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Sustainability, Inland Waterway Transport, CO2 Emissions & ISO 14083

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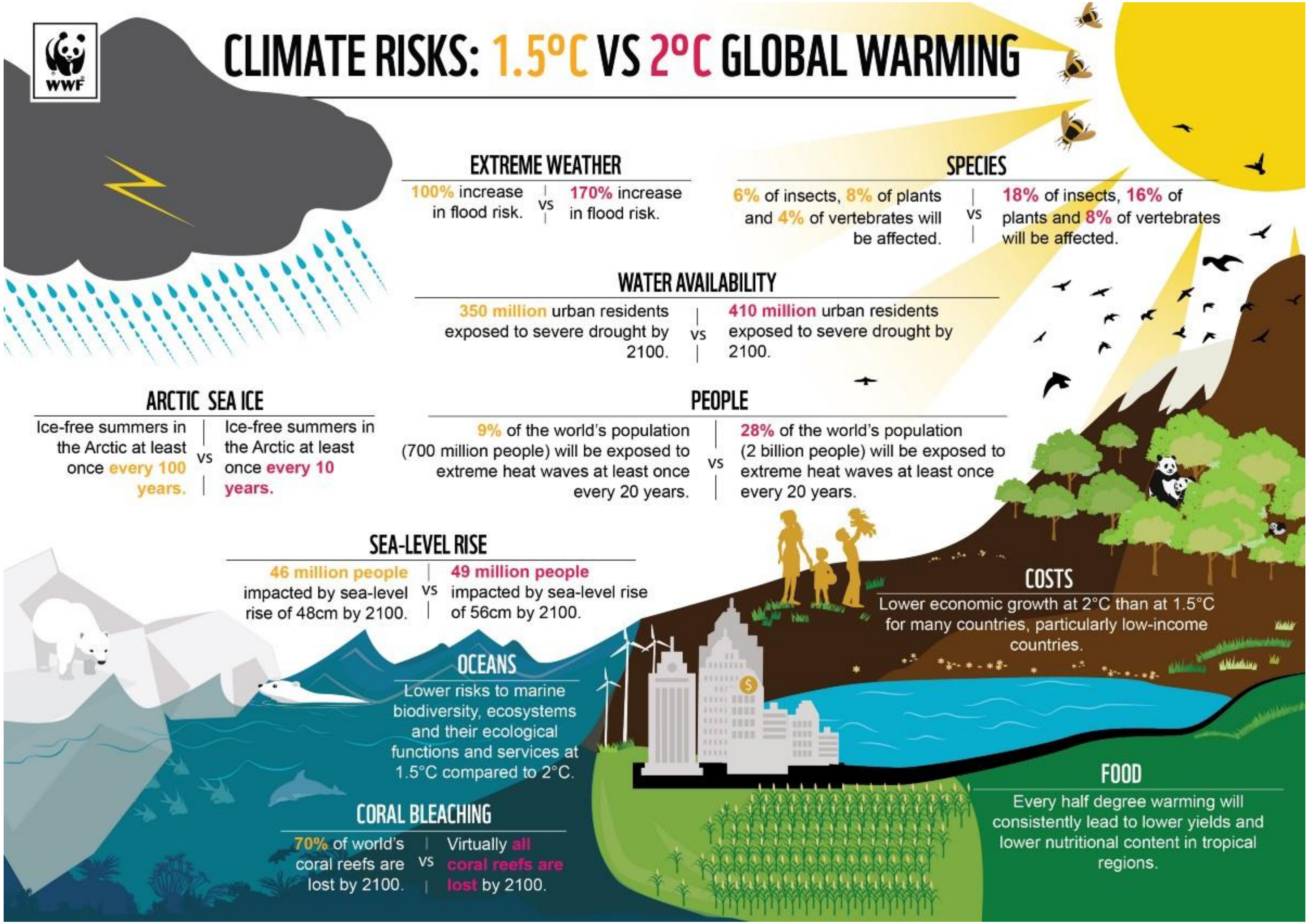
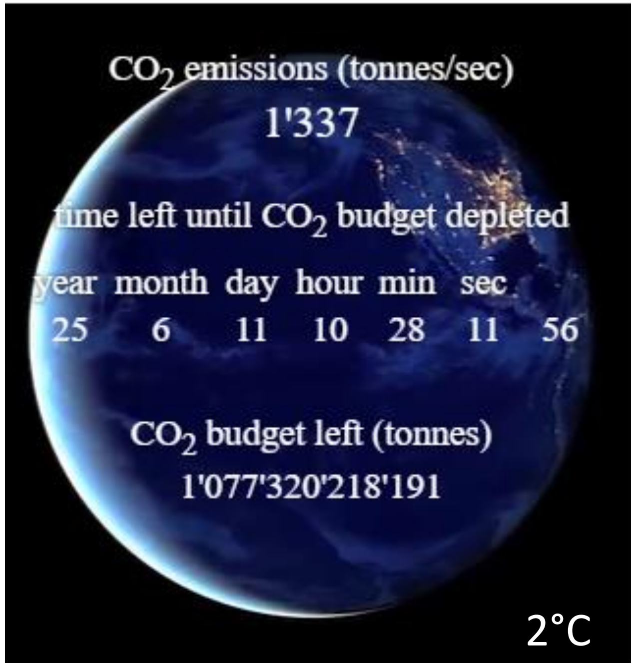
FH OBERÖSTERREICH UNIVERSITY OF APPLIED SCIENCES UPPER AUSTRIA

Smart Freight Centre

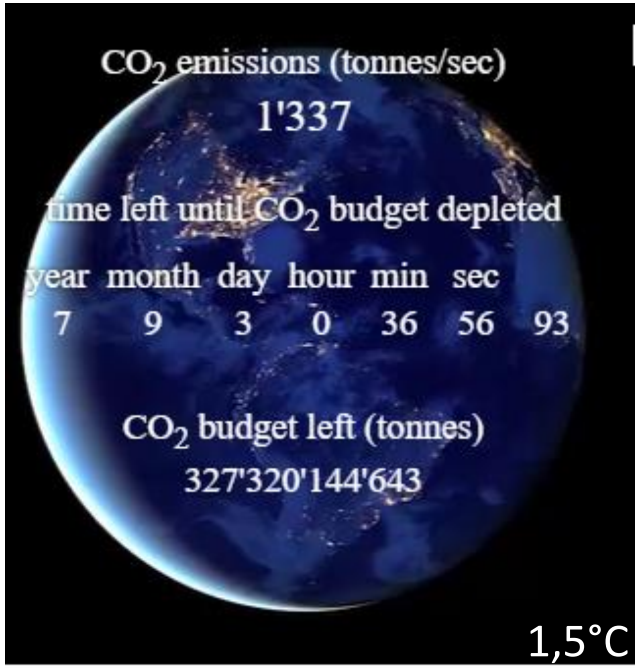
GLEC GLOBAL LOGISTICS EMISSIONS COUNCIL



https://www.mcc-berlin.net/en/research/co2-budget.html

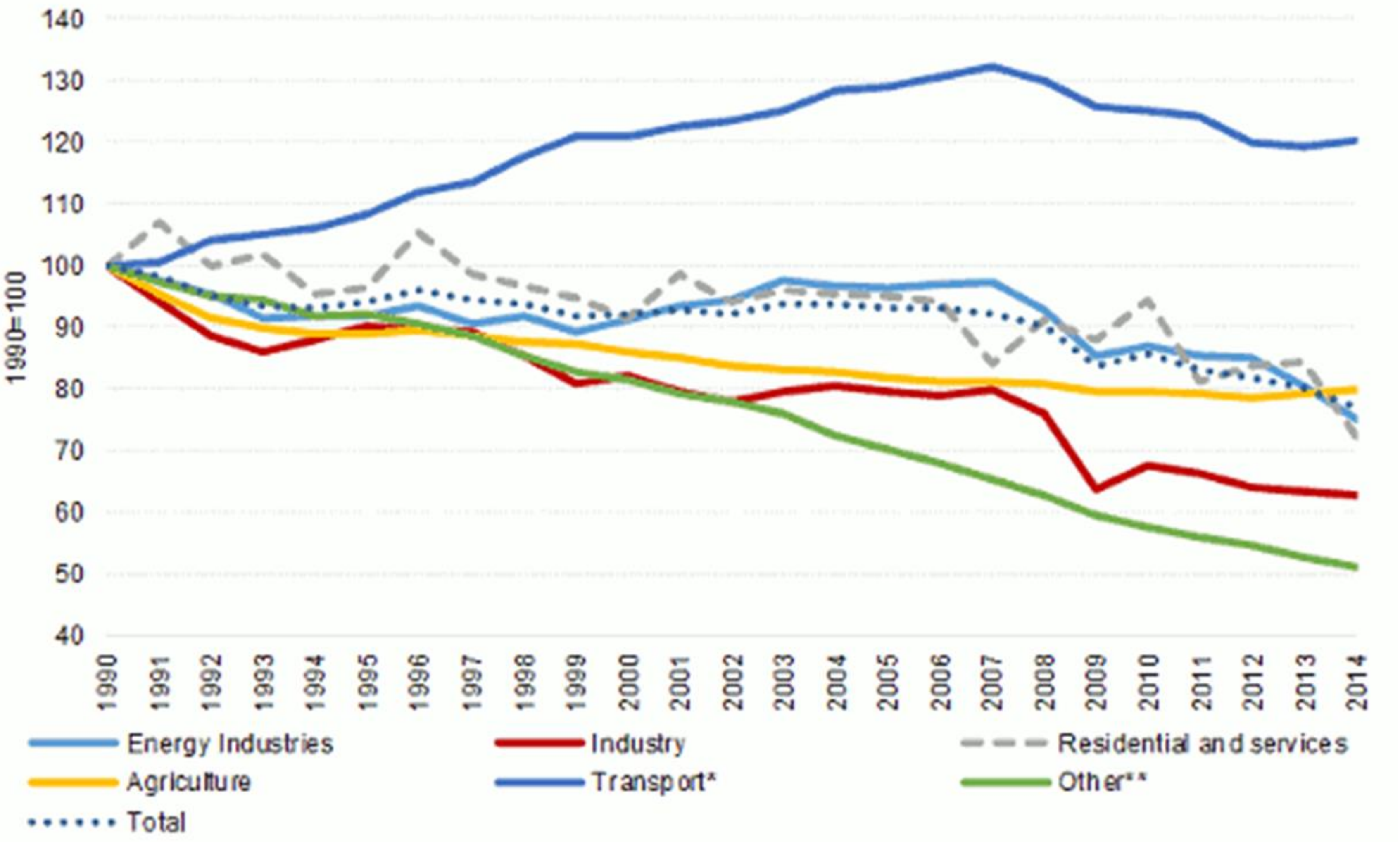


2°C



1,5°C

CO2 development in transport



https://ec.europa.eu/clima/policies/transport_en

It´s urgent

Logistics emissions will increase by almost 50% by 2050
- but these are to be reduced by 90% in order to achieve the climate target

Source: GLEC 2019

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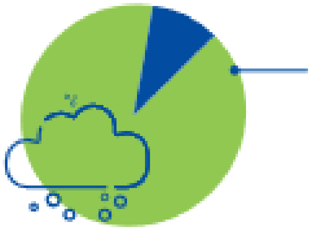
The European Green Deal



90% reduction greenhouse gas emissions in transport by 2050

https://ec.europa.eu/info/sites/default/files/european-green-deal-communication_en.pdf

Green Deal: Sustainable mobility

➢ **Go Digital**

- Automated mobility and smart traffic management systems will make transport more efficient and cleaner.
- Smart applications and 'Mobility as a Service' solutions will be developed.

➢ **Prices that reflect impact on environment**

- Ending subsidies for fossil-fuel
- Extending emissions trading to the maritime sector
- Effective road pricing in the EU
- Reducing free allowances to airlines under emissions trading

➢ **Use different modes of transport**

More freight should be transported by rail or water. And the Single European Sky should significantly reduce aviation emissions at zero cost to consumers and companies

➢ **Boost supply of sustainable alternative transport fuels**

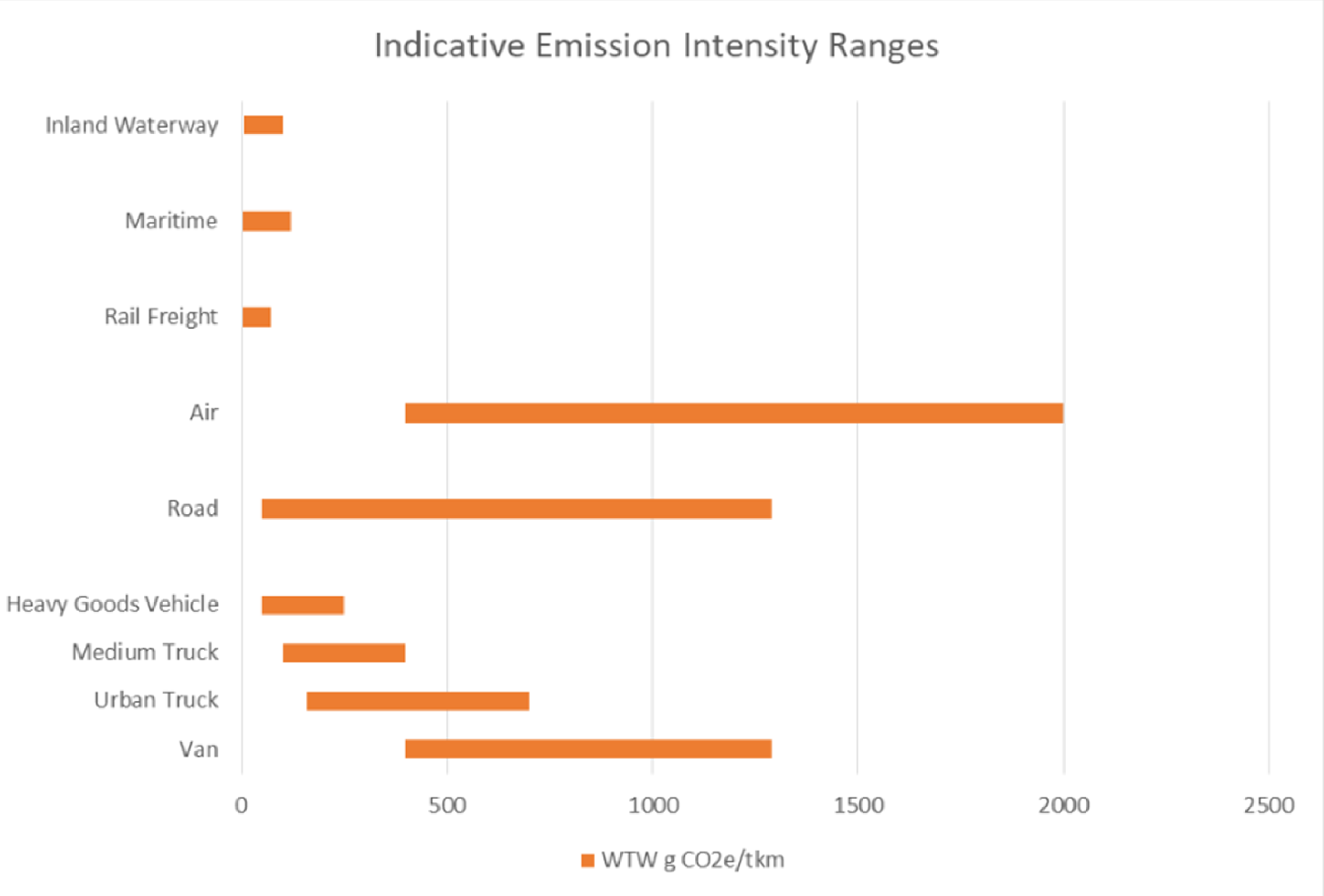
By 2025, about 1 million public recharging and refuelling stations will be needed for the 13 million zero- and low-emission vehicles expected on European roads

➢ **Reduce pollution**

The Green Deal will address emissions, urban congestion, and improve public transport.

https://ec.europa.eu/commission/presscorner/detail/en/fs_19_6726

CO2e emissions per transport mode



Green Deal: Inland Waterways +50% until 2050
Why should the inland vessel be used more?

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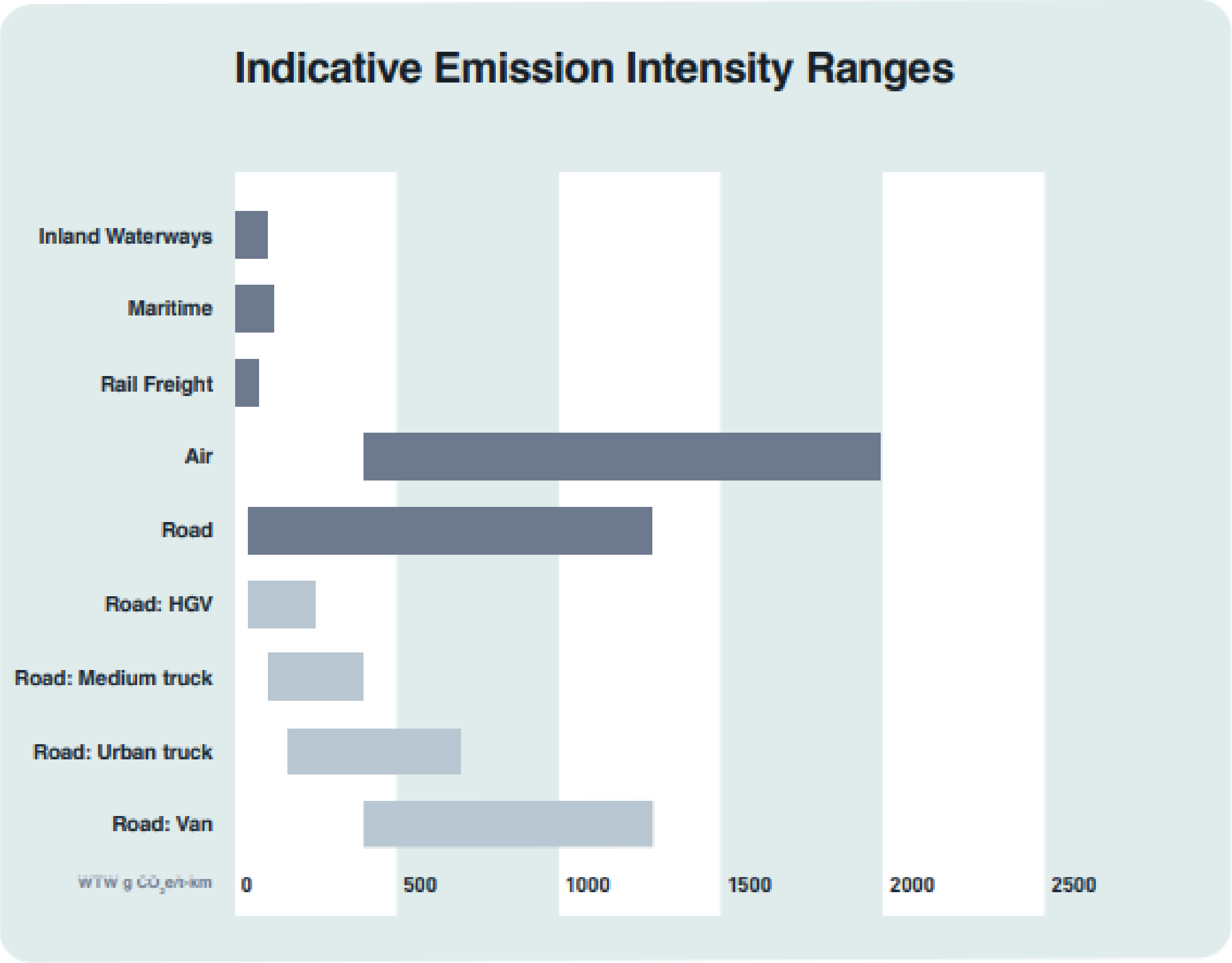

Figure 21. Examples of WTW emission intensity values for different types of freight transport, based on 2019 GLEC default factors.

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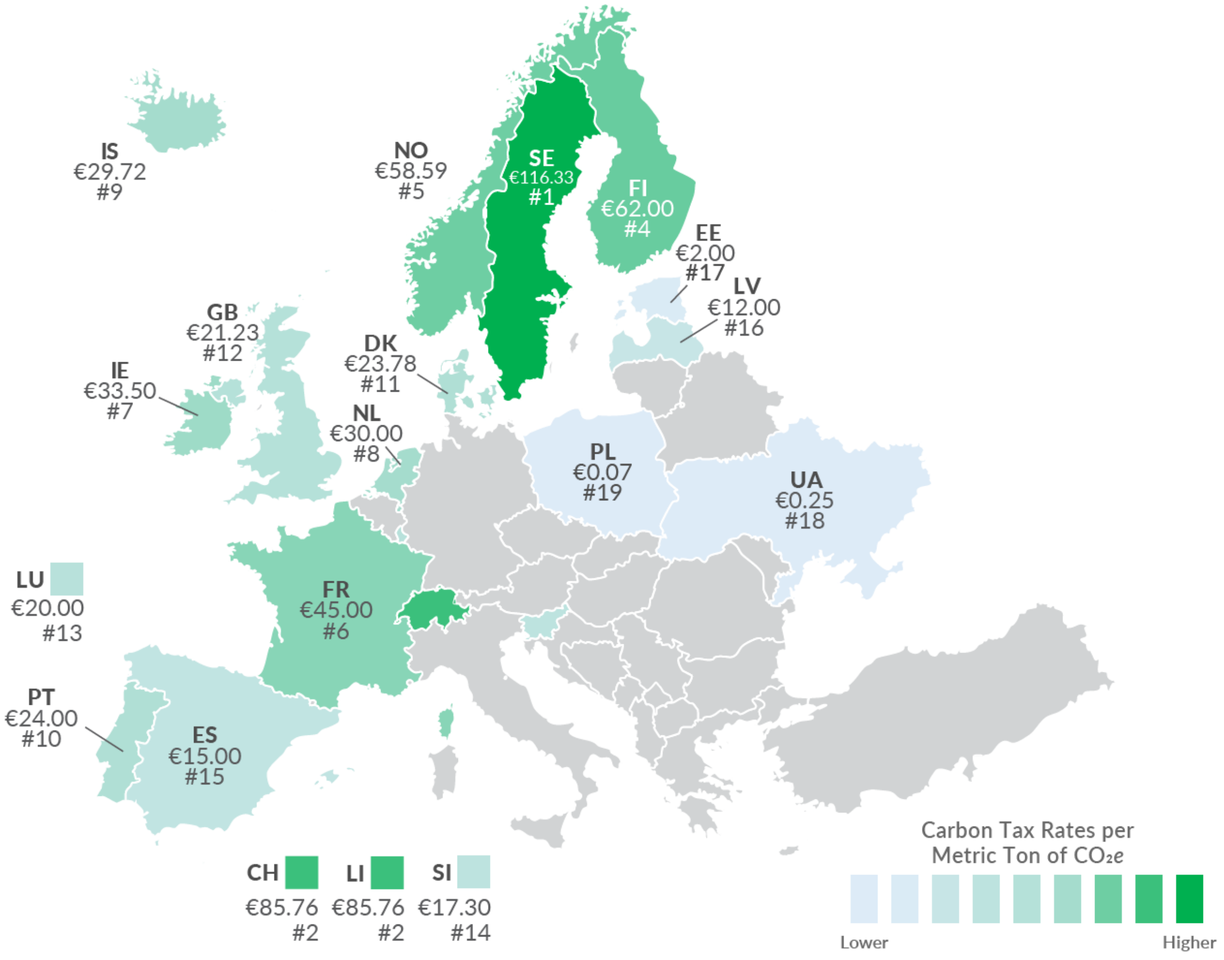
CO2 Taxation in Europe & Austria

- Eco-tax reform as a central component of the government program → from 2022 CO2 tax
- Tax benefits for public transport
- Increase in standard consumption tax for high-emission cars
- Exclusion from NoVA: electric and hydrogen-powered cars

Carbon Taxes in Europe

Carbon Tax Rates per Metric Ton of CO_2e, as of April 1, 2021



Note: The carbon tax rates were converted using the EUR-USD currency conversion rate as of April 1, 2021.

ISO 14083 project update (Sep 2021)
Background to the project

- Challenges:
  - GLEC Framework as industry guideline is not ‘official’ enough for some stakeholders
  - Desire for a tighter application structure
- Objectives:
  - To embed the principles and default factors of the GLEC Framework into the ISO 140xx family
  - Ensure industry, governments and investors use a single methodology, consistent with GLEC Framework
- Timeframe:
  - November 2019 to November 2022

Partners

- International Secretariat: German Institute for Standardization (DIN)
- ISO Technical Committee 207: Environmental Management
  - Steering Committee SC7: Greenhouse Gas Management & Related Activities
    - Working group WG14: Quantification and reporting of greenhouse gas emissions of transport operations
- Working Group Convener: Verena Ehrler, DLR/IFFSTAR
- Up to 60 national committees set up to discuss and review drafts

- Project manager ISO 14083 : Alan Lewis of Smart Freight Centre
- Financial support and content input:
  - Trafigura Foundation
  - GLEC members and affiliates

What will the project deliver?

ISO14083 standard

- Title: Greenhouse gases - Quantification and reporting of greenhouse gas emissions arising from transport chain operations
- Scope: a common methodology for the quantification and reporting of GHG emissions arising from the operations of transport chains of passengers and freight, including hub operations
- Vienna Agreement ensures review of EN16258 is captured within the development of ISO14083
- If ISO14083 is approved EN16258 will be withdrawn

Structure Outline

- Main Body
  - Purpose
  - Alignment with ISO 140xx 'family'
  - Terms & definitions
  - Principles
  - Requirements
    - Quantification of emissions by transport operator
    - Assignment and allocation of emissions to consignments and/or passengers
    - Collection of emissions for multi-element chains (e.g. by freight forwarder or tour operator)
    - Reporting

- Annexes
  - Calculation guidance for all transport modes (inc. pipelines)
  - Guidance on hub calculations
  - GHG emission factors for common fuels
  - Guidance on calculation of GHG impact of refrigerant leakage
  - Suggested default emission intensity values, for when primary data is not available
  - Introductory (non-binding) guidance on
    - Packaging impacts
    - Black carbon & radiative forcing
    - IT energy use
    - Suitable modelling parameters for GHG calculations

Achievements to date

1. Proposed General Principles:
   - All GHG emissions shall be treated equally for each mode of transport.
   - All GHG emissions shall be treated equally, irrespective of the energy carrier used.
   - There shall be no material difference in approach to the quantification and allocation between the different modes, or between passenger and freight transport.
   - All emissions shall be allocated between the beneficiaries of the transport operations (passengers and/or freight).
   - The sum of allocated emissions shall not be less than the emissions calculated.
   - Includes the full fuel cycle – split into energy provision and operational components.
   - Includes emissions from operation of empty vehicles needed for overall system to function

2. Proposed three stage process:
   - Quantification
   - Allocation
     - Calculation of an emission intensity factor to aid onward reporting
     - Combination by service providers who need to aggregate information from (multiple) transport operators for onward reporting
   - Reporting

3. Proposed use of transport and hub operation categories:
   - group of transport operations that share similar characteristics
   - removes insistence on use of primary data
   - allows flexible aggregation of data to meet varying user needs

Next steps

2019
Nov:
Kick-off

2020
April-June:
Working draft 1

July-Dec:
Working draft 2

2021
Feb:
Consultation meetings

March-May:

Consultation draft

2021

Aug / Sep:

Consultation meetings

Nov-Jan ‘22:

DIS

2022

Preparation & translation

Publication of ISO 14083

Implications for inland waterway transport

- Recommended structures for grouping freight and passenger operations:

Freight Type	Vessel size category	Vessel configuration	Condition
Dry Bulk Liquid Bulk Containerized Mass-limited, general freight Volume-limited, general freight	< 50 m 50-80 m 80–110 m 110–135 m > 135 m	Individual vessel Pushed convoy	Ambient Temperature-controlled

Vessel Operation Type	Vessel size category	Condition	Waterway type
River cruise RoRo river ferry Waterbus Water taxi	TBC	Transport only Transport + other services (restaurant, accommodation, …)	Canal River Lake

Implications for inland waterway transport

- Allocation for freight by tonne km (or TEU km for containerized transport)
- Inclusion of impact of current when modelling energy use and emissions
- Use of GLEC Framework well to wake default emission intensity values

Vehicle characteristics and size	Loading Basis	Emission intensity (g CO_2e/tkm)		
	Combined Load Factor & Empty Running	g_{EP}	g_{VO}	g_{TOT}
Motor vessels ≤ 50m (≤ 650t)		12.4	71.2	83.5
Motor vessels 50 - 80m (650 – 1000t)		4.2	24.4	28.6
Motor vessels 80 - 110m (1000 – 2000t)		2.7	15.4	18.1
Motor vessels 135m (2000 – 3000t)		2.7	15.7	18.4
Coupled convoys (163 - 185m)		2.4	14.0	16.5
Pushed convoy - push boat + 2 barges		2.5	14.3	16.8
Pushed convoy - push boat + 4/5 barges		1.4	8.0	9.4
Pushed convoy - push boat + 6 barges		1.1	6.1	7.2
Tanker vessels		3.1	17.6	20.6
Container vessels 110m		3.7	21.1	24.7
Container vessels 135m		2.8	16.3	19.2
Container vessels - Coupled convoys		2.8	16.3	19.1

Summary: Sustainability, CO2 & Inland Waterway Transport

A global initiative:

There will be ISO certification for GHG (CO2e) transport emissions based on the GLEC framework for freight transport (replaces EN16258)

ISO is detailed and technical in its process and approach: smaller logistics companies need help with the interpretation

Calculation process of the GHG:

- Suitable/available data type
- Primary data: for LDL, ideally shared with users that they understand procurement decisions
- Detailed modeling

Primary data:

The EU wants to implement a transparency requirement for transportation service providers to be linked to ISO processes

Challenges:

- Integration of all modes of transport in a multimodal context
- improved data exchange and standard protocol

The biggest challenge for inland navigation:

Improve data collection to ensure comparability with other modes of transport