COLD CHAIN INSIGHT

Webinars for Cold Chain Professionals

CLIMATE CHANGE WEEK DAY 1: POLICY

STARTING AT 10:30AM

SUPPORTED BY:

mypower solar professionals

Onsite Energy projects

STAR REFRIGERATION

COLD CHAIN FEDERATION

TOM SOUTHALL
POLICY DIRECTOR
COLD CHAIN FEDERATION

COLD CHAIN & CLIMATE CHANGE - FINDING PRAGMATIC SOLUTIONS

COLD CHAIN FEDERATION

18 & 19 MAY @ 10:30 – 12:00

This two-day event will examine COP26, the latest climate change policy and its impact on businesses in the cold chain. We will also be revealing the next phase of our Net Zero Project and focussing on innovations driving decarbonisation.

18 MAY @10:30

CLIMATE CHANGE POLICY AND THE COLD CHAIN

Dan Hamza-Goodacre
COP 26 Champion

Prof Toby Peters
Professor in Cold Economy

Tom Southall
Cold Chain Federation

Dr Rob Lamb
Star Refrigeration

19 MAY @10:30

SUSTAINABLE INNOVATION IN THE COLD CHAIN

co op
It's what we do

Cooperative Group

Neil Stott
Mypower

David Kipling
Onsite Energy Projects

FIND OUT MORE & BOOK YOUR PLACE:
www.coldchainfederation.org.uk/climate-change-week/

EVENT PARTNERS

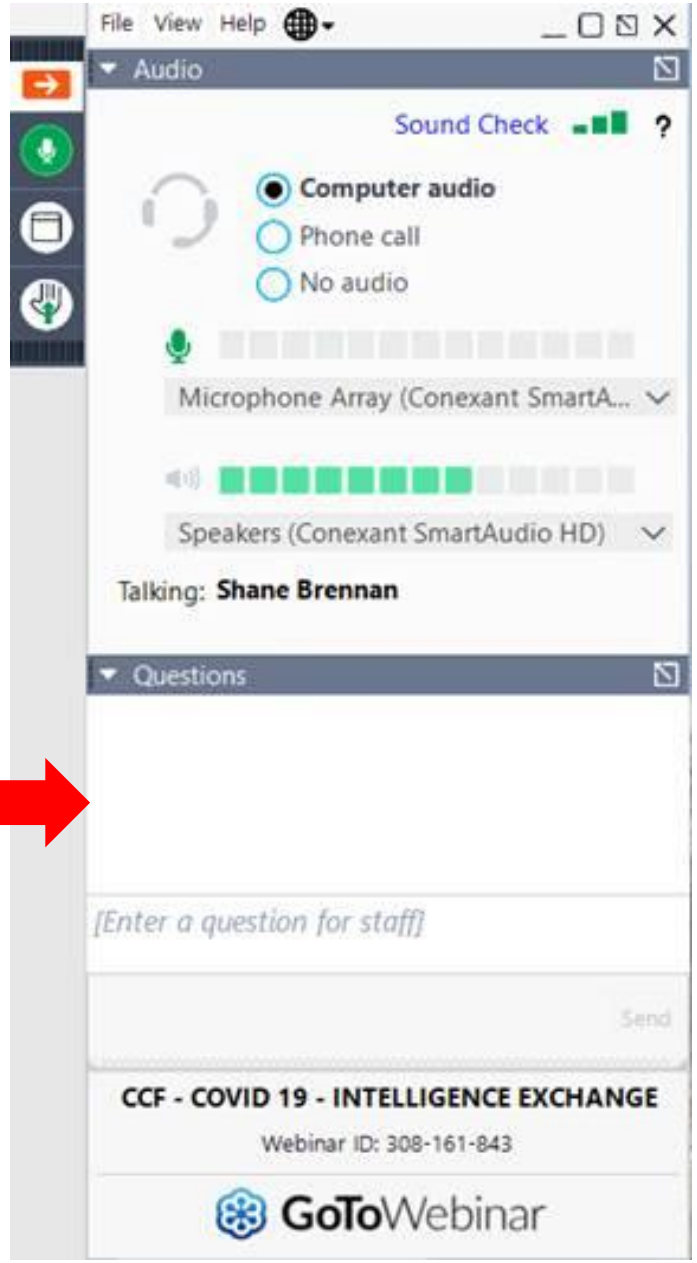
mypower solar professionals

Onsite Energy projects

STAR REFRIGERATION

TODAY: COP26, POLICY & RESEARCH

10:35 – 10:50	COP26 Introduction	
10:50 – 11:15	Climate Change Policy and the Cold Chain	
11:15 – 11:35	Research into Net Zero Cold Chains	
11:35 – 11:55	Reflection and discussion	


File View Help
Audio
Sound Check
Computer audio
Phone call
No audio
Microphone Array (Conexant SmartA...
Speakers (Conexant SmartAudio HD)
Talking: Shane Brennan
Questions
[Enter a question for staff]
Send
CCF - COVID 19 - INTELLIGENCE EXCHANGE
Webinar ID: 308-161-843
GoToWebinar

AN INTRODUCTION TO COP26

With Dan Hamza-Goodacre, COP26 Champions Team

CLIMATE CHANGE POLICY AND THE COLD CHAIN

With Tom Southall, CCF Policy Director

AGENDA

COLD CHAIN FEDERATION

UK CLIMATE CHANGE TARGETS & PROGRESS

POLICY IMPACTING THE COLD CHAIN

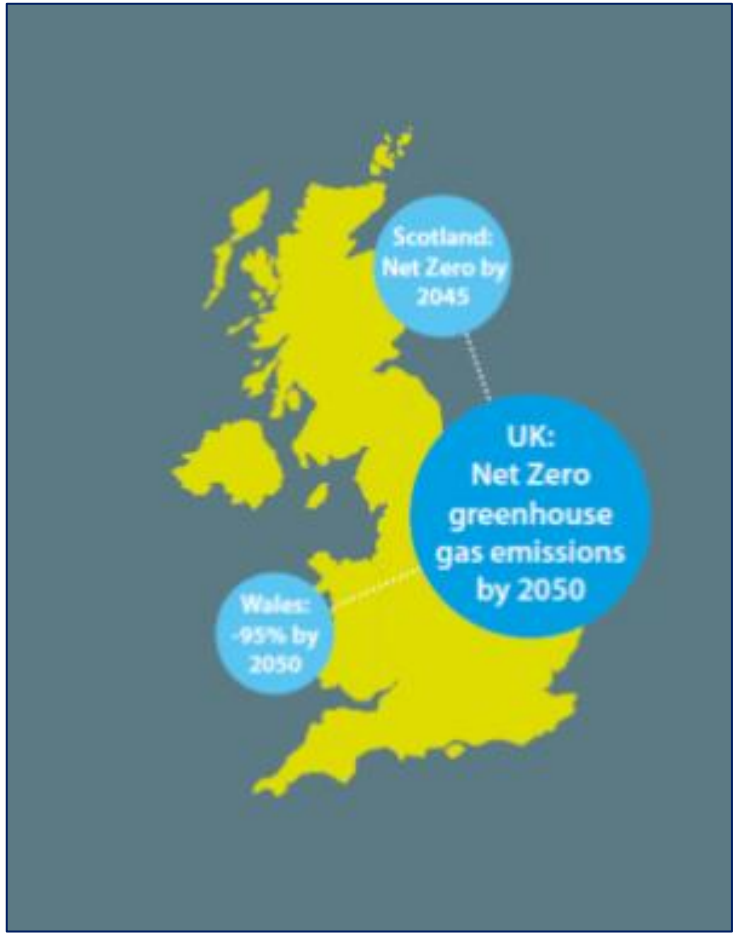
COLD CHAIN MOTIVATORS AND INHIBITORS

WHAT DOES THIS ALL MEAN: CCF NET ZERO PROJECT

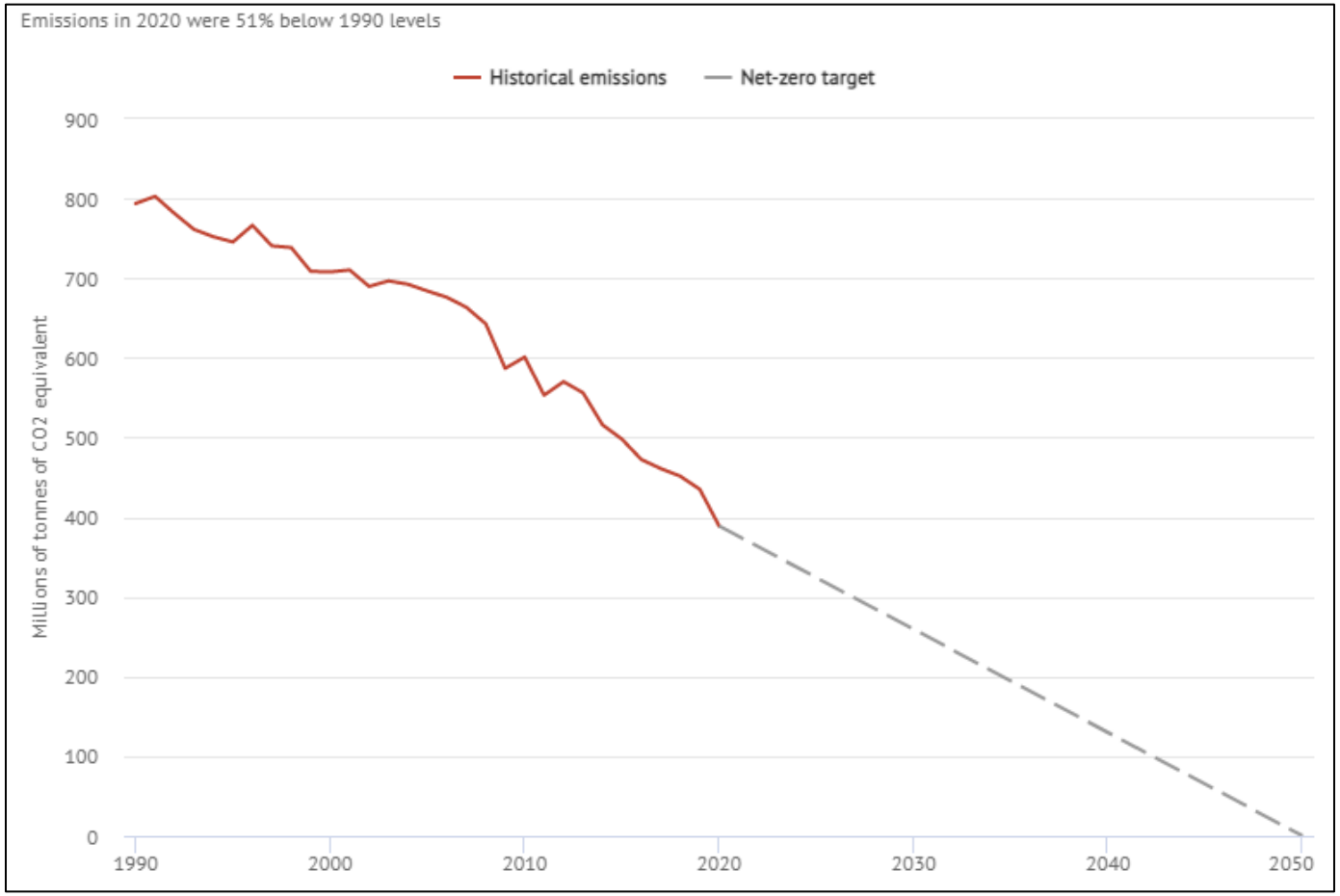
UK CLIMATE CHANGE TARGETS & PROGRESS

TARGETS: THE DRIVING FORCE

- ‘Net zero’ economy by 2050
  - Legally binding: Climate Change Act
  - World’s most ambitious legally binding GHG target
  - against a baseline of 1990 levels
  - Progress overseen by the Committee for Climate Change (CCC)

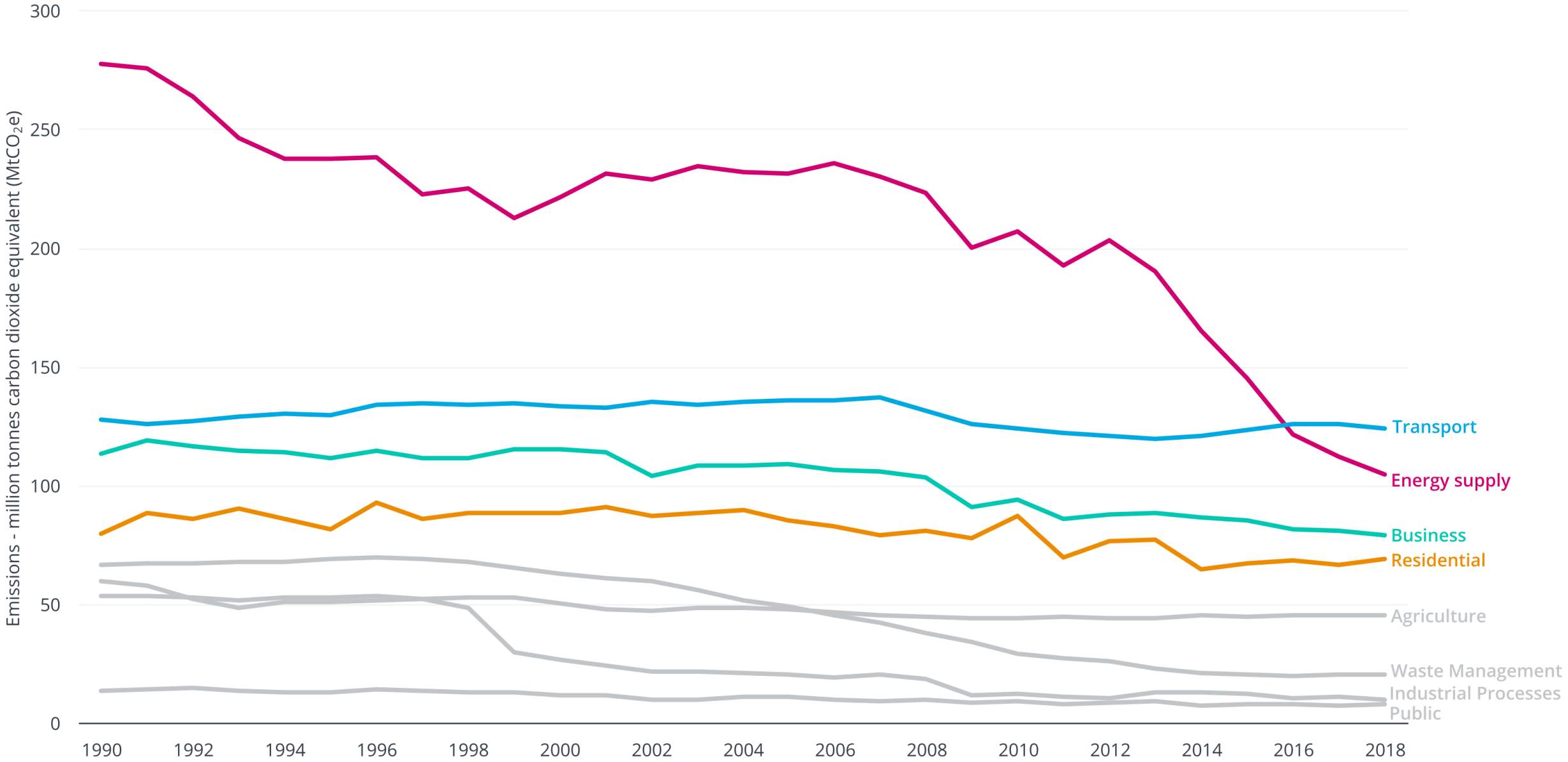


PROGRESS: HALFWAY, BUT.....



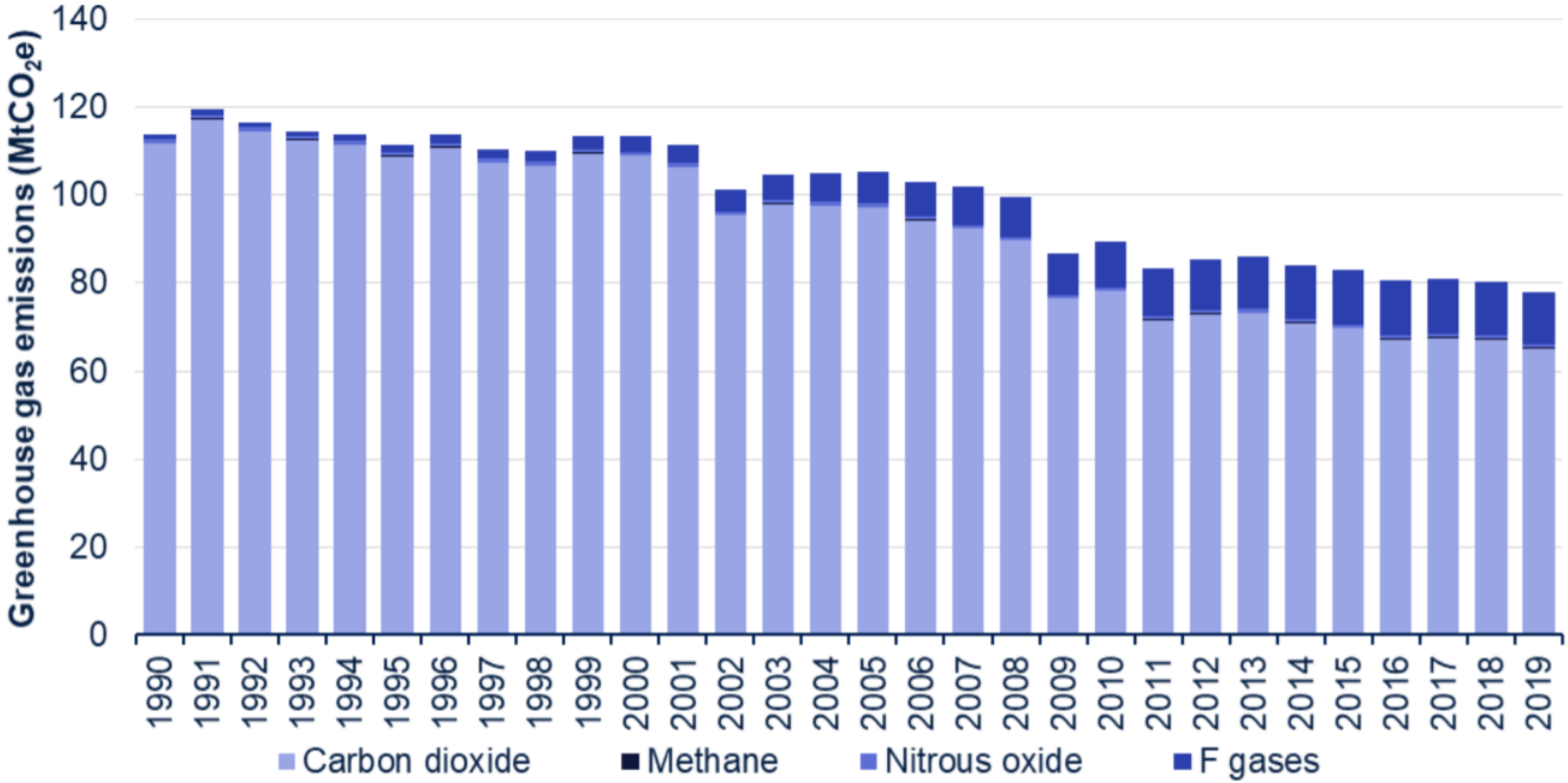
https://www.carbonbrief.org/

UK - Emissions by sector, 1990-2018



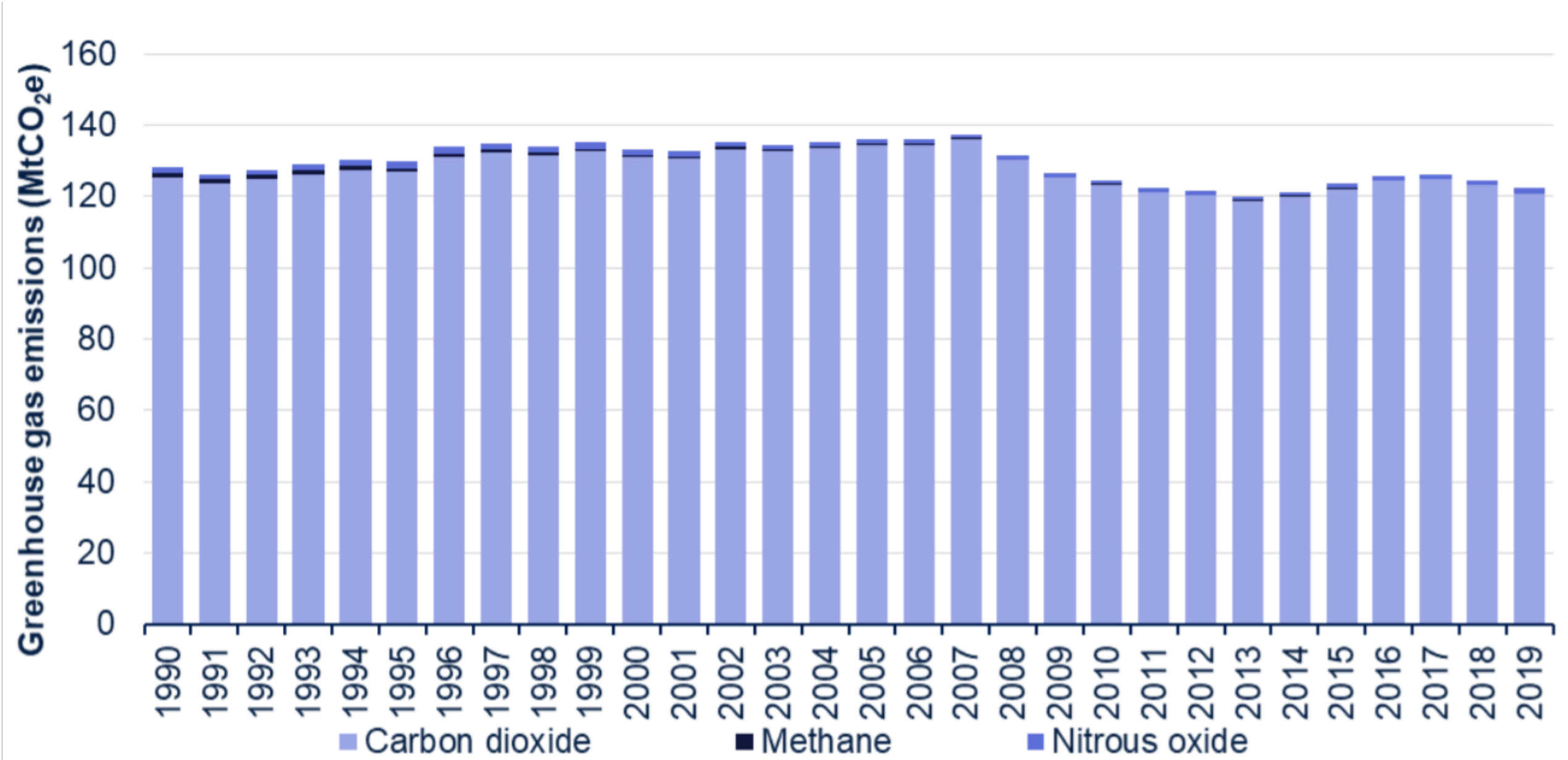
Source: Institute for Government analysis of: *Final UK greenhouse gas emissions national statistics*, BEIS, February 2020
Note: Net negative emissions from LULUCF not shown.

Figure 9: Greenhouse gas emissions from business, UK 1990-2019 ($MtCO_2e$)



Source: Tables 1.2 to 1.6, Final UK greenhouse gas emissions national statistics 1990-2019 Excel data tables

Figure 6: Greenhouse gas emissions from transport, UK 1990-2019 ($MtCO_2e$)

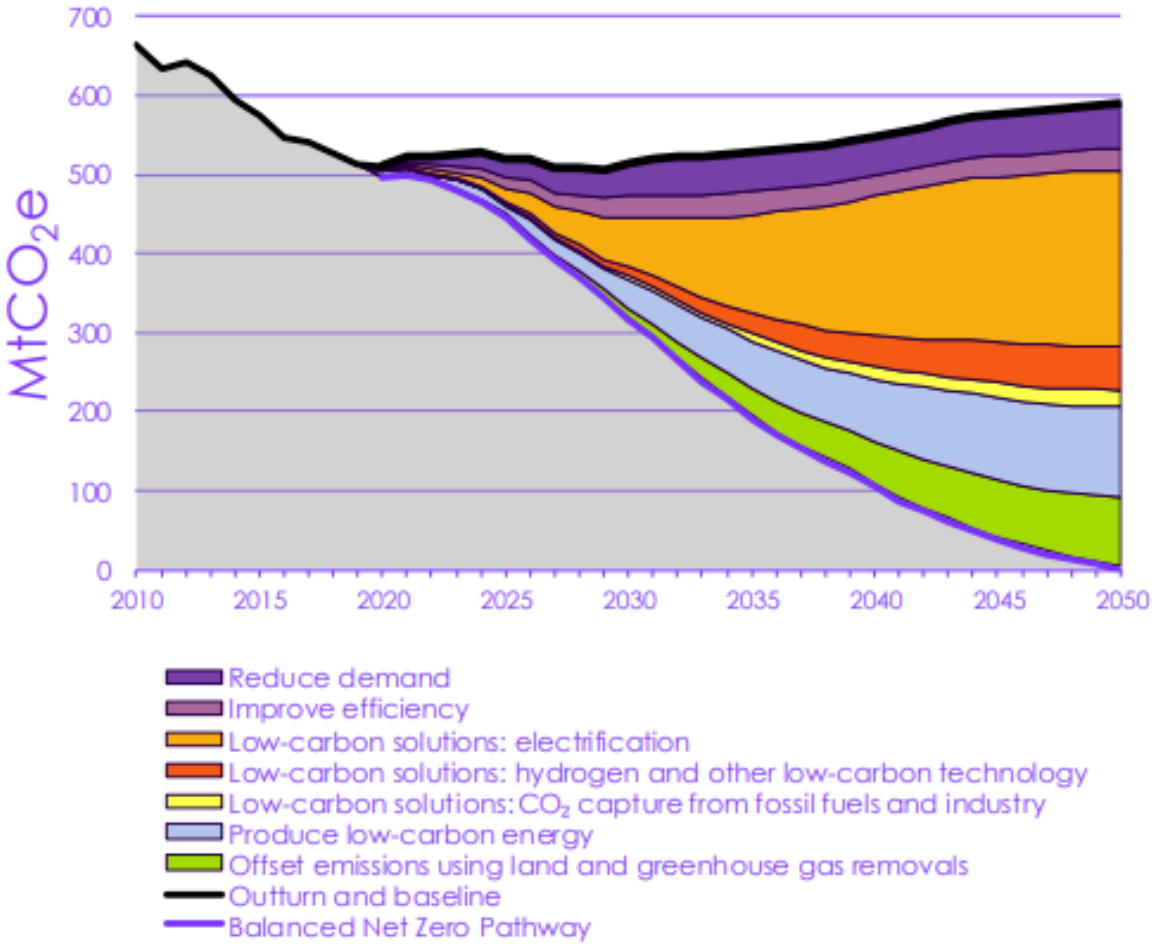


Source: Tables 1.2 to 1.6, Final UK greenhouse gas emissions national statistics 1990-2019 Excel data tables

COVID-19 & THE CCC

- The impacts of the coronavirus pandemic delivered an estimated **10.7% reduction** in carbon emissions in 2020.
- CCC Sixth Carbon Budget (2033-2037), Dec 20
  - interim target of 78% by 2035 also legally binding
- "It will be businesses that primarily deliver the net-zero target and provide the vast majority of the required investment" *CCC Progress Report 2019*

Figure 4 Types of abatement in the Balanced Net Zero Pathway



Source: BEIS (2020) Provisional UK greenhouse gas emissions national statistics 2019; CCC analysis.
Notes: 'Other low-carbon technology' includes use of bioenergy and waste treatment measures.
'Producing low- carbon electricity' requires the use of CCS in electricity generation.

UK STRATEGY FOR ACHIEVING NET ZERO

COLD CHAIN FEDERATION

NO CLEAR STRATEGY

- Industrial Decarbonisation Strategy: March 2021. 2/3 reduction in emissions in 15 years
  - Energy efficiency, clean energy and carbon capture

- Government's 10 point plan for a Green Industrial Revolution
  - Transport Decarbonisation Plan… awaited
  - Hydrogen Strategy…. awaited
  - Heat and Buildings Strategy…awaited
  - **Net Zero Strategy…..awaited in time for COP26**

- Build back Greener… but not much in March Budget or May Queens speech.
  - Net Zero funding portfolio
  - More coming soon….?

POLICY IMPACTING COLD CHAIN BUSINESSES

SHORT TERM – WHAT WE KNOW

COLD CHAIN FEDERATION

TRANSPORT

- Red Diesel… a climate change policy?
- Restrictions on movement for diesel vehicles (and TRUs?)
- Funding for the transition.. promised but not yet delivered
- F Gas phaseout

BUILDINGS

- Reporting of emissions & building performance ratings
- Climate Change Agreement reform
- Fluctuations in energy pricing and contracts
- Temporary tax reliefs for investment

LONGER TERM – WHAT WE MIGHT EXPECT

COLD CHAIN FEDERATION

TRANSPORT

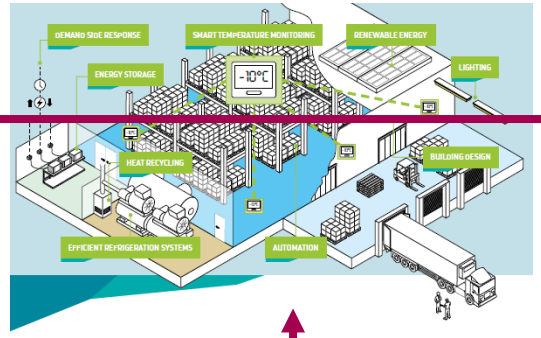
- Phase out of diesel in vehicles, HGVs in 2040?
- Fuel duty changes
- Move to natural refrigerants

BUILDINGS

- Planning: increasing requirements for sustainable buildings
- Carbon Tax/Pricing
- Greater requirement for energy efficiency

CRUX OF THE ISSUE

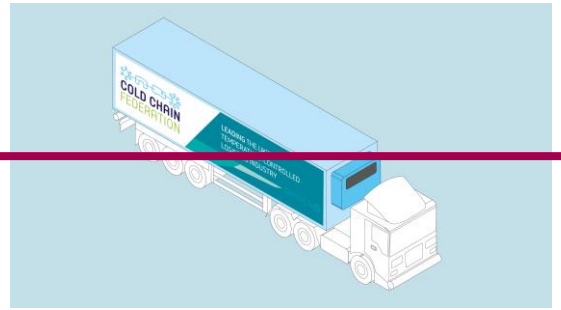
BUILDINGS



- Ever increasing requirement for energy efficiency and management in design and operation (reduce, replace, offset)
- Transparency in reporting and benchmarking

More efficiency….

TEMPERATURE-CONTROLLED VEHICLES



- Transition away from diesel in TRUs (and HGVs/vans)
- Move to natural, or Ultra-low refrigerants

MOTIVATORS AND INHIBITORS FOR COLD CHAIN BUSINESSES

BUSINESS MOTIVATORS FOR NET ZERO

COLD CHAIN FEDERATION

SAVE MONEY

- CUT OPERATING COSTS
- REDUCE OVERHEADS
- MINIMISE DOWNTIME
- REDUCE TAX BURDENS

MAKE MONEY

- ESTABLISH A COMPETITIVE ADVANTAGE
- BUILD AN ATTRACTIVE BRAND AND REPUTATION
- ESTABLISH A PREMIUM SERVICE (AND A BETTER MARGIN)
- CREATE BUSINESS SECURITY

STAY OUT OF JAIL

- UNDERSTAND AND STAY AHEAD OF REGULTORY CHANGE
- ENSURE COMPLIANCE
- STAY COMPETITIVE (BARRIER TO COLLABORATION)
- PAY NECESSARY TAXES
- PLAY THE GAME (FAIRLY)

FEEL GOOD

- BUY INTO THE MISSION
- TRAIN AND MOTIVATE PEOPLE
- EMBRACE AND SEEK OUT INNOVATION

INHIBITORS TO NET ZERO

CCF Survey on barriers to decarbonising T/C fleets

WHAT DOES THIS ALL MEAN?
CCF NET ZERO PROJECT

CCF NET ZERO PROJECT

Our commitment to support our industry through the transition to Net Zero

- PUBLICATIONS: Defining, vehicles, buildings, cold chain ecosystem
- INSIGHT & RESEARCH:
  - keeping our members up to date with the latest in climate change strategy and policy.
  - Supporting research into sustainable cold chains
- EVENTS
- ADVISING THE GOVERNMENT: THE VOICE OF THE COLD CHAIN

https://www.coldchainfederation.org.uk/cold-chain-net-zero-project/

GOVERNMENT SUPPORT FOR NET ZERO COLD CHAIN

COLD CHAIN FEDERATION

- **Strategy**: what are the innovations & technologies which Gvmt will be supporting and how will the cold chain be expected to contribute to net zero?
- **Funding**: to be determined how this will support operators

Scrappage schemes / policies to encourage retirement of old technology

Grants to support installation of infrastructure

Tax breaks or subsidies for investment in new equipment

Grants for R & D

Grants to support trials of alternative technology

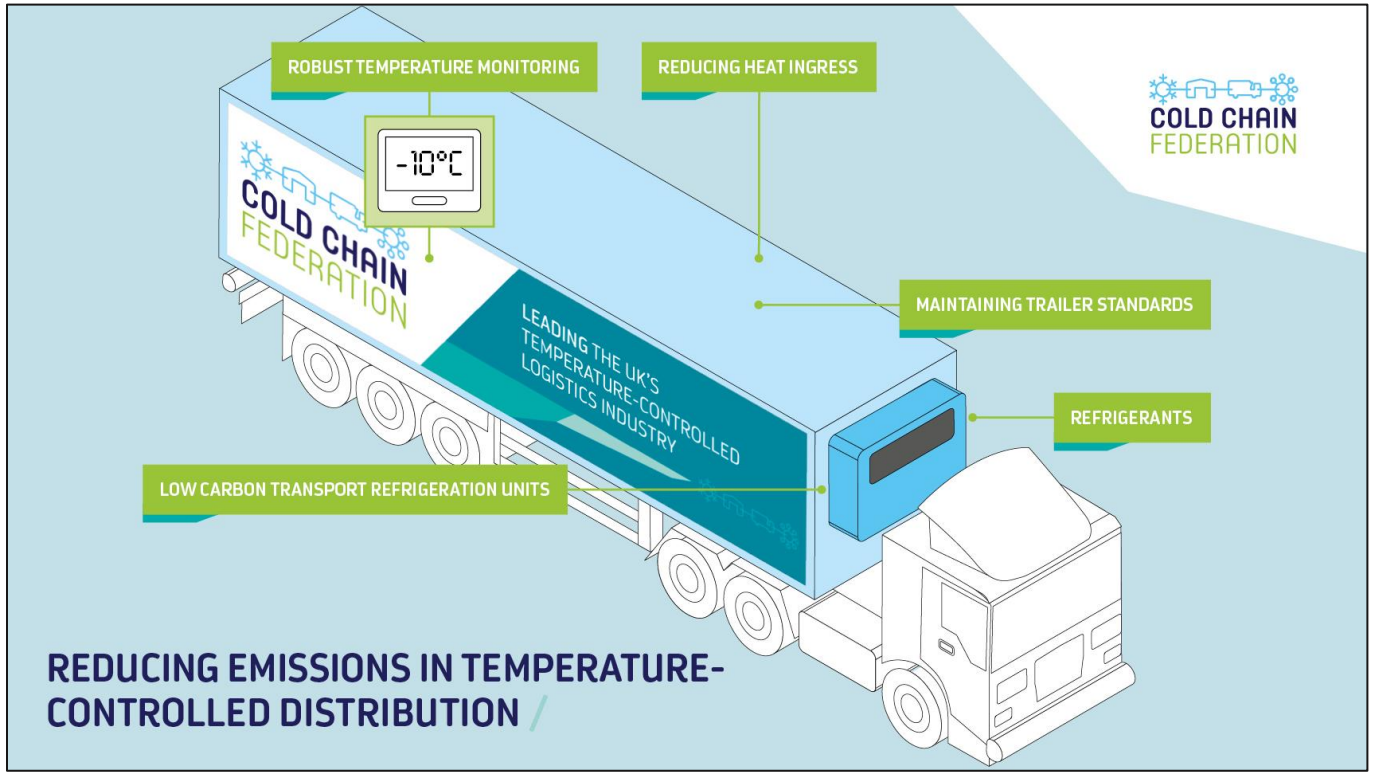
- **Infrastructure**: how will the Government be supporting the transition?

DEFINING NET ZERO

- Supporting Cold Chain Federation members to calculate the emissions they control and produce decarbonisation strategies

- Actively supporting research and studies into the overall emissions impact (and benefit) of the cold chain in the UK and beyond…….

DECARBONISING TC DISTRIBUTION



- An outlook on how the industry can transition to diesel-free TRUs
  - Technology
  - Government support
  - Milestones

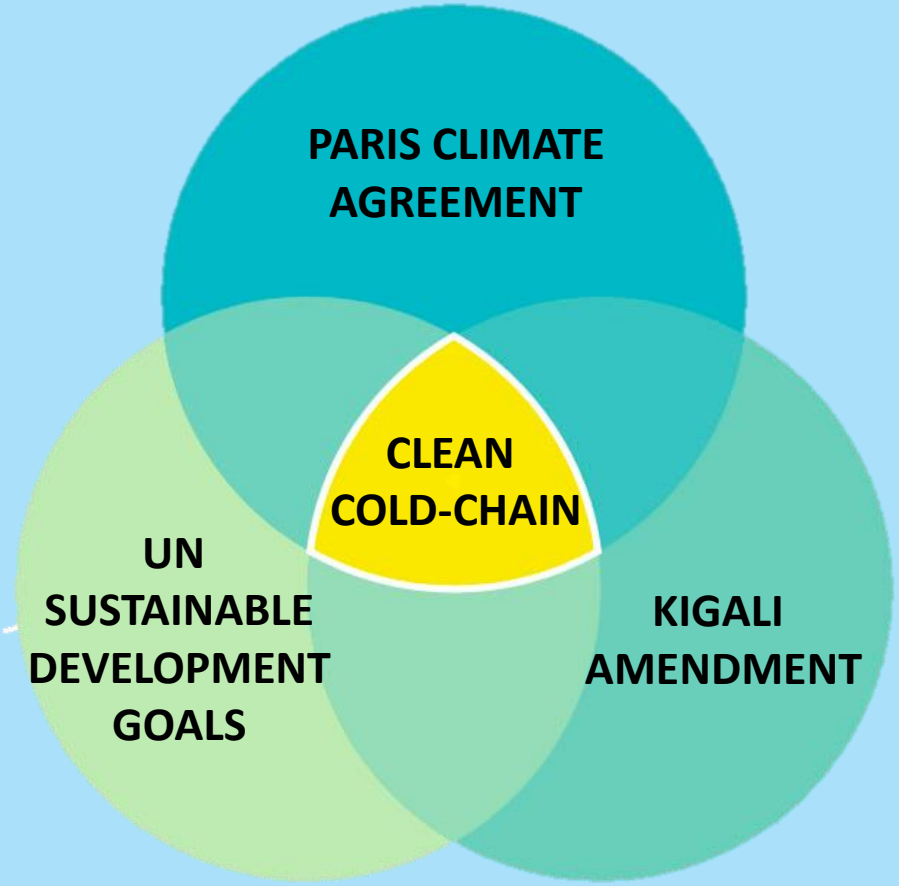
- Coming summer 2021

RESEARCH INTO NET ZERO COLD CHAINS

With Prof Toby Peters, Professor of Cold Economy

PATHWAYS TO NET-ZERO COLD-CHAINS

Meeting the world's shared climate and social goals



DELIVERED BY:

Centre for Sustainable Cooling | UNIVERSITY OF BIRMINGHAM | HERIOT WATT UNIVERSITY UK | DUBAI | MALAYSIA | Cranfield University | London South Bank University

A COLLABORATIVE TEAM FROM LEADING UK RESEARCH INSTITUTES

London South Bank University

Refrigeration systems
Cold-chain

Prof. Judith Evans

Prof. Graeme Maidment

University of Birmingham

Energy Systems
Policy

Professor Toby Peters

Dr Xinfang Wang

Cranfield University

Postharvest Management

Dr Natalia Falagán

Prof. Leon Terry

Heriot-Watt University

Logistics
Business Models

Professor Phil Greening

Dr Dhanan Utomo

Dr. Bing Xu

Dr. Kumar Debnath

A SERIES OF INTERLINKING PROJECTS

We have built a portfolio of projects across cold-chain research and bottom-up, needs driven system approaches in both developed and developing markets.

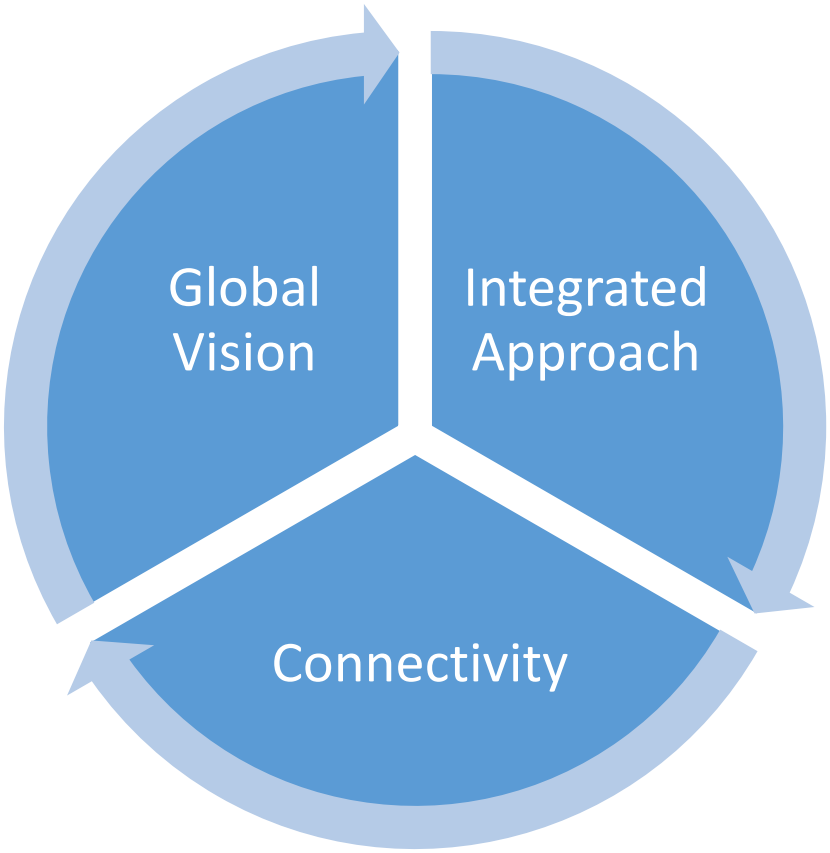
It includes

- design for mass scale COVID-19 vaccination;
- the new Africa Centre of Excellence for Sustainable Cooling and Cold-chain;
- a new UK-India Centre of Excellence for Postharvest Management and clean cold-chain;
- a whole systems *"farm to customer fridge"* approach to deliver a clear industry-led pathway to achieve the UK's net zero 2050 target whilst maintaining food security and affordability and supporting economic opportunities.

Given the global nature of cold-chains, these programmes all work closely together.

£5.5M of UK grant funding

Similar level of funding from in-country partners in Indi and Africa



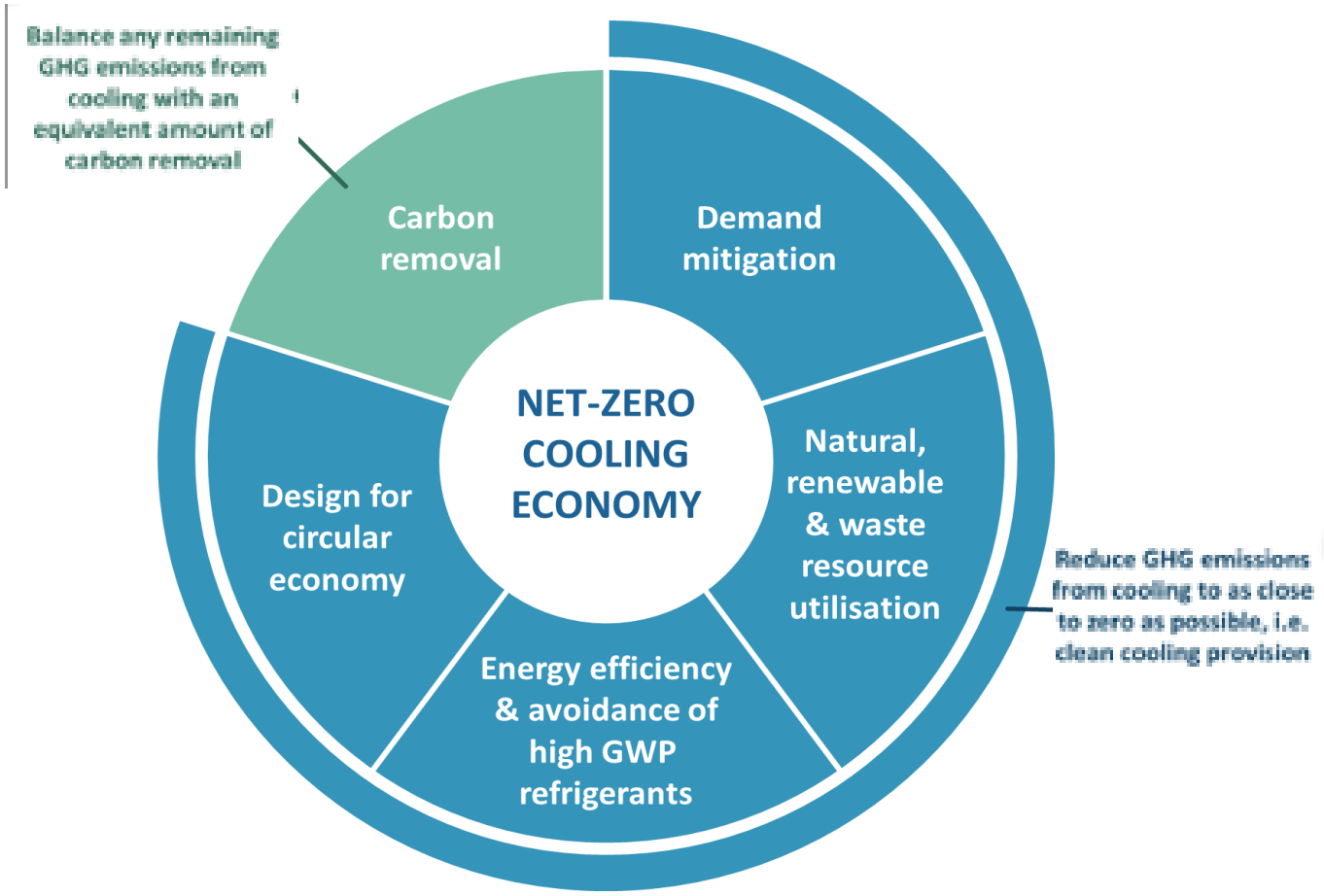
DELIVERED BY:

Centre for Sustainable Cooling | University of Birmingham | Heriot Watt University UK | DUBAI | MALAYSIA | Cranfield University | London South Bank University

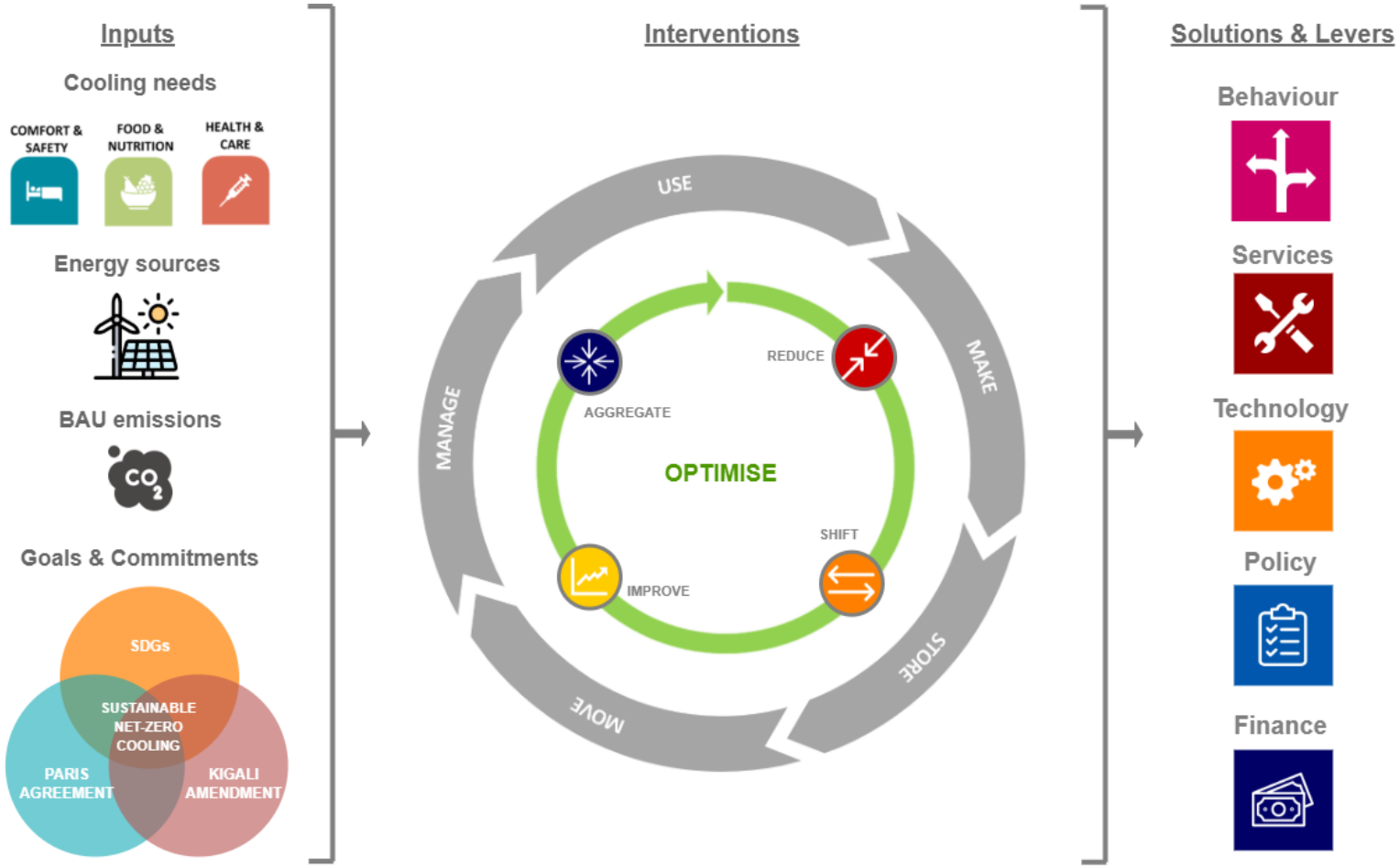
PATHWAYS TO NET-ZERO COLD-CHAINS

Net-zero cooling is reducing GHG cooling emissions from energy use (i.e. indirect emissions) and refrigerant leakage (i.e. direct emissions) during operational life of products (excluding resource extraction, manufacturing, end of life decommissioning) to as close to zero as possible and any remaining GHG emissions (direct and indirect) would be balanced with an equivalent amount of carbon removal.

- Minimise the demand for artificial cooling
- Making use of natural, renewable, and waste energy resources,
- Using energy efficient technologies that avoid refrigerants high global-warming-potential (GWP)
- Taking a circular economy approach to design, manufacturing, deployment, operation and end of life decommissioning



WHOLE SYSTEM ASSESSMENT



DELIVERED BY:

Centre for Sustainable Cooling · University of Birmingham · Heriot-Watt University UK | DUBAI | MALAYSIA · Cranfield University · London South Bank University

AFRICA CENTRE OF EXCELLENCE IN SUSTAINABLE COOLING AND COLD-CHAIN

UK Academic Co-Investigators

DELIVERED BY:

Underpinned with £multi-million public sector investments by the Governments of UK and Rwanda, scheduled to open in 2022 with its own 96-acre campus in Kigali, Rwanda, hosted by the University of Rwanda.

- Help least-served communities work in partnership with industry and academia to reduce food loss and increase access to cooling; key to many basic societal services and needs.
- Provide the skills and encouragement to young people to access exciting careers in fast-growing global sectors.
- Deliver industry the right environment, sales channels and support for the development; demonstration and marketing, and installation and maintenance of new technologies
- We will create the fit-for-market step-change pathways to net zero cold-chain and cooling

SOME OF THE EXAMPLE AREAS

Post-harvest handling, storage, quality, process and packing zone with: Off-grid mobile pre-cooling; Controlled Atmosphere systems; Refrigerated storage; Precision Cooling for soft fruit and perishable crops (blast chilling/vacuum coolers); Hydrocooling; Ripening Rooms; Sustainable packaging; modified atmosphere packaging.

Distribution, Cold-Chain and Logistics Zone with: Ice-production; Zero-emission transport refrigeration; PCMs and small-scale rechargeable cooling boxes; Zero-emission refrigerated transport as well as retail display, professional and domestic, etc.

Energy and Energy Storage Centre with: Integrated thermal systems; waste heat to cold (sorption cooling); Thermal storage (phase change materials).

Data and Digital Transformation Needs assessment tools, data capture and use monitoring, virtual models, electronic trading and fulfilment platforms.

Business Start-Ups, and Incubation Suite with: Design service, business models market engagement and finance, export distribution network.

Quality control and Certifications Centre addressing: Codes and Standards; Setting quality thresholds for retail sector and export markets; Food safety.

Other areas – vaccine and health, retail domestic.

DELIVERED BY:

Centre for Sustainable Cooling | University of Birmingham | Heriot-Watt University UK | DUBAI | MALAYSIA | Cranfield University | London South Bank University

ACES Africa Centre of Excellence for Sustainable Cooling and Cold-chain

OPPORTUNITIES FOR BUSINESS

- ✓ Access to test and development equipment, and technology demonstration in the field.
- ✓ In-market capacity building and skills development to support uptake of best practices and technology deployment and maintenance
- ✓ A business incubator with full-service training, business model design and support, skills development and innovation support.
- ✓ Sustainable low-carbon, packhouse and logistics design services.
- ✓ International certifications advisory services to increase market opportunities and qualify in-country service providers.
- ✓ Research programmes on future-proof, localised solutions for food loss reduction and increased farmer income.

UK – PATHWAYS TO ZERO EMISSION COLD-CHAIN

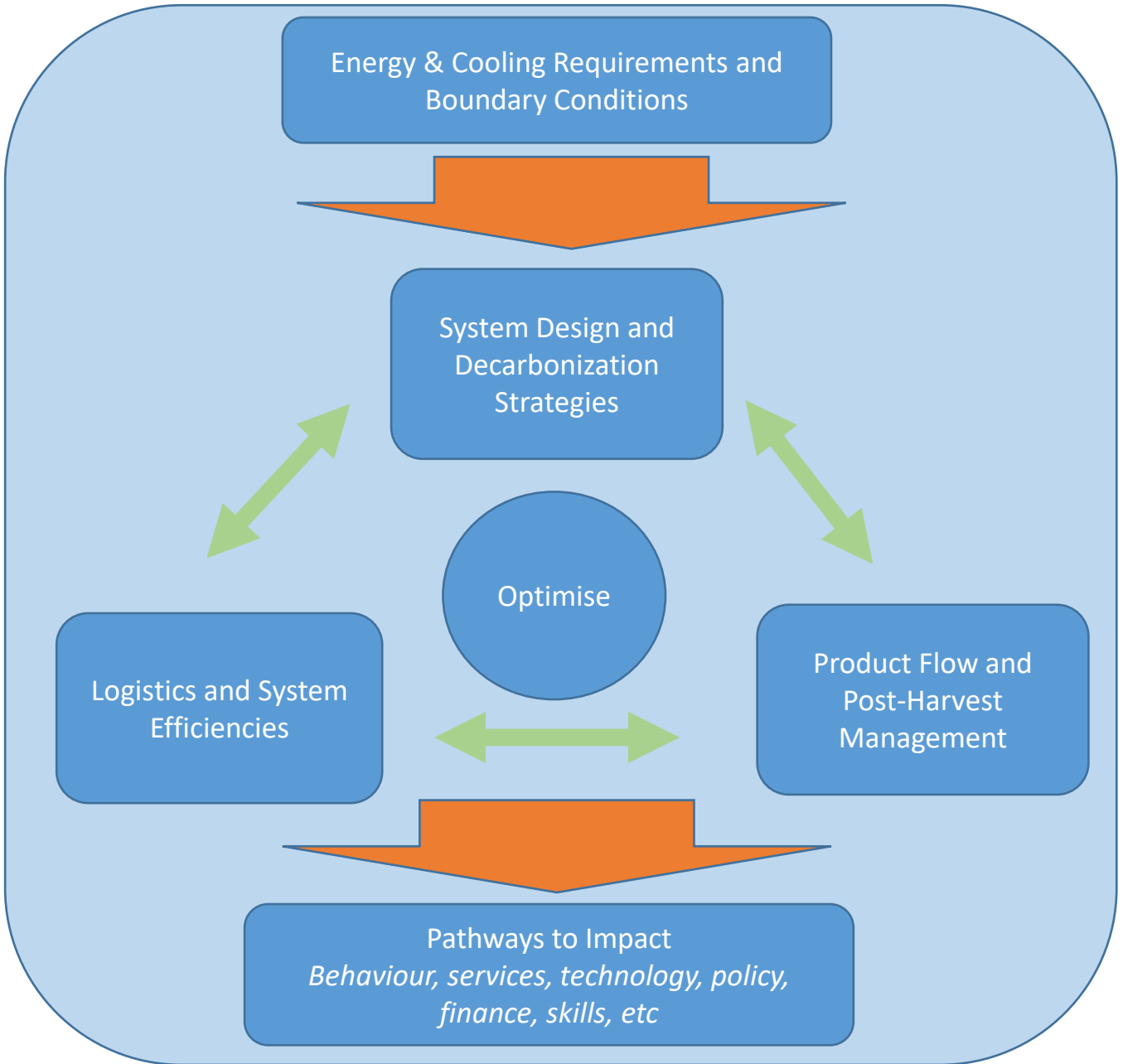
Two projects – 18 month and 4 years

Update and add to current information on energy usage and CO_{2e} emissions

- Benchmark the existing cold chain (chilled and frozen) and provide robust evidence based data on emissions in 2020
- Forward predict emissions to 2050 based on a business as usual scenario
- Evaluate future cold-chain energy consumption demands (technical + non-technical), on UK energy strategies

Systems approach to cooling

- Using digital twins, develop a pathway(s) to a 2050 net zero food

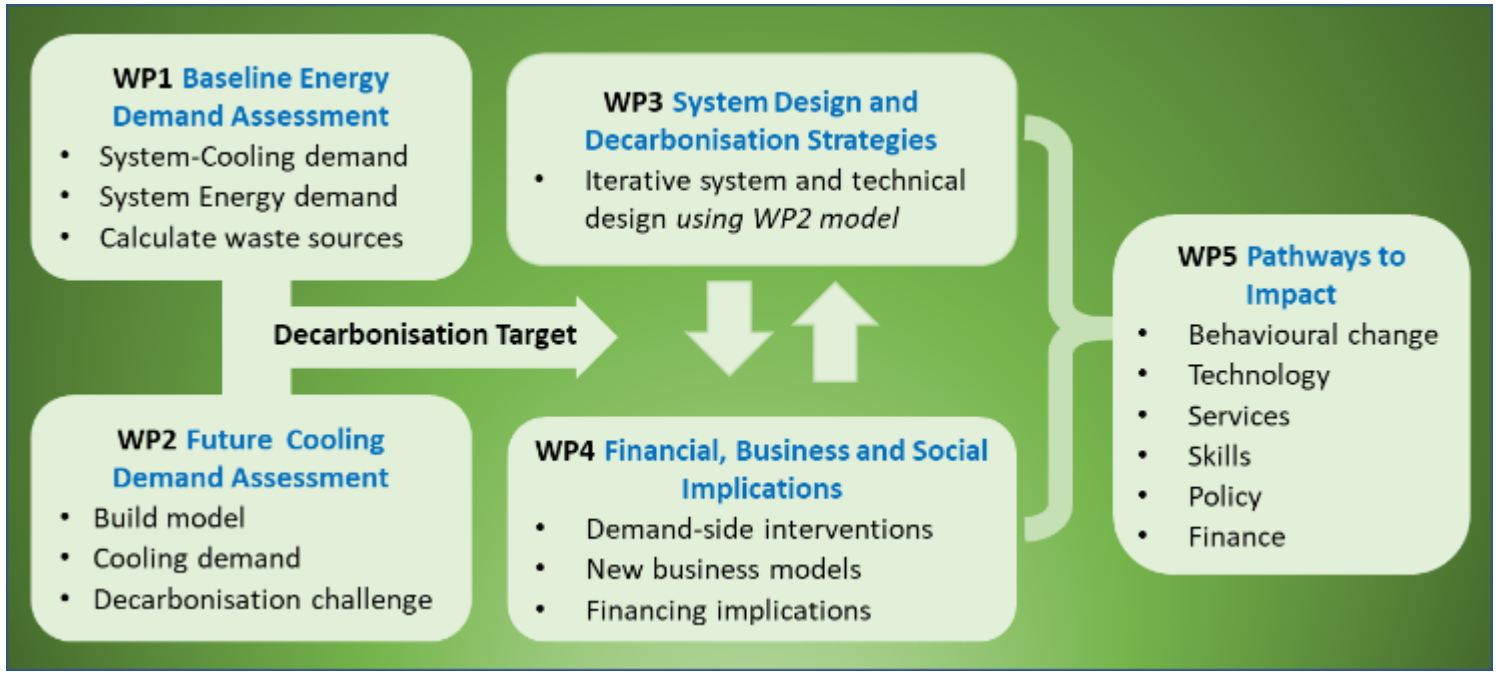


DELIVERED BY:

Centre for Sustainable Cooling · University of Birmingham · Heriot Watt University UK | DUBAI | MALAYSIA · Cranfield University · London South Bank University

Objectives:

- Benchmark the existing cold chain (chilled and frozen) and provide robust evidence based data on emissions in 2020
- Forward predict emissions to 2050 based on a business as usual scenario considering predicted/known changes in population, climate and legislation
  - Assess available options to improve (TRL >=TRL7)
  - Assess new options (TRL4-6)
- Develop a pathway(s) to a 2050 net zero food



Supporting partners include:

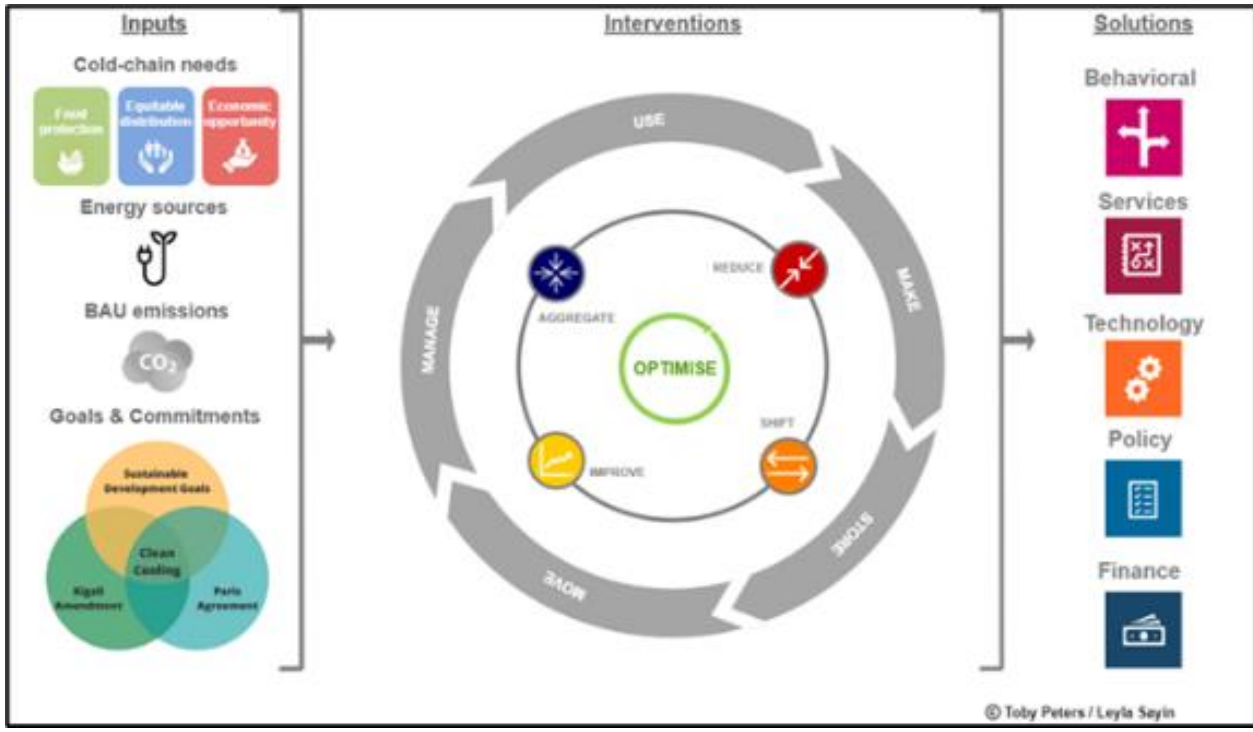
AMDEA (The Association of Manufacturers of Domestic Appliances)
BFFF (British Frozen Food Federation)
Bitzer
CCF (Cold Chain federation)
CFA (Chilled Food Association)
Danfoss
Dawson Group
FDA (Food and Drink Federation)
FES (Foodservice Equipment Association)
FETA (Federation of Environmental Trade Associations)
Flexible Power Systems
Hubbard
IOR (Institute of Refrigeration)
Star Refrigeration
U4E (United for Efficiency)
UNEP (UN Environment Programme)
WAVE Refrigeration

DELIVERED BY:

Centre for Sustainable Cooling | University of Birmingham | Heriot Watt University UK | DUBAI | MALAYSIA | Cranfield University | London South Bank University

NET ZERO COLD CHAIN

- Update and add to current information on energy usage and CO_{2e} emissions
- Assess cooling (chilling and freezing) needs of fresh produce to maintain quality and safety
- Evaluate future cold-chain energy consumption demands (technical + non-technical), impact on UK energy and peak electricity demand
- Systems approach to cooling
- Areas of intervention considering available energy and thermal resources, emission targets, cost and other commitments
- Four integrated measures covering societal, technical, operational and economic perspectives:
    1) Reduce: Reducing the need for cooling, ensuring optimal conditions for food
    2) Shift: Transitioning to more sustainable technologies and working fluids and taking different approaches to cooling
    3) Improve: Enhance equipment and operation efficiency
    4) Aggregate: synergies within the cold-chain to better integrate different cooling demands into single system



LOGISTICS & SUPPLY CHAINS MODELLING PROJECTS

- Building several digital twins to to analyse a variety of scenarios (e.g. technology, logistics and policy interventions), before testing them in reality, reducing risks and cost

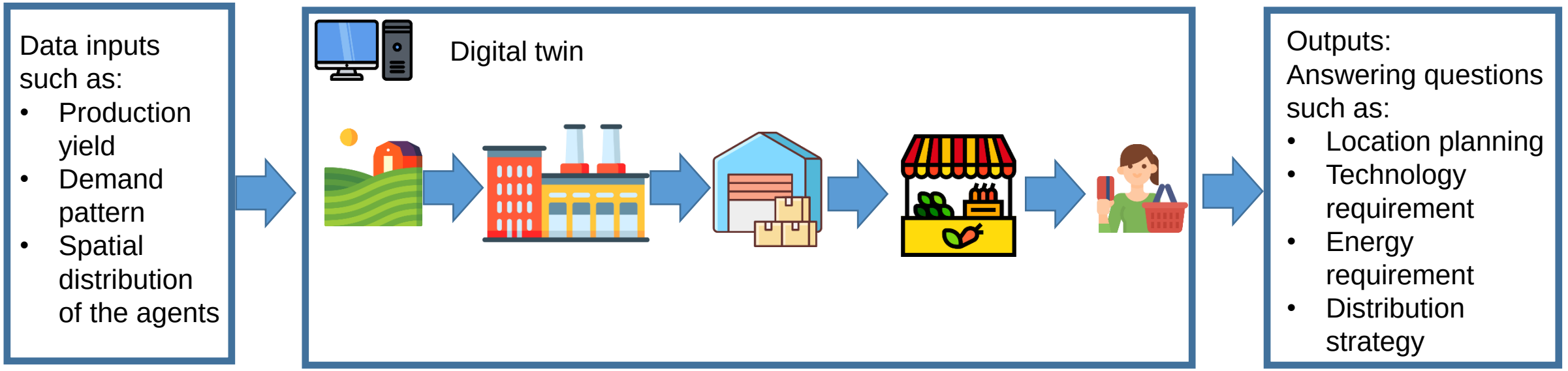
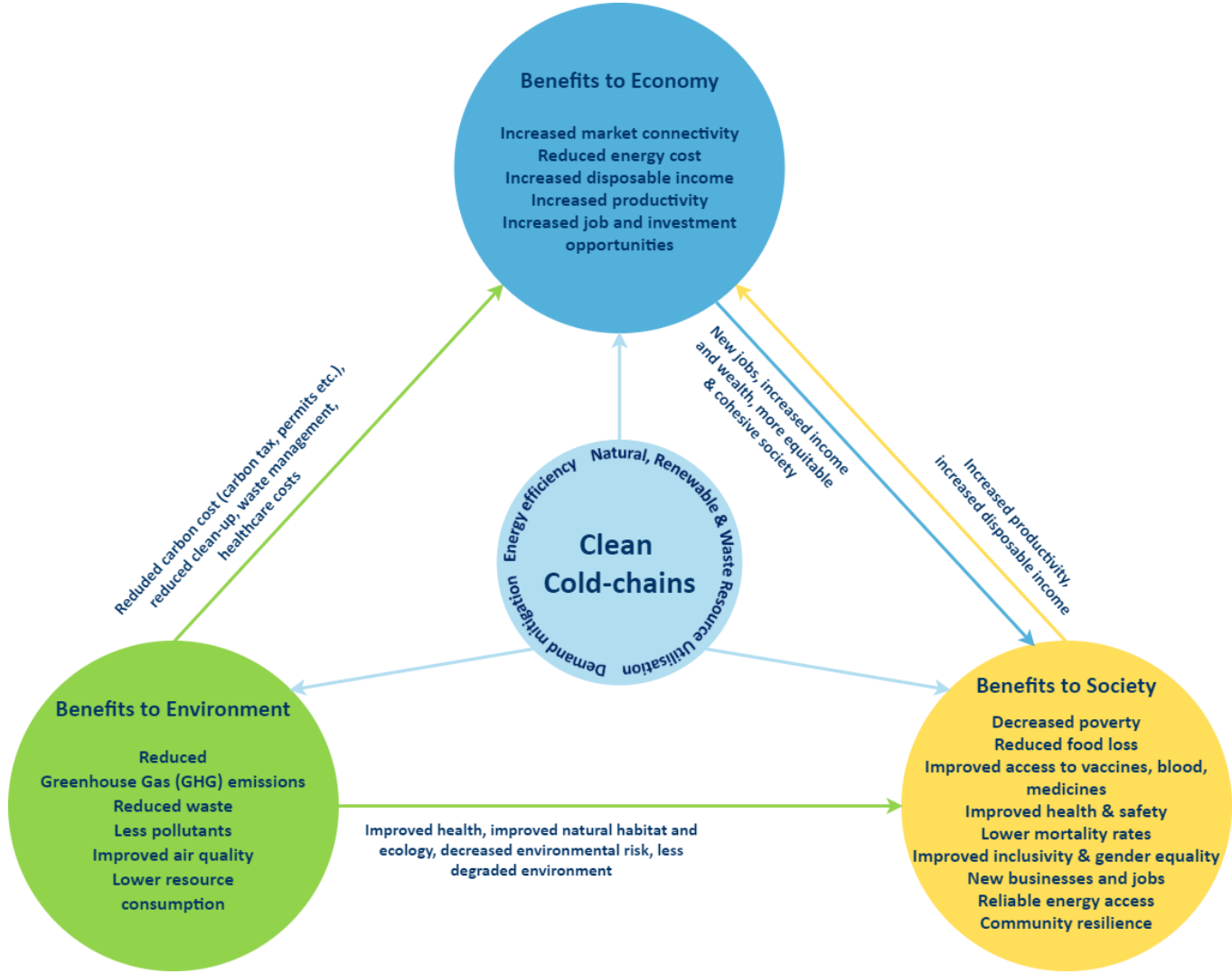


Image source: https://www.flaticon.com/

PATHWAYS TO NET-ZERO COLD-CHAINS

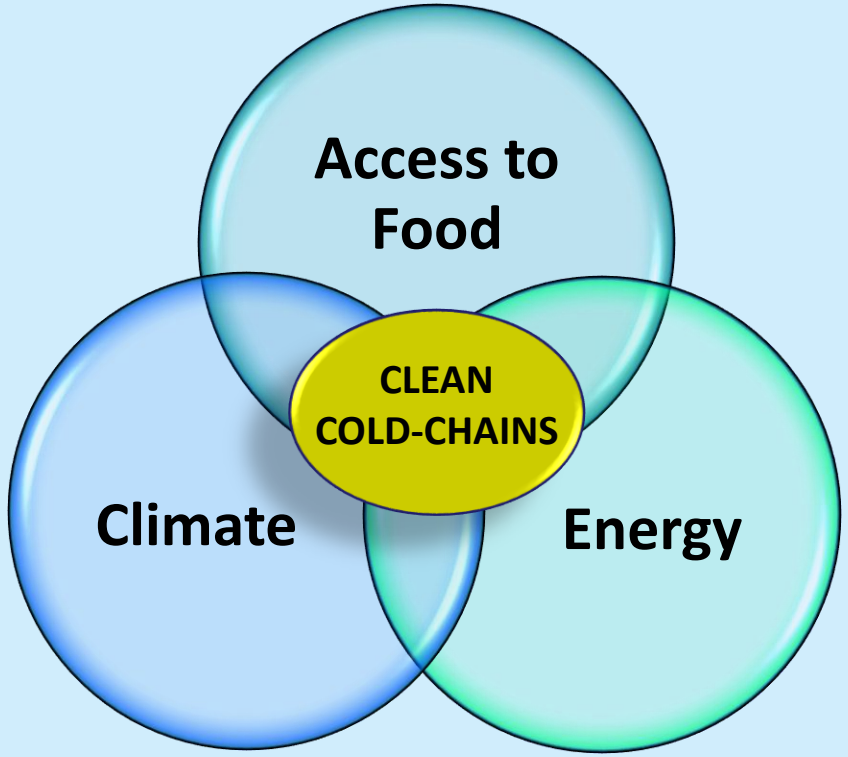


DELIVERED BY:

Centre for Sustainable Cooling · University of Birmingham · Heriot-Watt University UK | Dubai | Malaysia · Cranfield University · London South Bank University

PATHWAYS TO NET-ZERO COLD-CHAINS

Meeting the world's shared climate and social goals



T.PETERS@BHAM.AC.UK	R.L.DRAPER@BHAM.AC.UK	J.KAUFFMANN@CRANFIELD.AC.UK	INFO@SUSTAINABLECOOLING.ORG

DELIVERED BY:

Centre for Sustainable Cooling · University of Birmingham · Heriot Watt University UK | DUBAI | MALAYSIA · Cranfield University · London South Bank University

REFLECTIONS AND CLOSING THOUGHTS

With Dr Rob Lamb, Star Refrigeration

THANK YOU

JOIN US TOMORROW:

Wednesday 19th May 10:30am

DAY 2: SUSTAINABLE INNOVATIONS FOR THE COLD CHAIN

SUPPORTED BY:

mypower solar professionals

Onsite Energy projects

STAR REFRIGERATION