

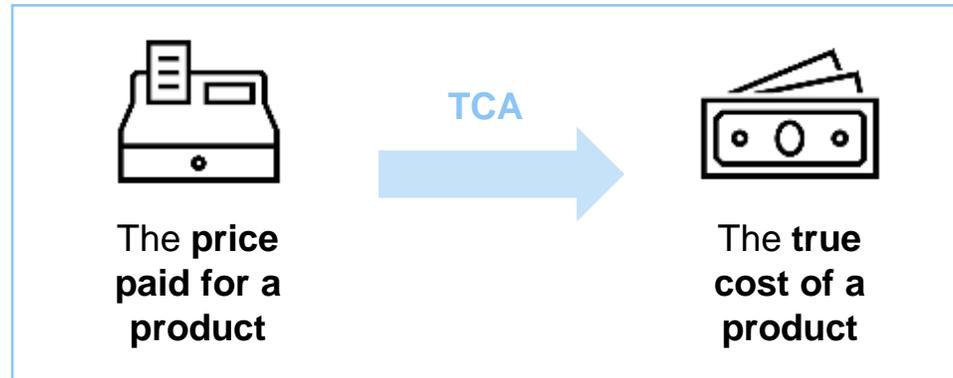


Moving Towards a Sustainable Swiss Food System: An Estimation of the True Cost of Food in Switzerland and Implications for Stakeholders

Master Thesis Presentation June 10, 2021
EUSALP Workshop

What is the true cost of food?

- **All costs** generated by a product over its life cycle
- Derived by accounting “**for all external costs – including environmental, social and economic – generated by the creation of a product**”¹ (true cost accounting (TCA))
 - External costs (externalities) are currently not included in food prices, e.g. GHG emissions, pollution (air, water, soil), human health impacts, social externalities



¹ Food Tank

Why is it important to understand the true cost of food?



The food system is a major contributor to climate change, and one of the sectors most affected by it



Agriculture is one of the main drivers of biodiversity and ecosystem service loss



Unhealthy diets cause rising public health costs worldwide, especially due to the increase of NCDs¹



Farmers and food system workers are often those most affected by poverty and food insecurity



Tax payers support food systems that do not enable sustainable development



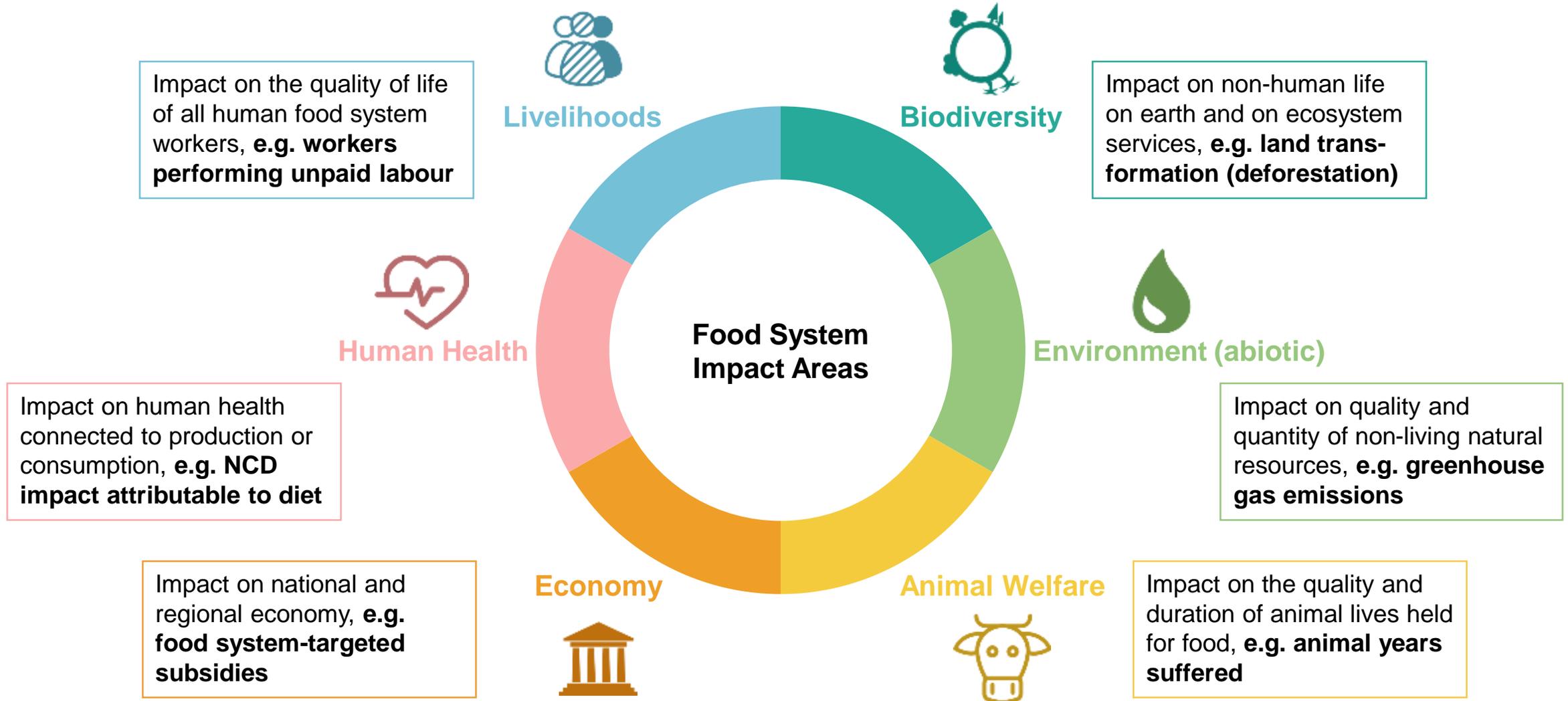
Intensive animal production systems significantly affect animal welfare



- Externalities of the current food system are **not accounted for in food prices**, despite significantly stalling sustainable development
- Growing demand for resource-intensive and unhealthy diets will **further increase these impacts and the costs they cause**

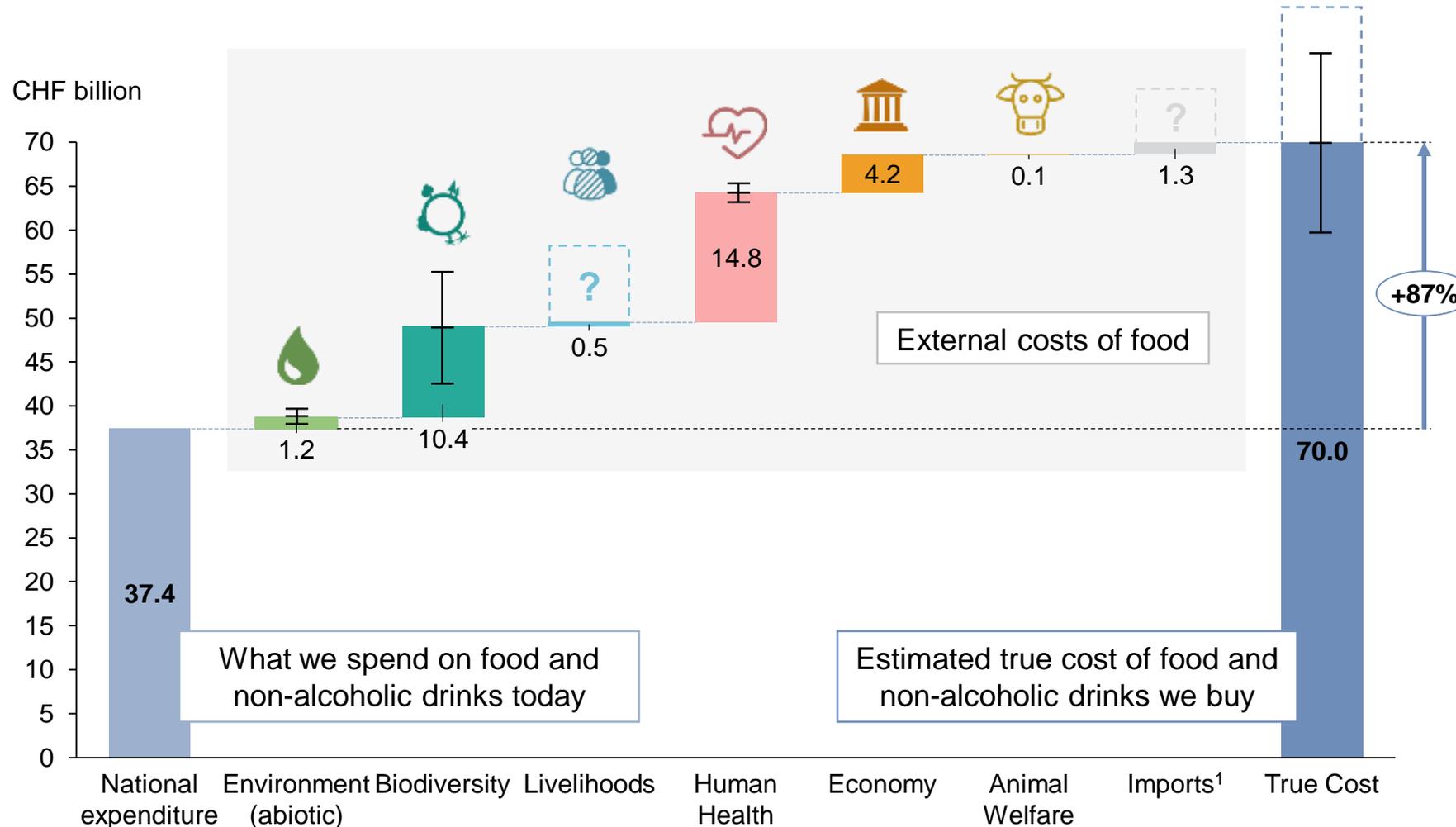
¹ Non-communicable diseases (cardiovascular diseases, cancer, diabetes etc.)

How can we understand the true cost of food?



What do first results say? (national level)

⊖ Min, mean, max estimate
 [?] Lack of data

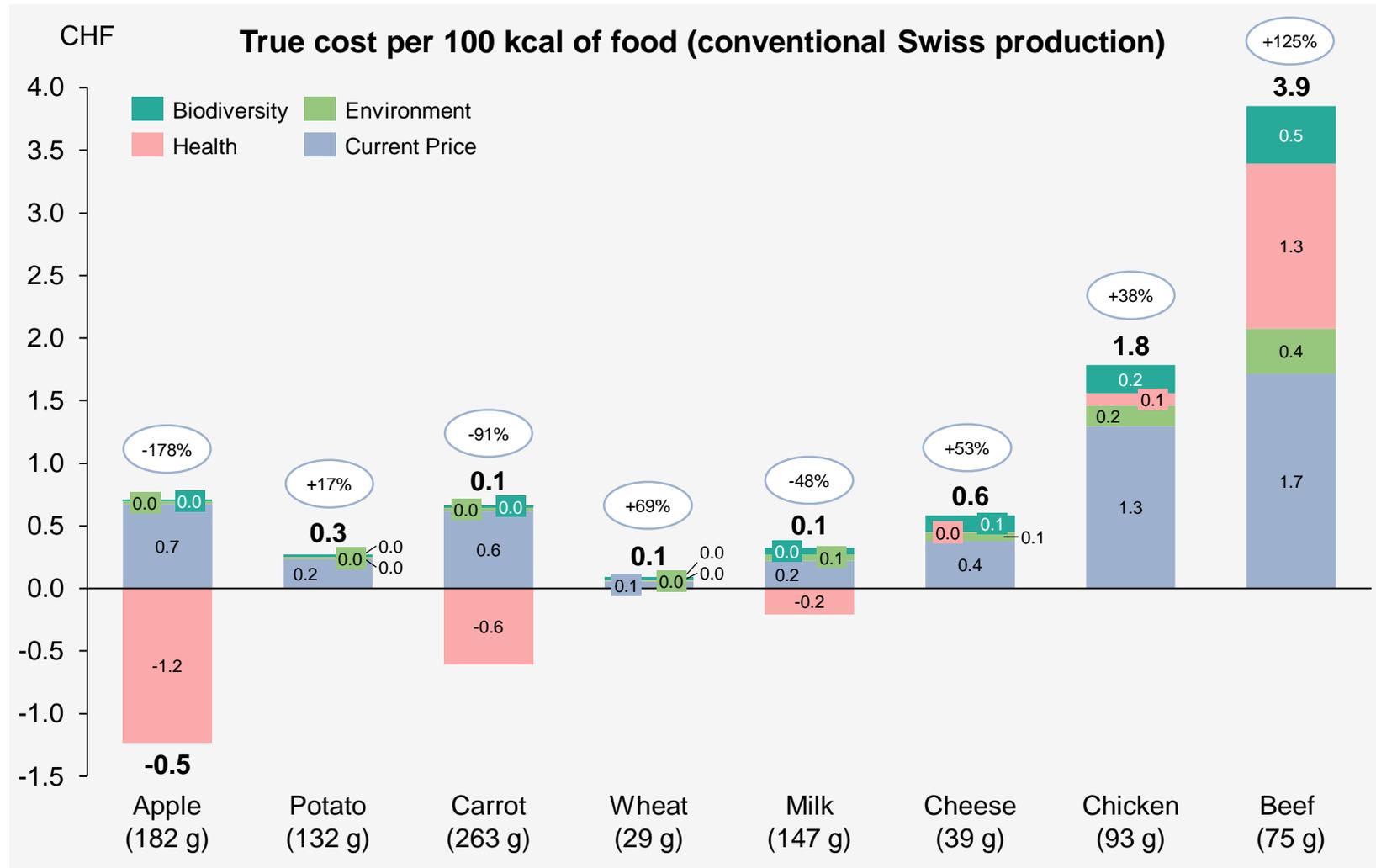


- External costs estimated at **32 billion CHF in 2018**
- Current food system causes high external costs, **driven by biodiversity and human health costs**
- Real true costs likely higher due to **limited data availability and accessibility** (especially in terms of livelihood costs)
- External costs of **imports also likely to be underestimated**

¹ Approximated by applying Swiss production-related external costs per CHF of locally produced food (0.39 CHF/CHF) to difference between the 2018 import (12.8 billion CHF) and export value (9.4 billion CHF), 3.4 billion CHF

What do first results say? (product level)

(x%) Difference between true cost and retail price



- External costs of Swiss food system likely partially **driven by the high intake of red meat** (exceeds recommended intake for health by factor 3)
- Some products have a **lower or negative true cost due to their health benefit**
- **More data is needed** on other impact areas, other products such as fish, legumes and on differences within products (different production practices)

How should we proceed from here?

Main conclusions

1. Reducing external costs of the food system is **key to achieving sustainable development**
2. Creating a **common data-driven approach for assessing food system costs and benefits represents a huge opportunity for the creation of a truly sustainable food system**
 - Basis for a food system **where sustainable decisions become the default decision along the entire value chain**
 - **Opportunity to quantify value** of small-scale territorial brands?



THANK YOU FOR YOUR ATTENTION

Alessa Perotti

alessa.d.perotti@gmail.com

Appendix

Thesis prioritizes 28 of >100 collected externalities for national and product level true cost of food estimate

ID	Impact Area	Impact Category	Topic	Externality	Unit	# of externalities selected for prioritization ¹
Env1	Environment (abiotic)	Contribution to climate change	Energy and non-energy sources (GHGs)	Greenhouse gas emissions	kg CO2 eq	7/13
Env2	Environment (abiotic)	Pollution of the living environment	Air pollution	Acidification	kg SO2 eq	
Env3	Environment (abiotic)	Degradation of land	Soil degradation	Soil loss from water erosion	kg soil lost	
Env4	Environment (abiotic)	Degradation of land	Soil degradation	Soil organic carbon loss	kg SOC	
Env5	Environment (abiotic)	Depletion of scarce abiotic resources	Fossil fuel depletion	Fossil fuel depletion	kg oil-eq	
Env6	Environment (abiotic)	Depletion of scarce abiotic resources	(Other) non-renewable material depletion	(Other) non-renewable material depletion	kg Cu-eq	
Env7	Environment (abiotic)	Depletion of scarce abiotic resources	Scarce water use	Scarce water use (blue water)	m3	
Bio8	Biodiversity	Pollution of the living environment	Air, water and soil pollution	Terrestrial ecotoxicity	kg 1,4-DB eq	7/13
Bio9	Biodiversity	Pollution of the living environment	Air, water and soil pollution	Freshwater ecotoxicity	kg 1,4-DB eq	
Bio10	Biodiversity	Pollution of the living environment	Air, water and soil pollution	Marine ecotoxicity	kg 1,4-DB eq	
Bio11	Biodiversity	Pollution of the living environment	Water pollution	Freshwater eutrophication	kg P-eq to freshwater	
Bio12	Biodiversity	Pollution of the living environment	Water pollution	Marine eutrophication	kg N-eq to marine water	
Bio13	Biodiversity	Degradation of biodiversity and ecosystems	Land occupation (part of land-use change)	Land occupation	MSA ha*yr	
Bio14	Biodiversity	Degradation of biodiversity and ecosystems	Land transformation (part of land-use change)	Land transformation	ha	
Liv15	Livelihoods	Labour	Free labour	Unpaid labour (work-related)	FTE	3/53
Liv16	Livelihoods	Non-guarantee of a decent living standard	Lack of social security	Workers with insufficient social security	\$	
Liv17	Livelihoods	Occupational health and safety risks	Negative effects of employee health & safety	Exposure to pesticides	DALYs	
Hum18	Human Health	Environmental human health impacts	Air pollution	Human toxicity (air pollution)	DALYs	8/18
Hum19	Human Health	Personal health impact attributable to diet	Malnutrition due to insufficient food diversity	Health impact of malnutrition	DALYs	
Hum20	Human Health	Personal health impact attributable to diet	Overweight and obesity attributable to diet	Health impact of overweight and obesity	DALYs	
Hum21	Human Health	Personal health impact attributable to diet	Hypertension attributable to diet	Health impact of hypertension	DALYs	
Hum22	Human Health	Personal health impact attributable to diet	Non-communicable diseases attributable to diet	Health impact of non-communicable diseases	DALYs	
Hum23	Human Health	Personal health impact attributable to diet	Food poisoning	Health impact of food poisoning	DALYs	
Hum24	Human Health	Personal health impact attributable to diet	Pesticide exposure (consumer)	Health impact of pesticide exposure	DALYs	
Hum25	Human Health	Public health threats from livestock production	Public health threats	Health impact of antibiotic use	DALYs	
Eco26	Economy	Additional spending through taxes	Subsidies	Taxes for food system-targeted subsidies	\$	2/6
Eco27	Economy	Additional spending through taxes	Regulation and research	Taxes for regulation and research	\$	
Ani28	Animal welfare	Animal welfare	Animal suffering	Animal years suffered	ALYS	1/1

¹ Externalities prioritised based on significance, data availability and data accessibility

Total 28 / 104

Cost types¹

- **Restoration costs** (cost of bringing people's health, wealth etc. or environmental stocks to the state they would have been in the absence of the damage)
- **Compensation costs** (cost of compensating affected people for economic and/or non-economic damage caused by the impacts of producing or consuming a product)
- **Prevention of re-occurrence cost** (cost that would be incurred in the future to avoid, avert or prevent the identified impact of producing or consuming a product)
- **Retribution cost** (cost associated with fines, sanctions or penalties imposed by governments for certain violations of legal or widely accepted obligations)

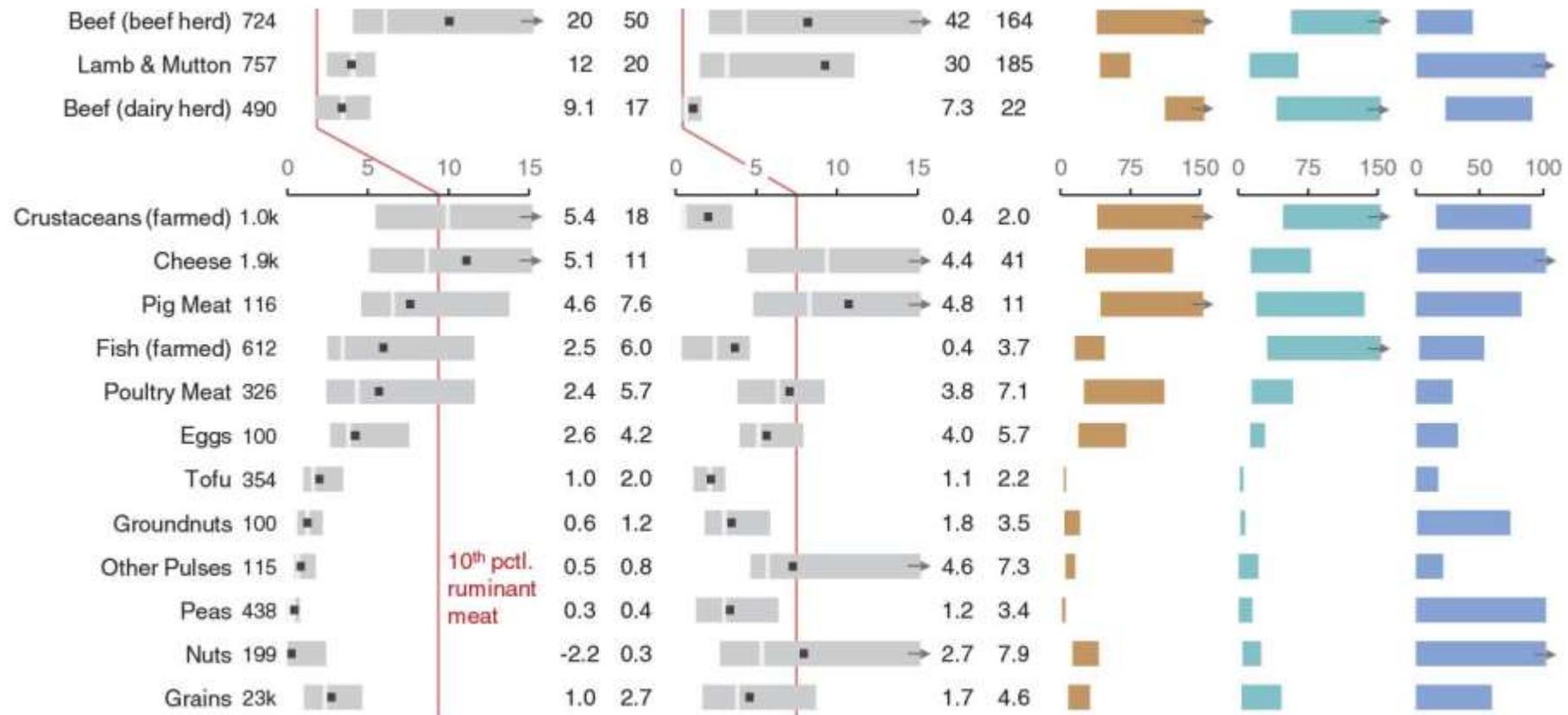
Remediation cost used by True Price equals sum of the above

¹ True Price

Substantial differences within production practices

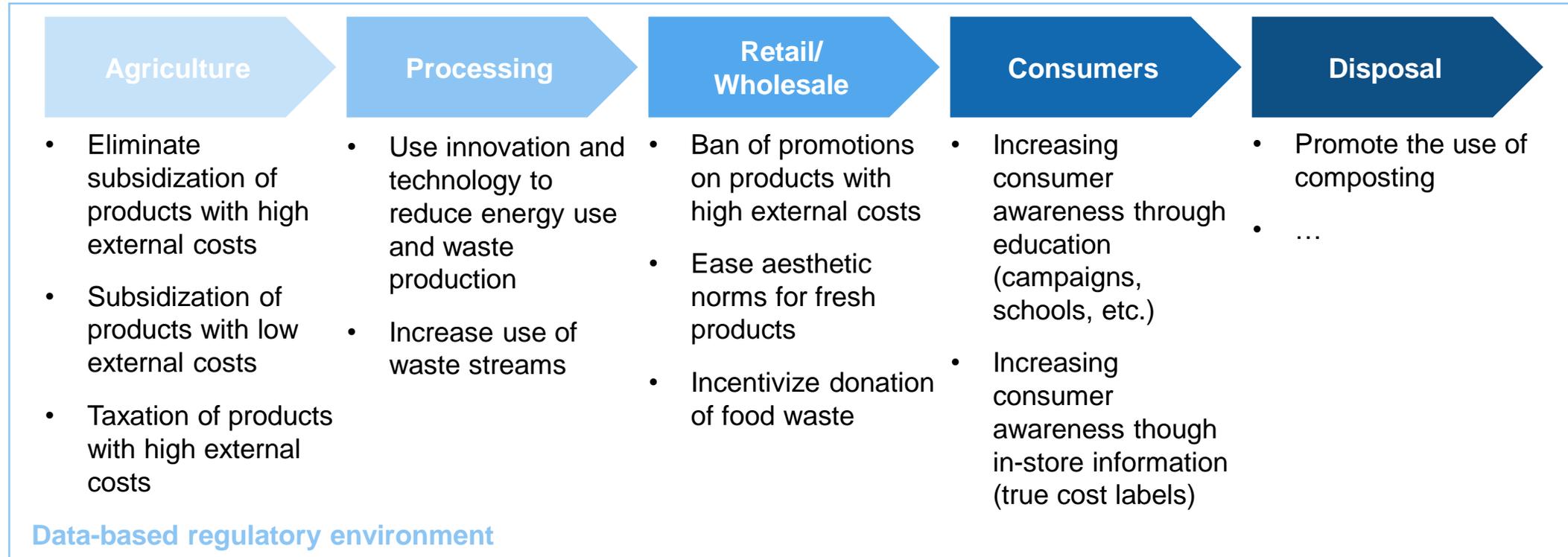
10th percentile Median Mean 90th percentile

Estimated global variation in GHG emissions, land use, terrestrial acidification, eutrophication, and scarcity-weighted freshwater withdrawals, within and between 40 major foods¹



¹ Poore & Nemecek

Selected options along the food value chain



A range of different actions will be required along the entire value chain, there is not one single solution