

ICCEE: Improving Cold Chain Energy Efficiency

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ICCEE: 13 partners from Europe



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ICCEE: Focus on cold supply chains

The cold supply chain as a network of companies offering food products ranging from initial procurement to the final customer under temperature-controlled conditions.



- Precooling system
- Farms (rural markets)
- Manufacturers

- Refrigerated trucks
- Refrigerated railway wagons
- Refrigerated cargo containers

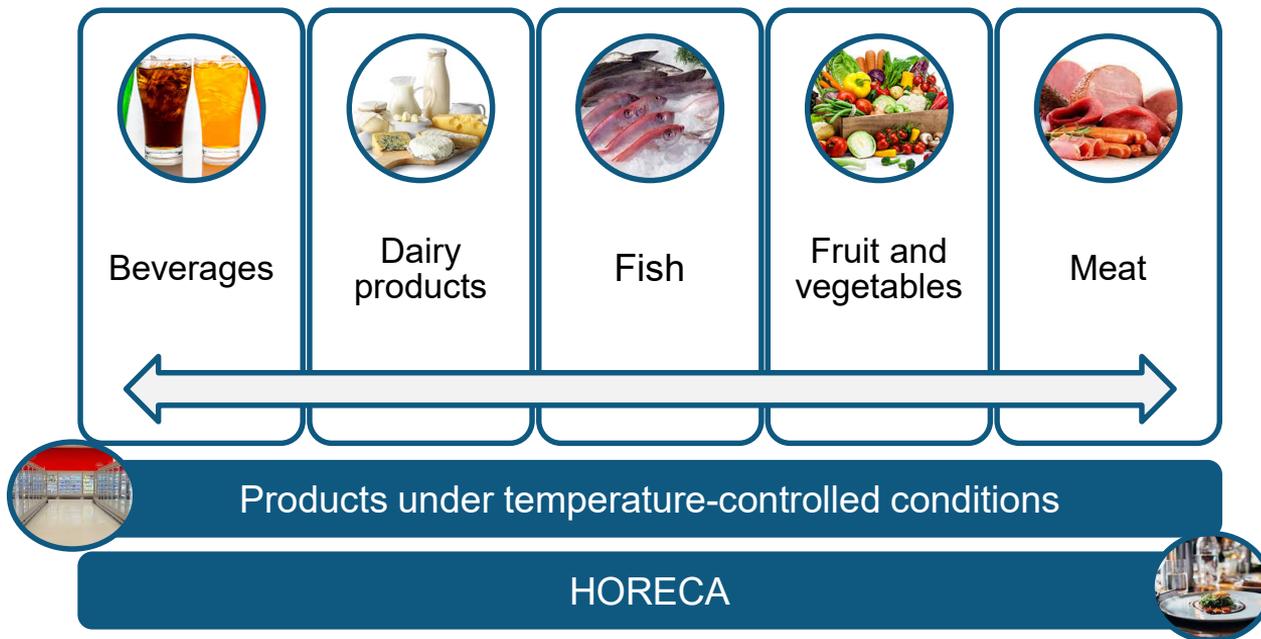
- Cold storage
- Warehouses

- Refrigerated trucks
- Refrigerated railway wagons
- Refrigerated cargo containers

- Retail, terminal, markets, factory, ports, airport

ICCEE: Targeted sectors

ICCEE focuses on SMEs in cold supply chains of the food and beverage sector
(large companies not excluded)



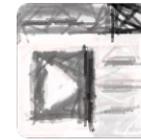
ICCEE: Implementation

What?

- Increase awareness and knowledge
- Lead to changes in habits and behaviour
- Contribute to enhance energy cultures
- Help overcome barriers to change

How?

- Methods and tools for cold supply chains
- E-learning module
- Industry informative network
- Direct training (workshops)



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About the ICCEE-toolbox in brief

- Collection of **7 tools** supporting the aims of the ICCEE project
- Coverage of various topics related to **energy efficiency in cold supply chain** performance using on default setups for targeted sectors
- Printable **“offline” spreadsheet** documents without macros (one exception)
- Available in **8 languages** 
- Available for **free** on project website (forthcoming)
- European **workshops on tools** for companies planned for Q3/Q4 2021

#4: Benchmarking on non-energy benefits: Input

Below you will find a series of selections. Please choose the size of your company questions and answer them. After completing your choices, you can compare you in the results.

#0: Choose your peer group for the benchmarking results

What is the size of your organization?

- Large (> 249 employees)
- Medium (50-249 employees)
- Micro & Small (1 - 49 employees)

With which organisations would you like to get benchmarked?

- Organizations of my size
- All organizations

#1: The importance of energy related matters in your company and your cold supply chain

How does your individual company manage energy-related matters?

- We have a formal energy management system (e.g. according to ISO 50001)
- We do not have a formal energy management system, but someone is following up on energy-related matters.
- Nobody is following up on energy-related matters.

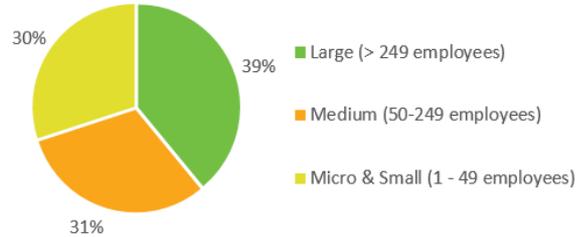
To what degree is energy efficiency relevant for decisions in your individual company?

- It is hardly relevant at all.
- It is sometimes relevant.
- It is relevant in most or almost all decisions.

To what degree is energy efficiency relevant for decisions concerning your cold supply chain?

- It is hardly relevant at all.
- It is sometimes relevant.

What is the size of your organization? (n=122)



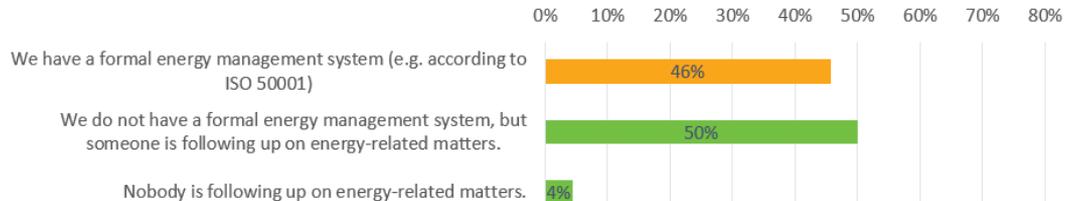
Size of your organization: Large company

Your selected peer group: Large companies

Management of energy efficiency in your organization vs. all participating organizations

About one third of all organizations have a formal energy management system (according to ISO 50001) and about two thirds are following up on energy-related matters with a formalized energy management system. Your organization is highlighted in orange.

How does your individual company manage energy-related matters?



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ICCEE-Toolbox: Coverage from 7 angles

Cold supply chain tool: Key features

- Analysis of **energy consumption** and **quality losses** along a cold supply chain
- Help to understand **trade-offs** between time, quality and energy
- Role of particular actors on the **entire chain**



Tool #1: Cold supply chain tool (CSC)

Do you want to analyze your CSC's energy consumption and prevent food quality losses?

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ICCEE-Toolbox: Coverage from 7 angles

Life cycle assessment tool: Key features

- Streamlined, yet consistent, **exploration of the overall environmental impact** of chilled and frozen products
- Coverage of **three main indicators** along the supply chain Cumulated Energy Demand (CED), Global Warming Potential (GWP) and Water Footprint (AWARE)



Tool #1: Cold supply chain tool (CSC)

Do you want to analyze your CSC's energy consumption and prevent food quality losses?

Tool #2: Life cycle assessment tool (LCA)

Do you want to understand the environmental impact of your CSC?

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ICCEE-Toolbox: Coverage from 7 angles

Life cycle costing tool: Key features

- **Holistic approach** for energy efficiency measures in cold chains from economic perspective
- Structured evaluation of the **life cycle costs**
- Provision of **economic performance** indicators



Tool #1: Cold supply chain tool (CSC)

Do you want to analyze your CSC's energy consumption and prevent food quality losses?

Tool #2: Life cycle assessment tool (LCA)

Do you want to understand the environmental impact of your CSC?

Tool #3: Life cycle costing tool (LCC)

Do you wonder about the economic benefit from energy efficiency measures?

ICCEE-Toolbox: Coverage from 7 angles

Benchmarking non-energy benefits tool: Key features

- **Entry point** for deeper reflections on the role of energy efficiency and non-energy benefits
- **Comparison with peers** in cold supply chains using results from a broader survey on cold supply chains

Tool #4: Benchmarking non-energy benefits (BEN)
Are you interested in other factors relevant for decision making on CSC energy performance?



Tool #1: Cold supply chain tool (CSC)
Do you want to analyze your CSC's energy consumption and prevent food quality losses?

Tool #2: Life cycle assessment tool (LCA)
Do you want to understand the environmental impact of your CSC?

Tool #3: Life cycle costing tool (LCC)
Do you wonder about the economic benefit from energy efficiency measures?

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Non-energy benefit evaluator tool: Key features

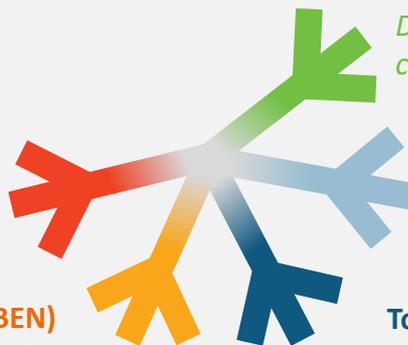
- Assessment of the **strategic value of non-energy benefits** of specific energy efficiency measures
- Structured **identification of relevant benefits** using pre-defined lists along a set of simple steps

Tool #5: Non-energy benefit evaluator (NEB)

Do you wonder how to analyze non-energy benefits in a structured manner?

Tool #4: Benchmarking non-energy benefits (BEN)

Are you interested in other factors relevant for decision making on CSC energy performance?



Tool #1: Cold supply chain tool (CSC)

Do you want to analyze your CSC's energy consumption and prevent food quality losses?

Tool #2: Life cycle assessment tool (LCA)

Do you want to understand the environmental impact of your CSC?

Tool #3: Life cycle costing tool (LCC)

Do you wonder about the economic benefit from energy efficiency measures?

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Multi-criteria analysis tool: Key features

- **Identification of trade-offs** between key performance criteria for the environmental impact in cold supply chains
- **Quantitative, yet simple, ranking method** for the evaluation of scenarios within cold supply chains

Tool #6: Multi-criteria analysis tool (MCDA)

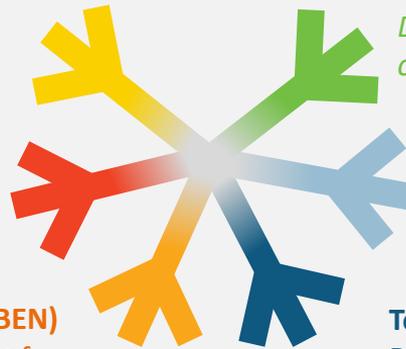
Did you already take a look at the CSC and LCA tools and do you want to know more?

Tool #5: Non-energy benefit evaluator (NEB)

Do you wonder how to analyze non-energy benefits in a structured manner?

Tool #4: Benchmarking non-energy benefits (BEN)

Are you interested in other factors relevant for decision making on CSC energy performance?



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Do you wonder about the economic benefit from energy efficiency measures?

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Guidance tool: Key features

- **Overview** and guidance to the toolbox
- Best practice examples for energy-efficient **cold supply chains** from ICCEE
- Overview of national support programmes concerning **energy efficiency in the cold supply chain**

Tool #0: Guidance

Do you want to know more about solutions and funding for energy-efficient CSCs?

Tool #6: Multi-criteria analysis tool (MCDA)

Did you already take a look at the CSC and LCA tools and do you want to know more?

Tool #5: Non-energy benefit evaluator (NEB)

Do you wonder how to analyze non-energy benefits in a structured manner?

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Do you wonder about the economic benefit from energy efficiency measures?



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Interested in the forthcoming European Tool Workshops?
Contact: Christine Weiker (c.weiker@ecsla.eu)
European Cold Storage and Logistics Association (ECSLA)



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eurammon e. V. is always available as a sparring partner for questions on refrigeration with natural refrigerants.

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