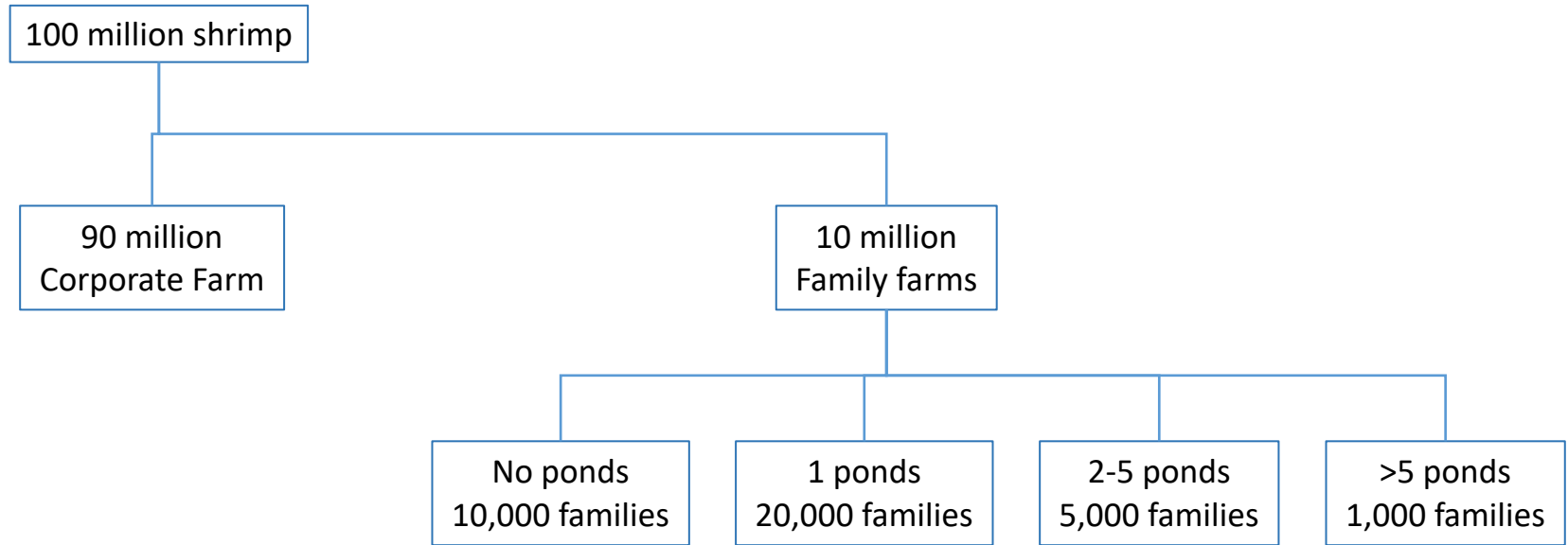
She was offered advice on foot-and-mouth disease

Our current use of economics in animal health leaves us:

- **Weak** in developing strong evidence based investment plans for animal health systems
- **Poor** in allocating resources to key social, economic and environmental problems
- **Limited** in evaluating the impact of our ongoing animal health investments

How we will improve the use of economics in animal health:
- *Global Burden of Animal Diseases*

Building blocks - *From population numbers to people- how would this translate to aquaculture?*

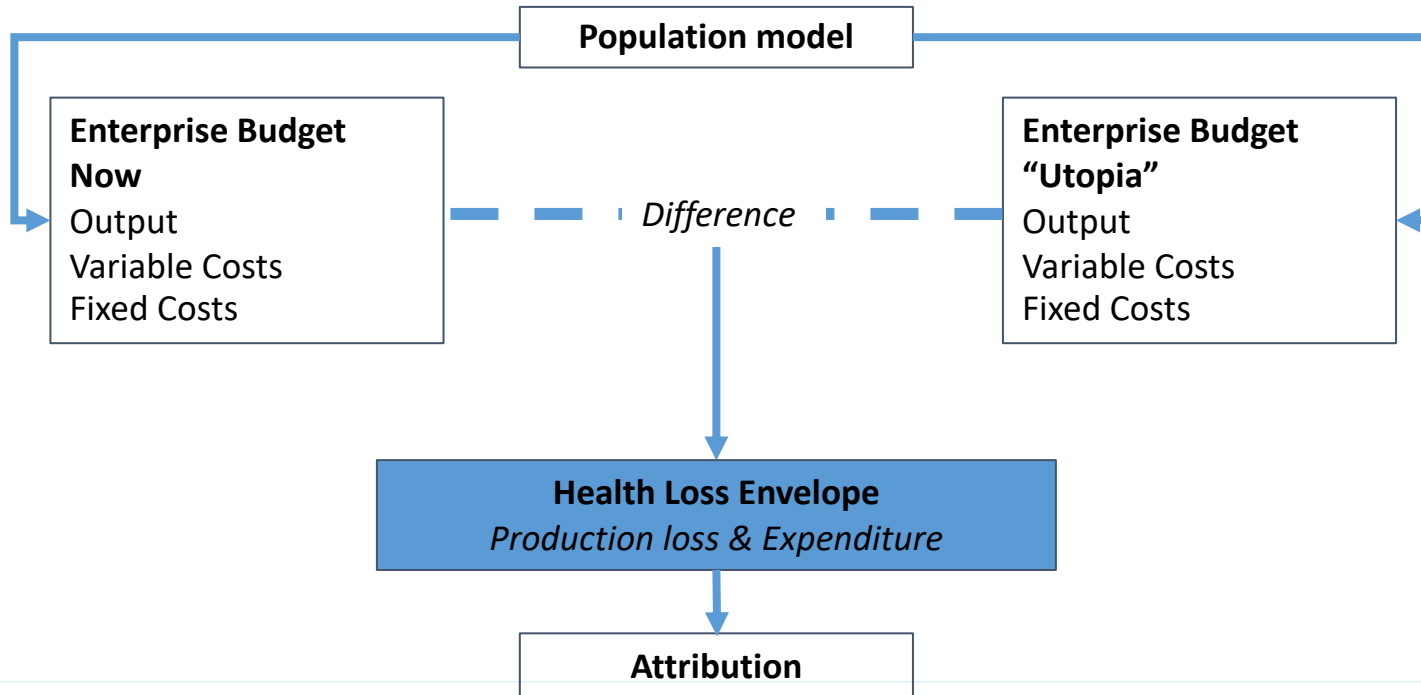


Illustrative

<https://animalhealthmetrics.org>

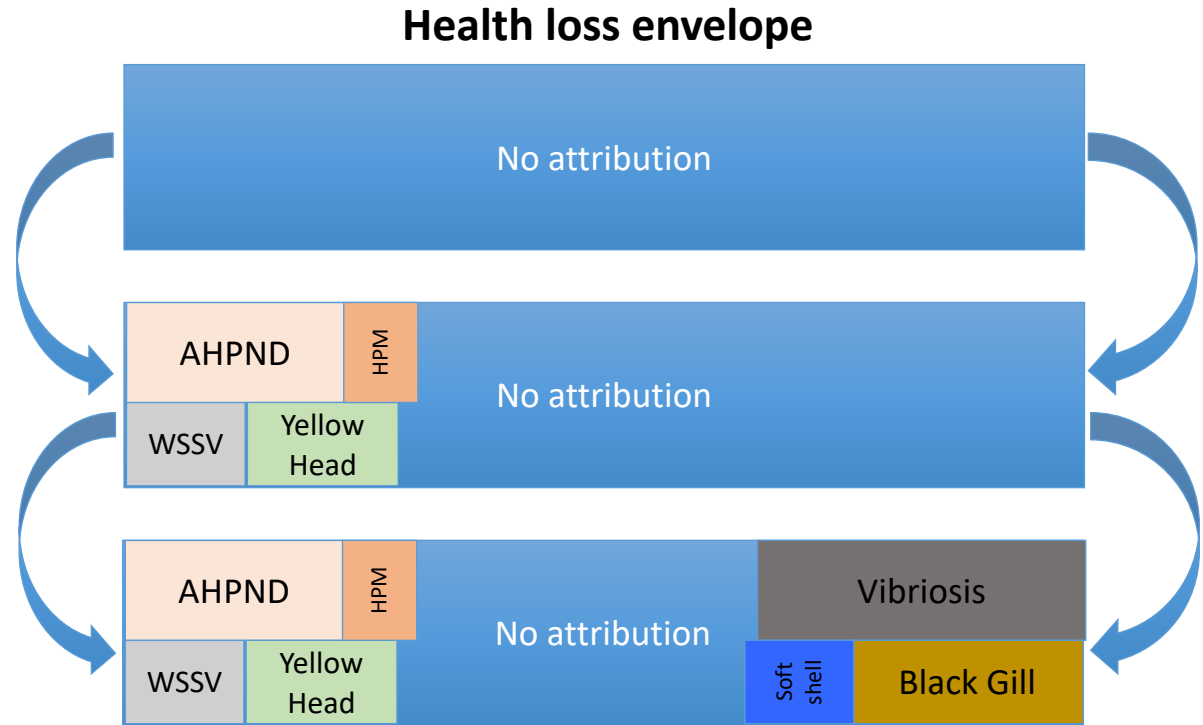
GBADs

Building blocks – animal health loss envelope

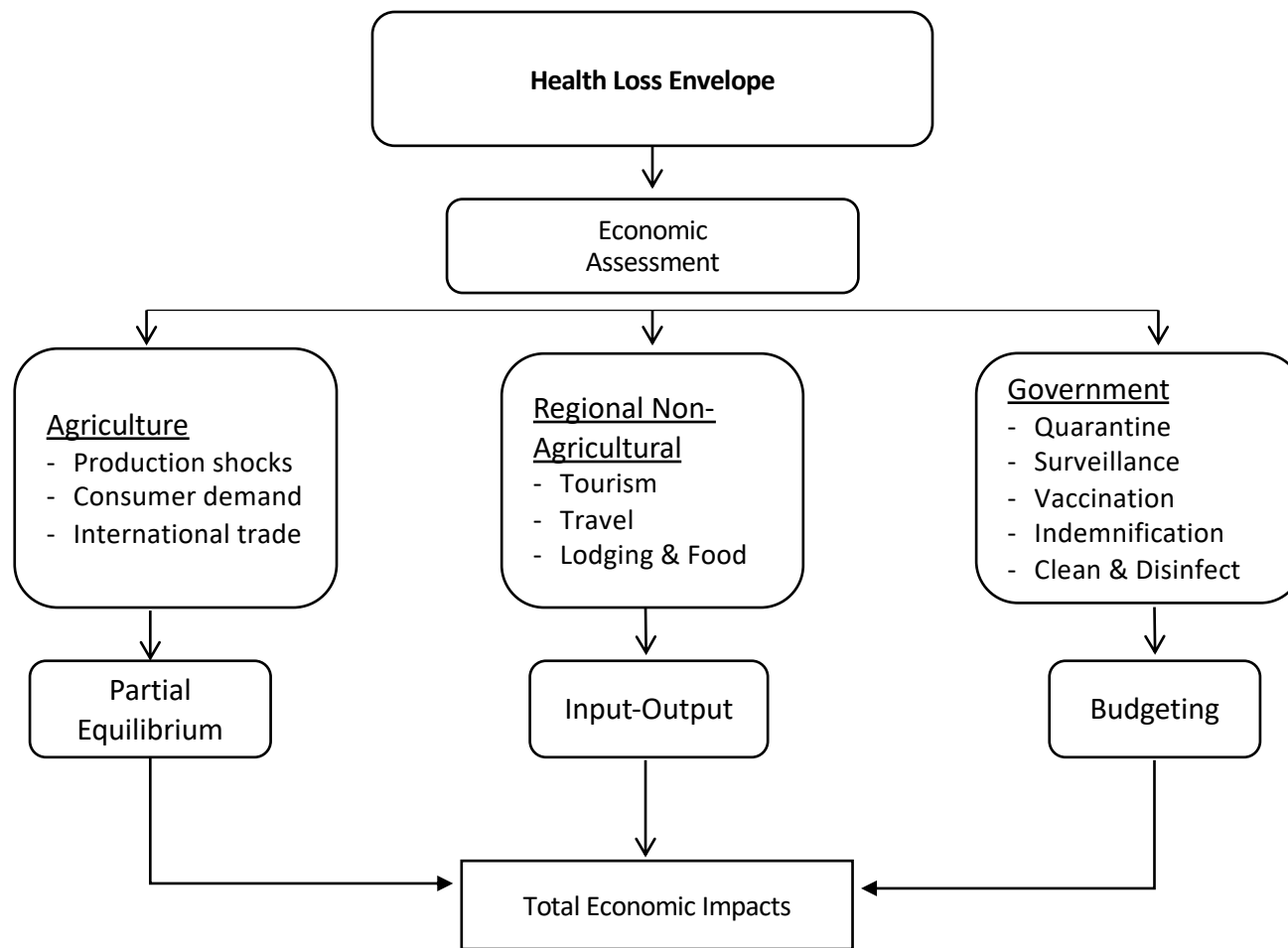


Building block - attribution

Shrimp system

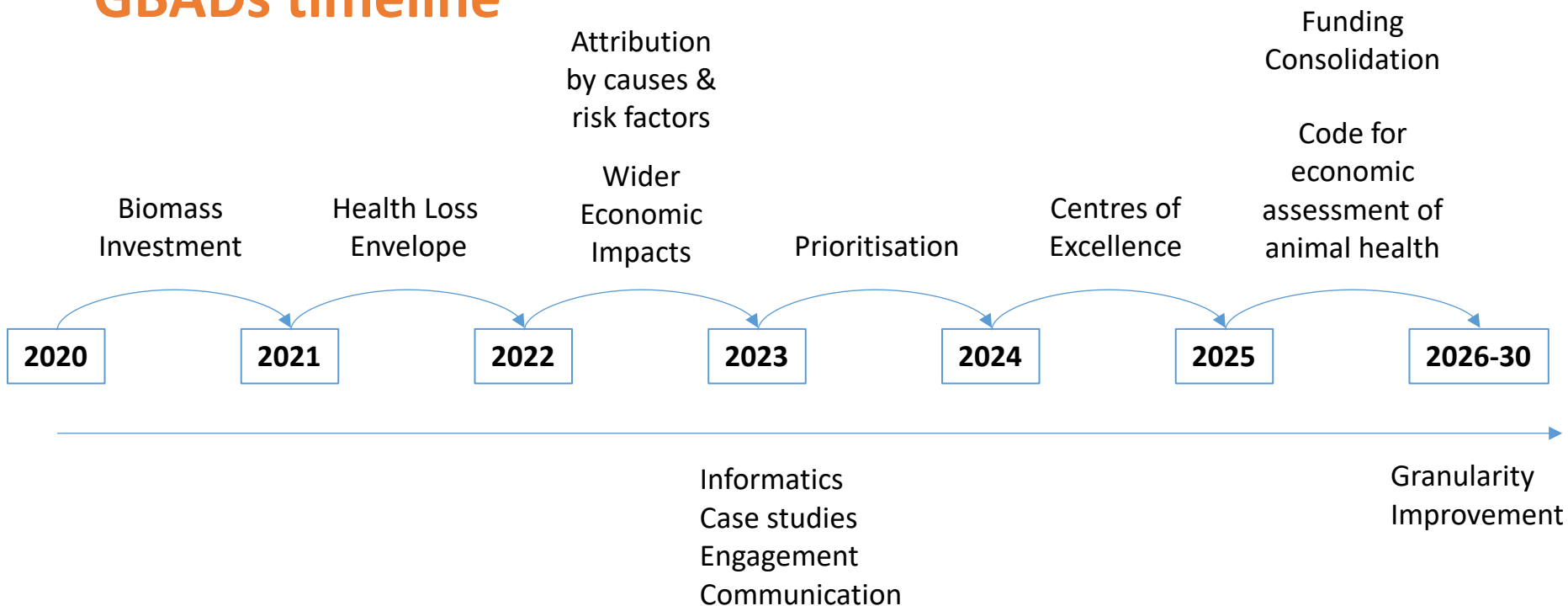


Illustrative



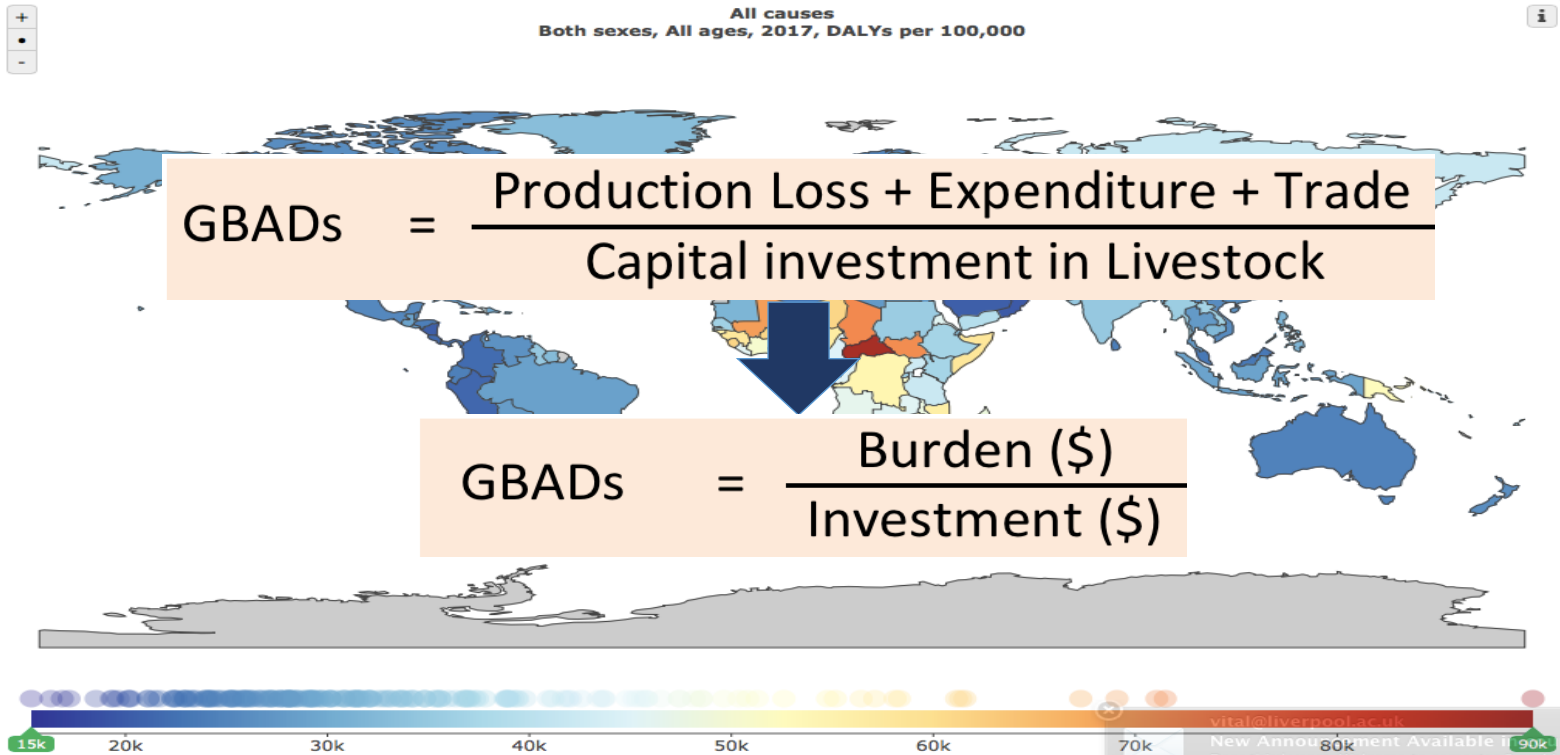
Legacy

GBADs timeline

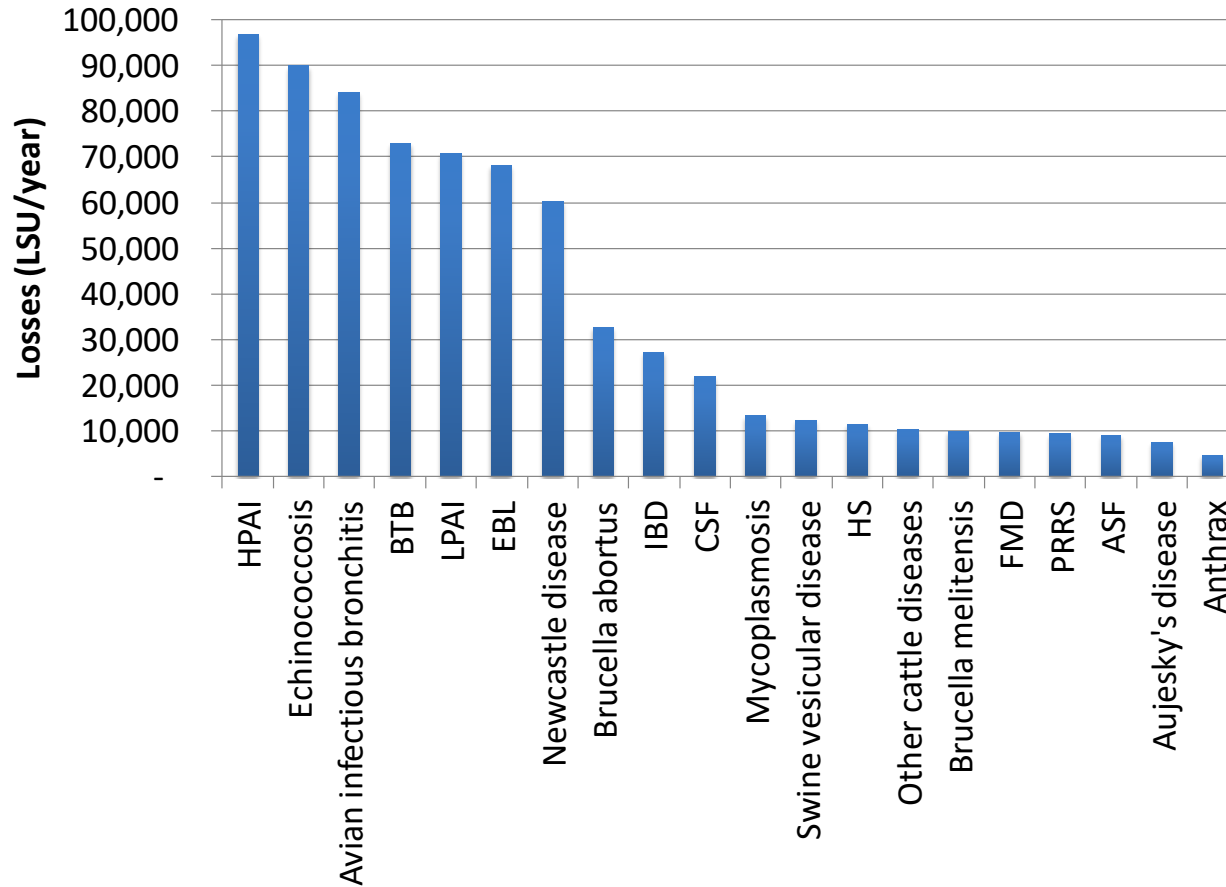


Metrics to compare regions and sectors

- learning lessons from GBD

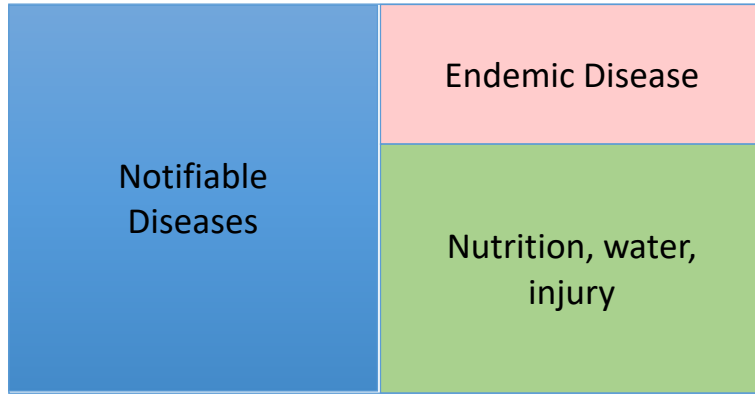


From crude ad hoc loss estimates

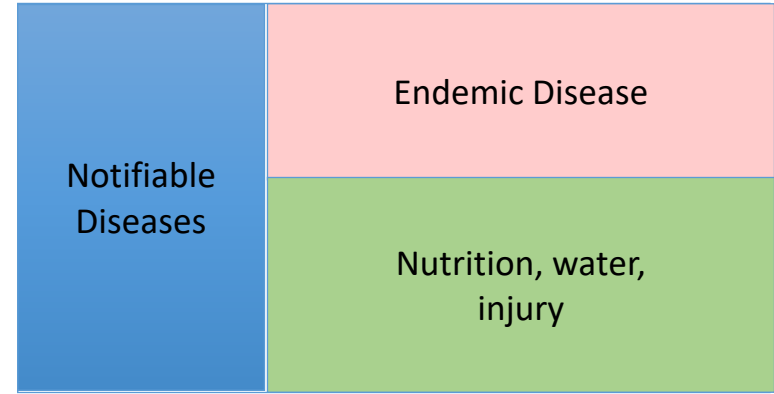


Granularity of impacts by cause and geography

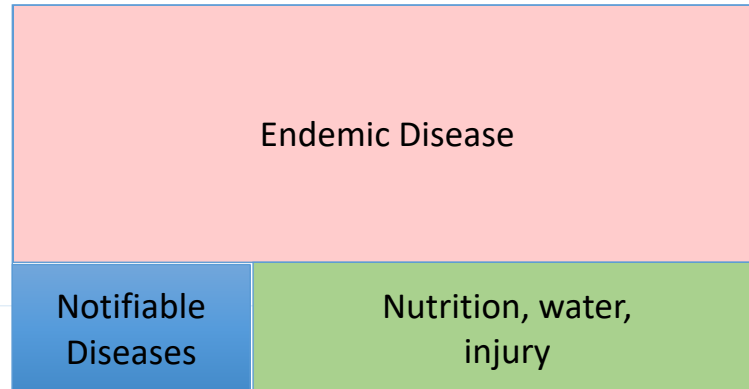
Global or regional



National

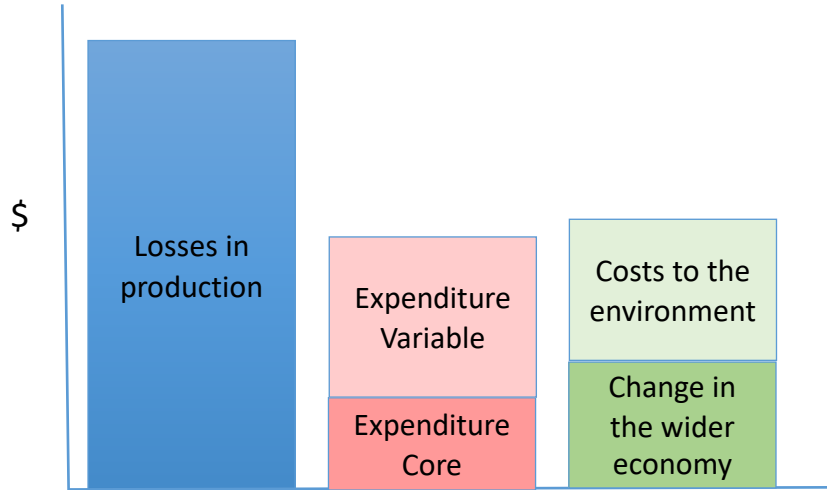


Sector – species and production system

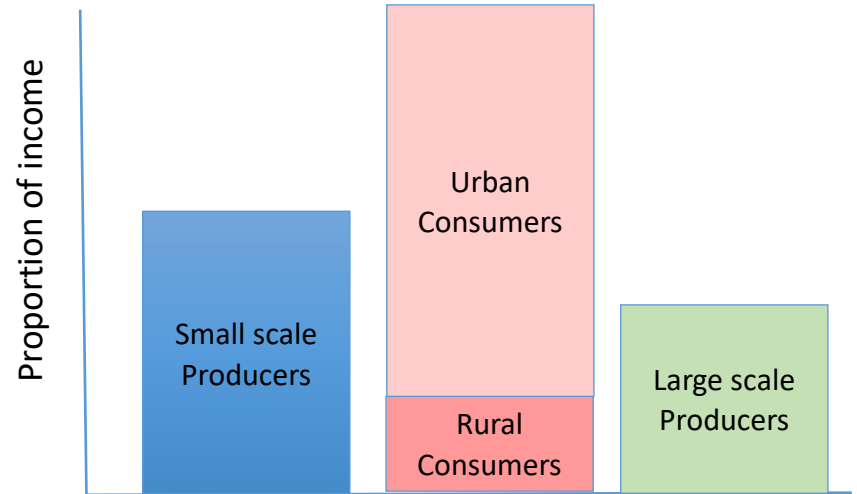


Providing impact by people affected and type of impact

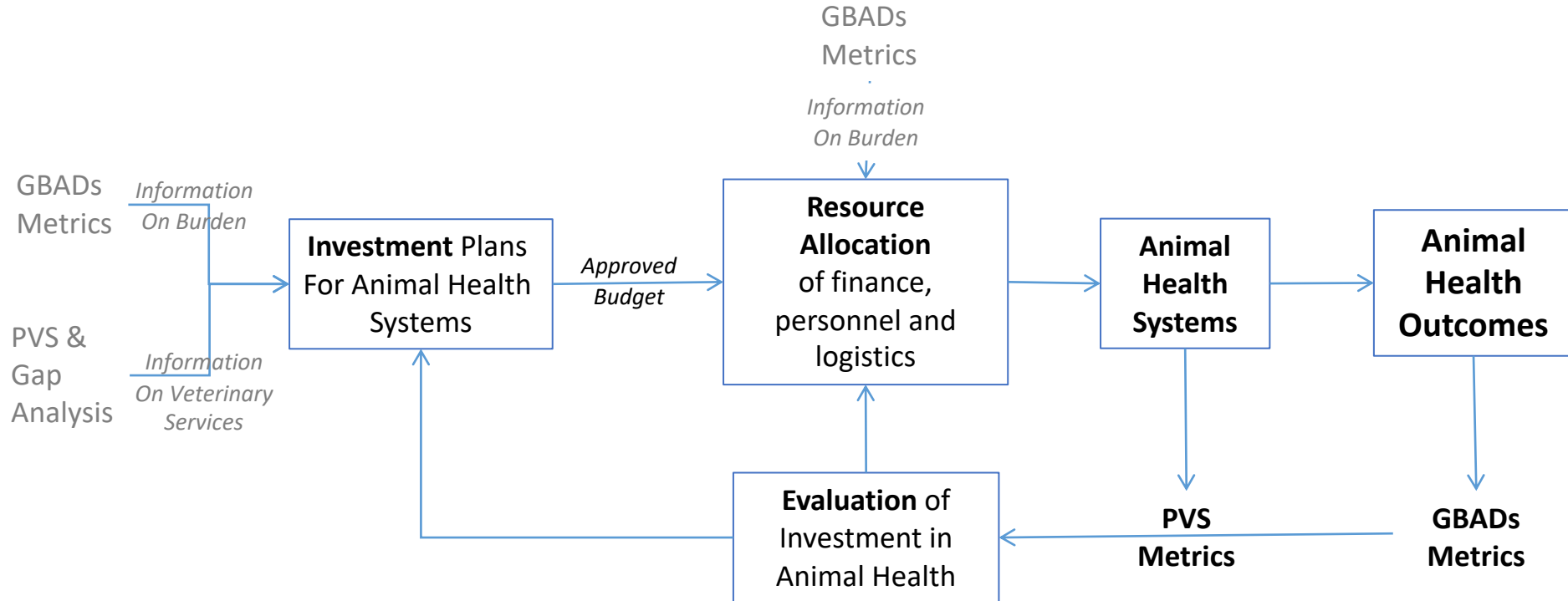
Impact type



Types of producer and consumer



Link between the outputs and investment plans



People on the margins



Nutrition



Genetics



Parasitic Diseases



Global Burden of Animal Diseases programme will:

- Provide information for **evidence based investment plans** animal health systems - supporting PVS and Gap Analysis
- **Allow allocation of resources** to key social, economic and environmental problems - strengthening PVS outcomes
- **Support high quality evaluation** of existing animal health investments demonstrating the value of animal health systems

Closing questions – I need your feedback please

- Would this approach be of value for aquaculture producers and policy makers?
- What is the true impact of aquatic health issues and how should this be measured?
- Can we identify ongoing work on impact and key people or groups to link with?
- Who are the users of the impact assessment and what do they want/need?