

Cold-chains are critical infrastructure

Professor Toby Peters,
Centre for Sustainable Cooling, University of Birmingham

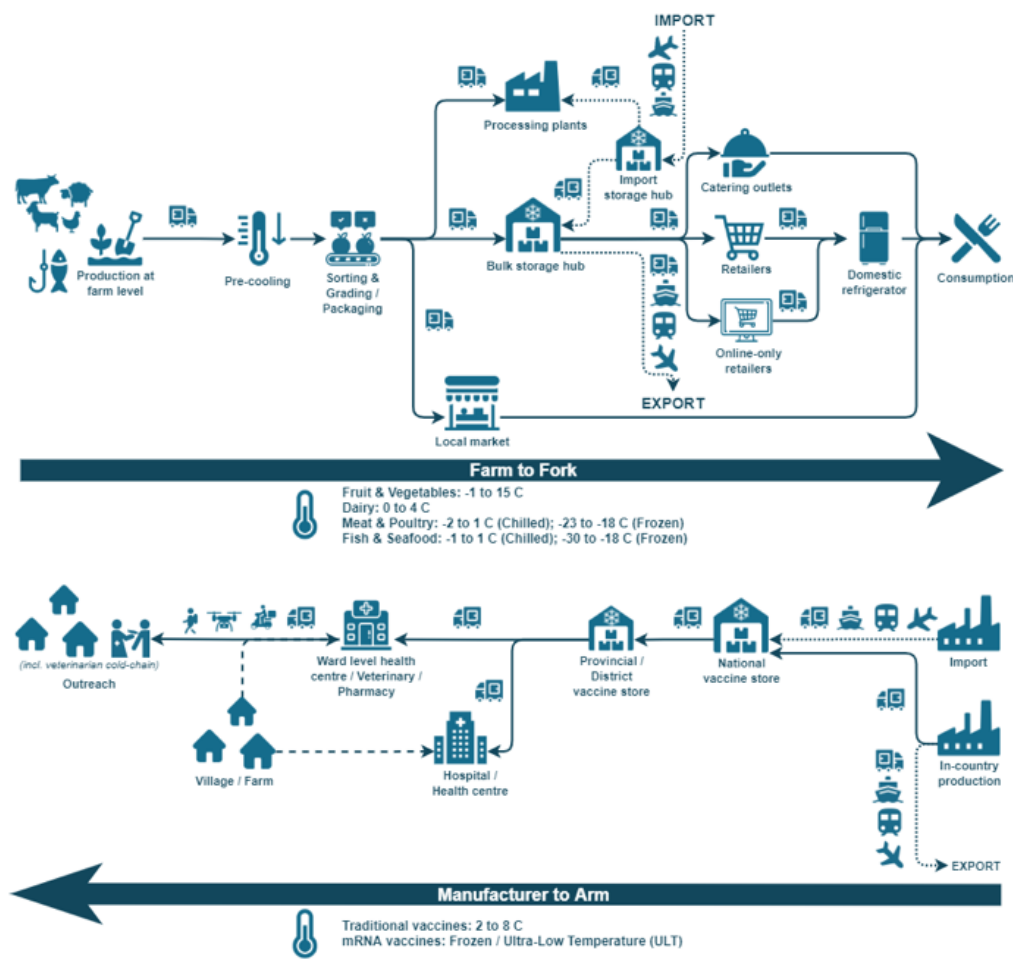


UNIVERSITY OF
BIRMINGHAM



Centre for
Sustainable
Cooling

Cold-chains are critical infrastructure



- Underpins access to safe food, healthcare, poverty reduction, economic growth & development
- Growth needs to be sustainable and equitable

Access to food and health



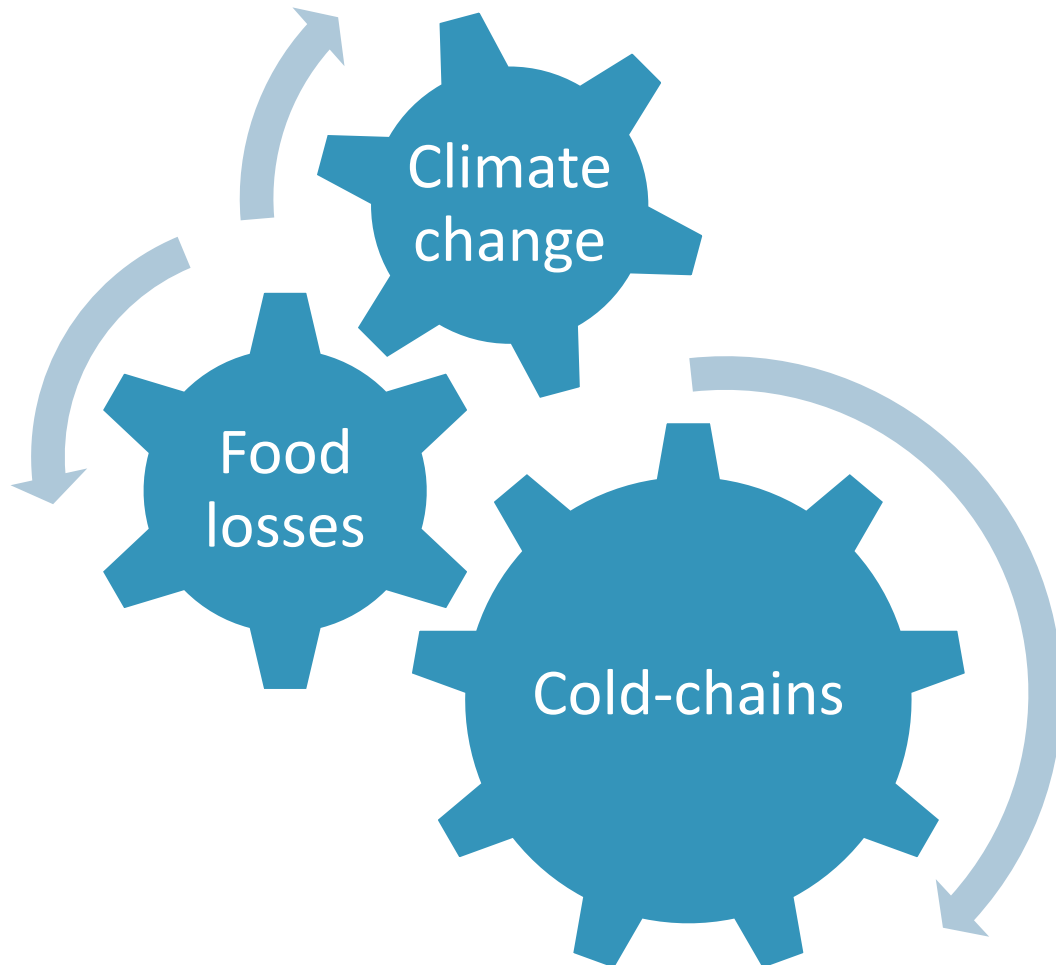
- 600 million people fall ill due to foodborne diseases, with around 420,000 of them dying annually
- 12% of the total food produced is lost due to lack of cold-chain; enough to feed 1 billion people
- 25% of vaccines wasted; 1.5 million people/year lose their lives due to vaccine-preventable diseases.

Equitable access



- 500 million small-holder farmers play a crucial role in food production
- For small and marginal farmers, functional cold-chains are non-existent: <1% of cold-chain capacity in Rwanda
- Disruptions highlight the importance of cold-chains & have disproportionate impact on vulnerable communities

The environment



- Cold-chains are typically energy-intensive, relying on fossil fuels and refrigerants with high GWP
- Food loss emissions resulting from a lack of cold-chains were estimated to be 1 gigaton of CO₂eq
- The food cold-chain (or lack thereof) is responsible for 4% of total GHG emissions

Need for rapid deployment

- Less than half of the food that requires refrigeration is refrigerated:

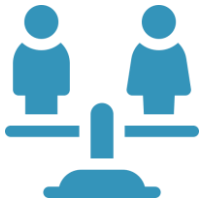


- But business-as-usual deployment could add significant GHG emissions

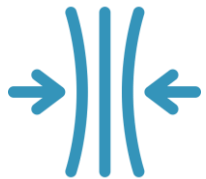
How do we deliver cold-chains...



sustainably with minimum environmental impact



equitably, providing access for all



and ensure that they are future-proofed and resilient

 **Paradigm Shift Needed**

Flaw in the business model



- In low-income countries, cold-chains are mainly owned and governed by the private sector
- Fails to deliver against society's most acute cold-chain needs

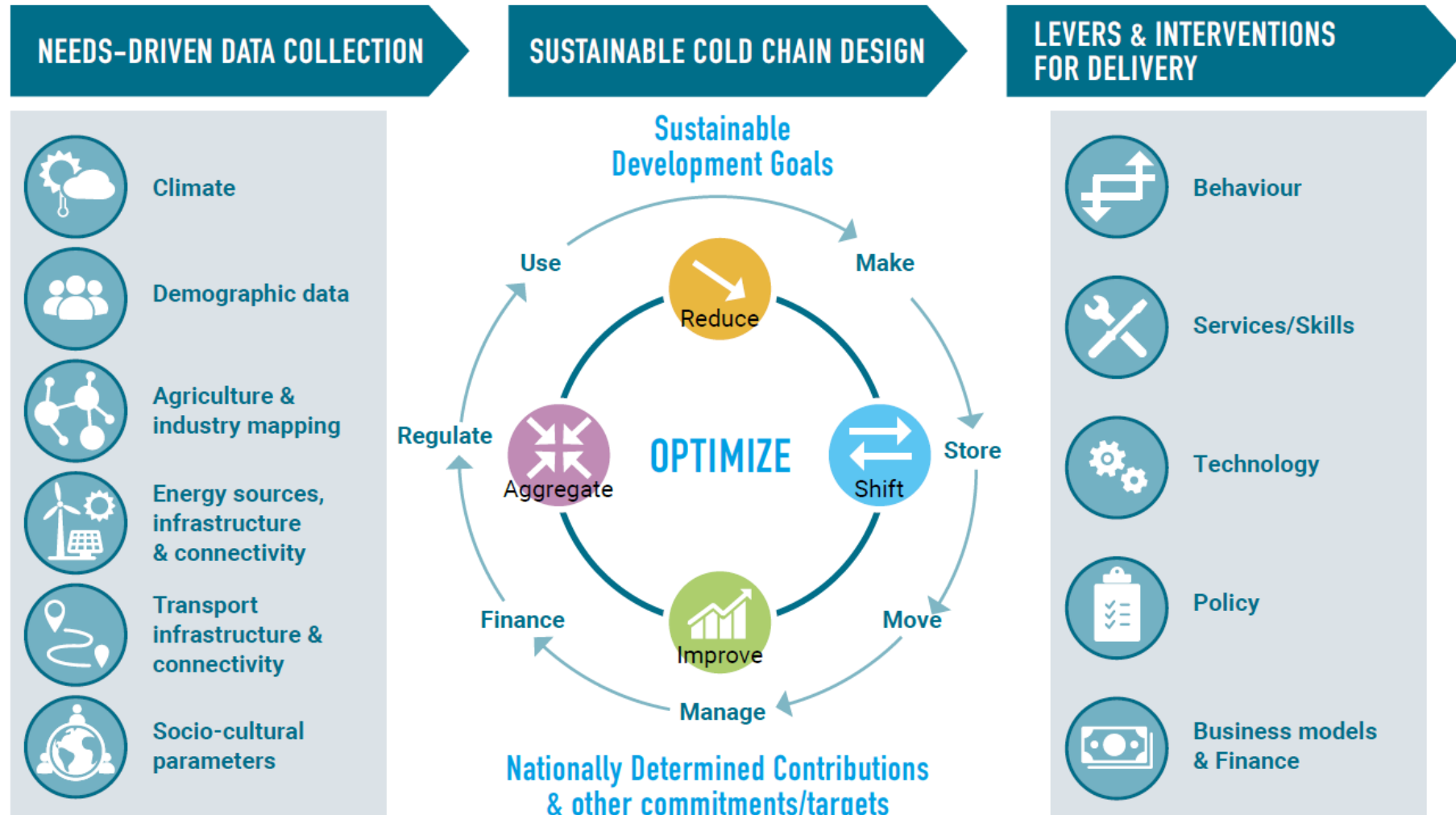
Key big challenges from current strategies



Inefficient allocation of resources & suboptimal investments:

- MORE PRODUCTION without addressing PHL
- MORE COLD STORAGE buildings without other functioning elements & connectivity
- MORE DONOR-DRIVEN PROJECTS that are not market-oriented and depend on grant funding to continue
- OLD TECHNOLOGY that is not climate friendly and expensive

Needs-driven, systems-level approach to cold-chain provision

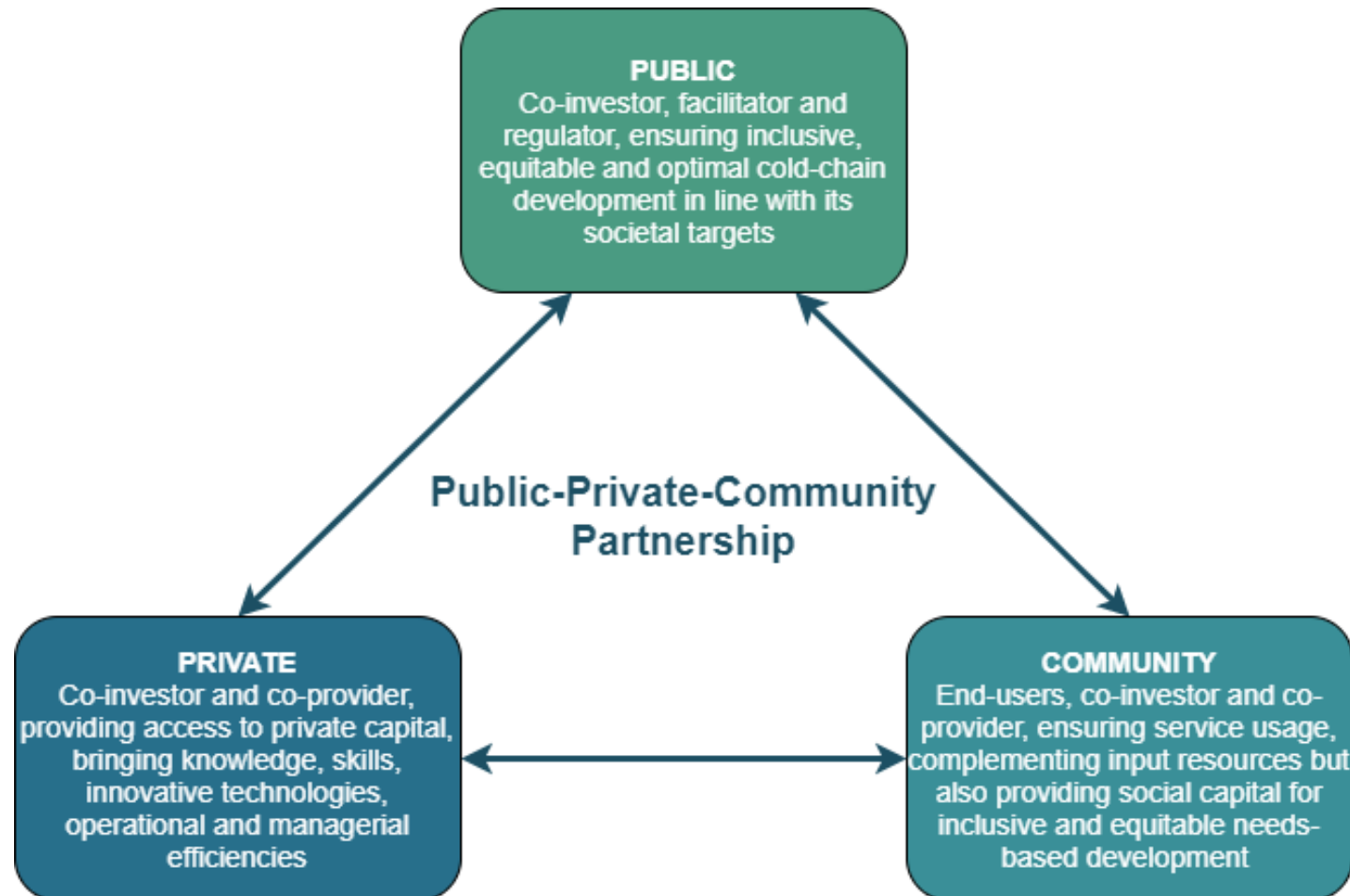


Cold-chains are global

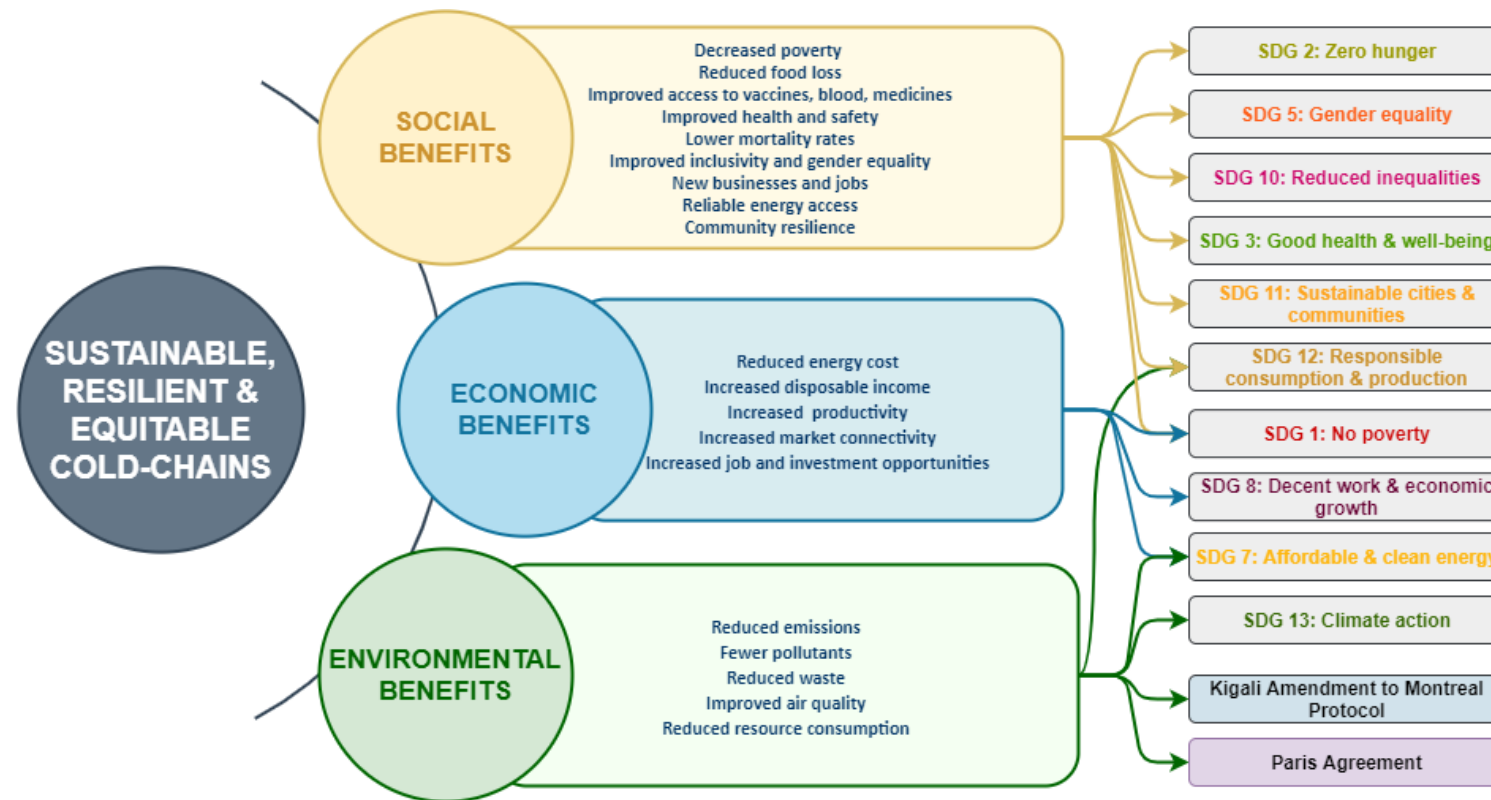


- 56% gap between 2010 food production and 2050 demand
- 60% of uncultivated arable land is in Africa; 500 million small holder farmers lack access to cold-chains and cooling
- Pandemics are likely to happen more frequently & climate change affects disease vectors; need to improve capacity in low-income countries

Cold-chains are critical infrastructure



Understanding the „real value“



© Toby Peters / Leyla Sayin

- Identify and quantify the multiple benefits that go beyond direct profit
- Improve the Return on Investment
- More detailed needed

Summary



- **The Global Food System Challenge:** Feeding 9.7 billion people by 2050 in a world facing climate change and resource constraints
- **Shifting priorities** from simply increasing production to addressing food loss as an equal priority.
- **Empowering small-holder farmers** in low-income countries is critical
- **Business case for cold-chain development is clear**

Call to Action



We must come together to solve the wicked problem

How do we deliver temperature-sensitive market connectivity to achieve global food and health security and resilience in a warming world while economically empowering 500 million small-holder farmers – all within a zero-emission strategy?



- **Professor Toby Peters**
- Centre for Sustainable Cooling, University of Birmingham
- t.peters@bham.ac.uk