

PORT SOLUTIONS FOR EFFICIENT, EFFECTIVE AND SUSTAINABLE MULTIMODALITY



MultiRELOAD

Accelerating Modal Shift to Danube Freight Shipping through Containerization

Identified Market Potentials

Silvia Dopler, MSc (silvia.dopler@fh-steyr.at)

12th March 2024 @ EM PORTS, Budapest



MultiRELOAD

PORT SOLUTIONS FOR SUSTAINABLE MOBILITY

Silvia Dopler, MSc

Research Associate

Sustainable Transport

silvia.dopler@fh-steyr.at



UNIVERSITY
OF APPLIED SCIENCES
UPPER AUSTRIA



LOGISTIKUM
CHALLENGE ACCEPTED

Why Containerization on the Danube?



Modal shift potential from road to inland waterways

Road transport distances of 300 km or longer should be shifted to IWW or rail ³



Low market penetration in IWT sector

~90% of 122 billion TKM in the EU is not containerized (year 2022) ^{1,2}



Promising advantages

Decrease costs and transit time
Increase reliability and flexibility

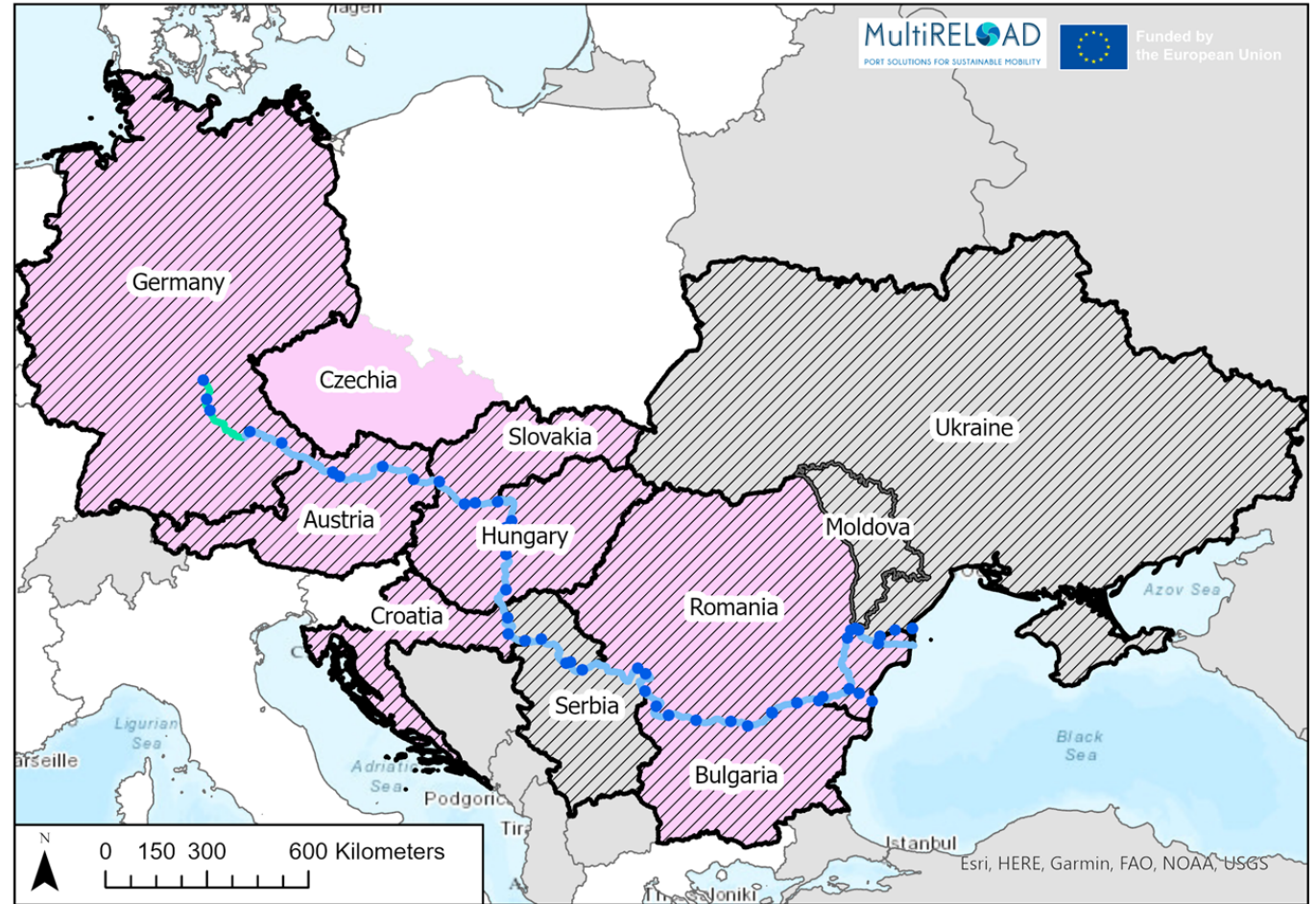
Project targets

- **Containerization** on the Danube for **better multimodal transport chains** using IWW to incentivize a modal shift from road to IWW
- Desk research on **goods** that are potentially **suitable for containerization** on the Danube
- Data acquisition and analysis on the current transport market of the potential goods in the **Danube corridor**
- Extraction of a **potential shift volume** (in t and tkm) from road to IWW
- Goal: Facilitate a **modal shift from road to IWW of 5%**

Study Area & Data

- Danube riparian countries that are EU member states
- Czechia included due to closeness to Danube
- EUROSTAT transport database⁴, year 2021

eurostat 



- Danube
- Main-Danube Canal
- Ports
- Non-EU
- EU member
- Danube riparian country
- EU member and part of study area in Task 2.3

Sources: European Commission – Eurostat/GISCO, UNECE, ArcGIS; Author: Silvia Dopler (FHOO); Date: 24.08.2023

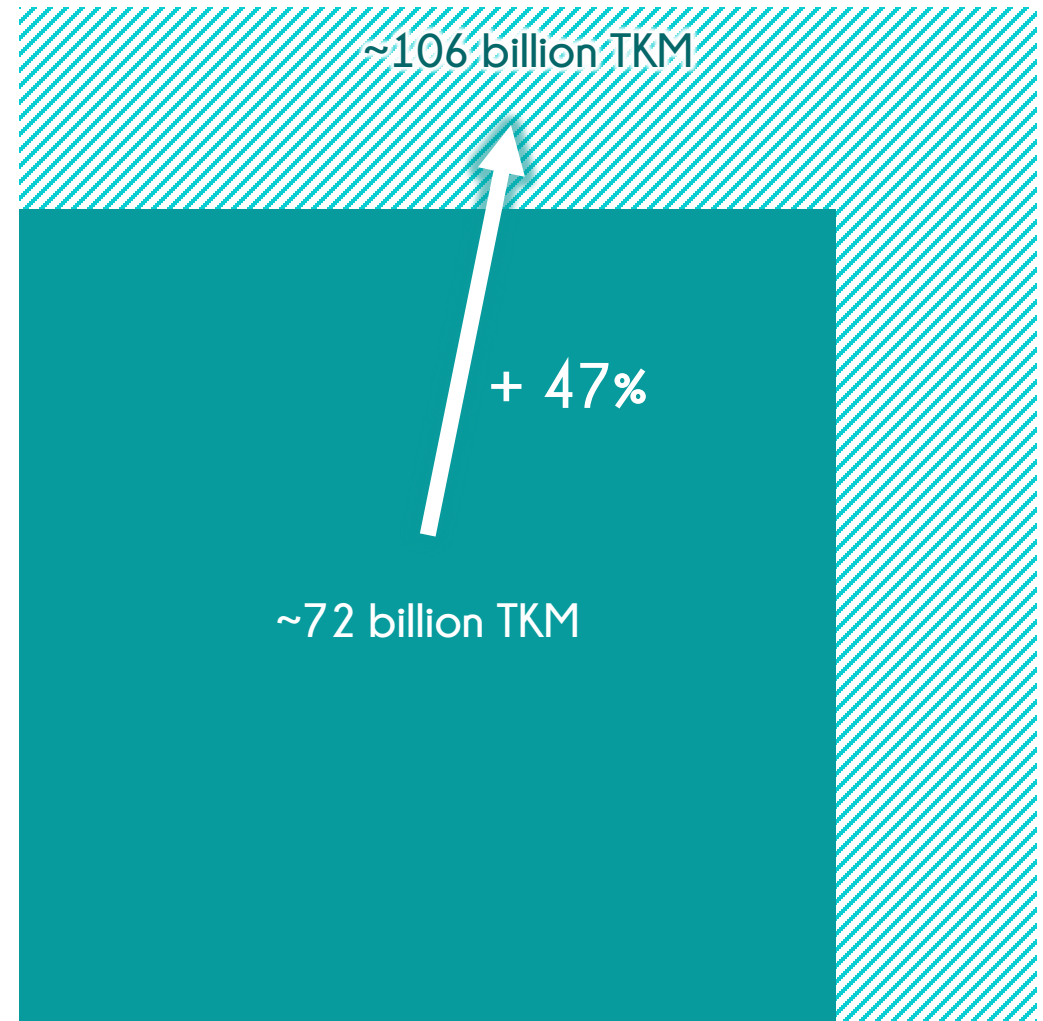
Funded by the Horizon Europe Call "Safe, Resilient Transport and Smart Mobility services for passengers and goods" | Call ID: HORIZON-CL5-2021-D6-01, Grant ID: 101069796

Motivation: 5% shift from road to IWT

Looking at the EU countries bordering the **Danube**, shifting just 5% of their TKM from road to inland waterways would increase Danube freight transport by 47%!



year 2021



Road transports territorialized

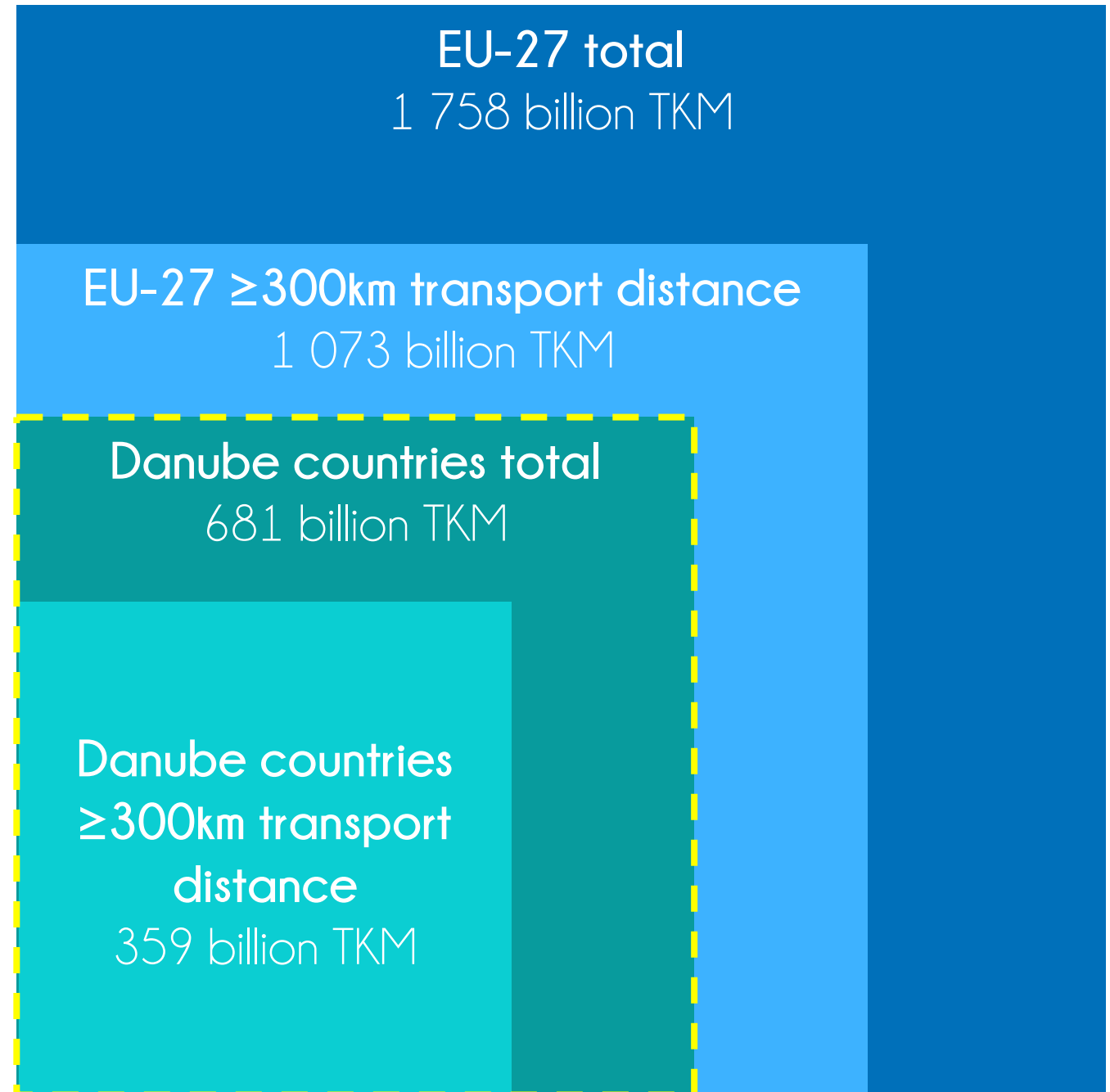
EU-27

- Total: 1 758 billion TKM
- $\geq 300\text{km}$: 1 073 billion TKM

Danube Countries → 100%

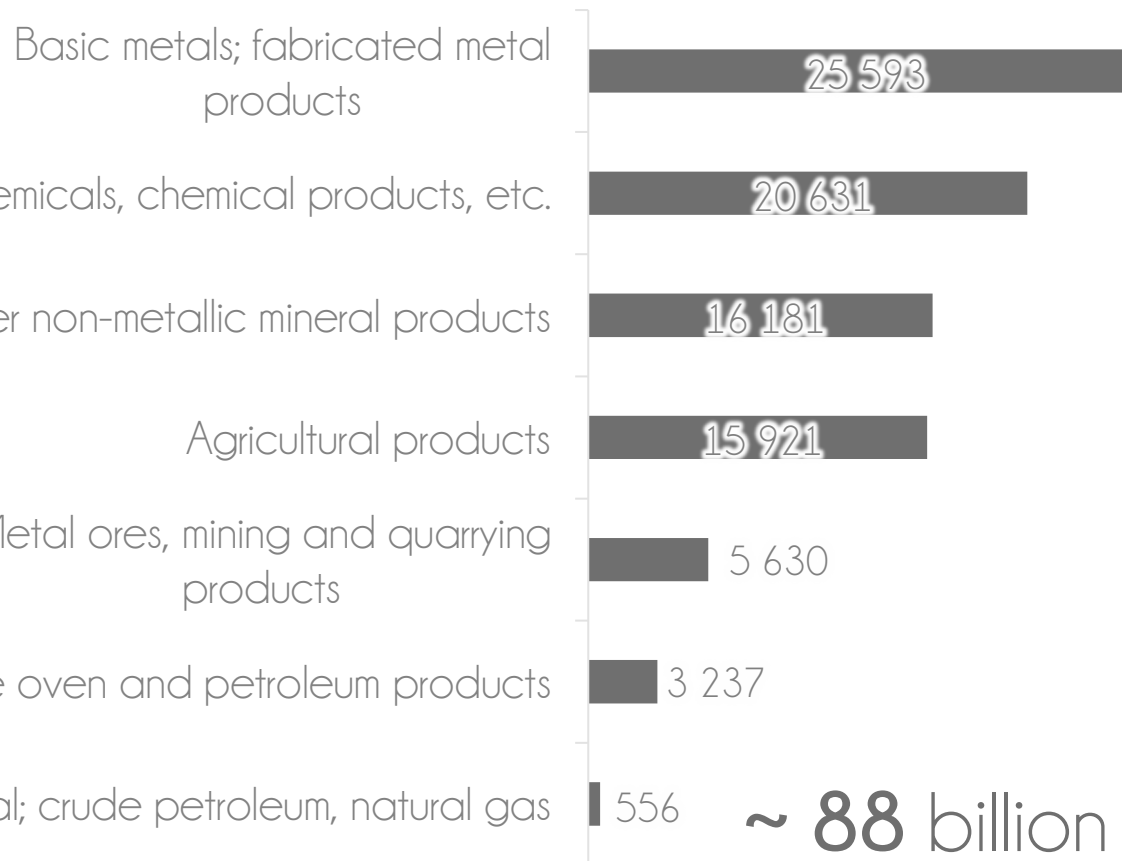
- Total: 681 billion TKM
- $\geq 300\text{km}$: 359 billion TKM

5% \approx 34 billion TKM



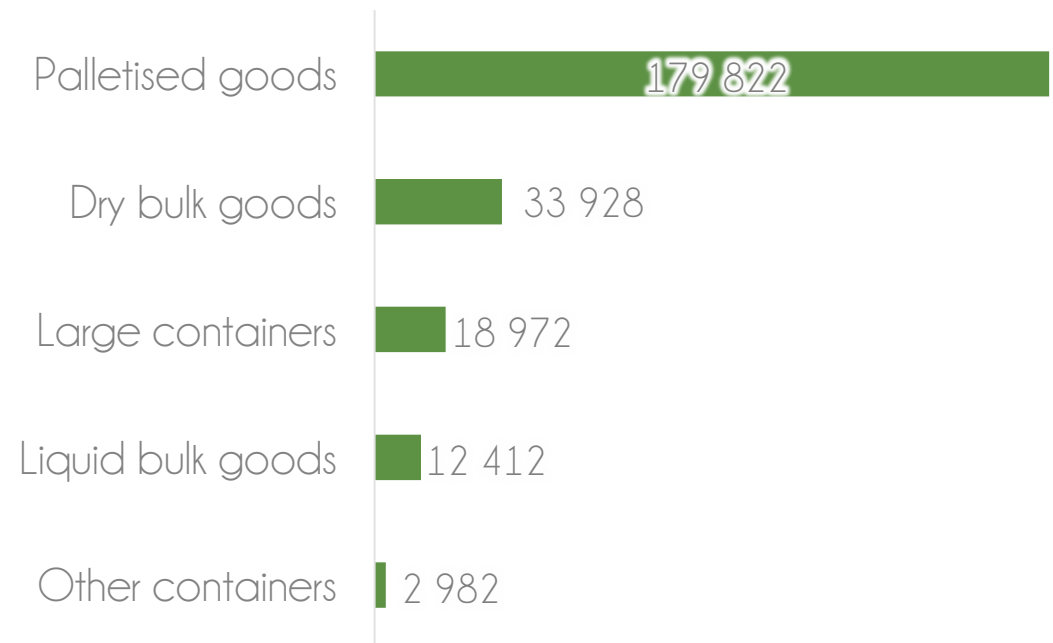
Road transports ≥ 300 km in the Danube countries

Identified product groups, mio TKM



~ 88 billion TKM*

Potential cargo types, mio TKM



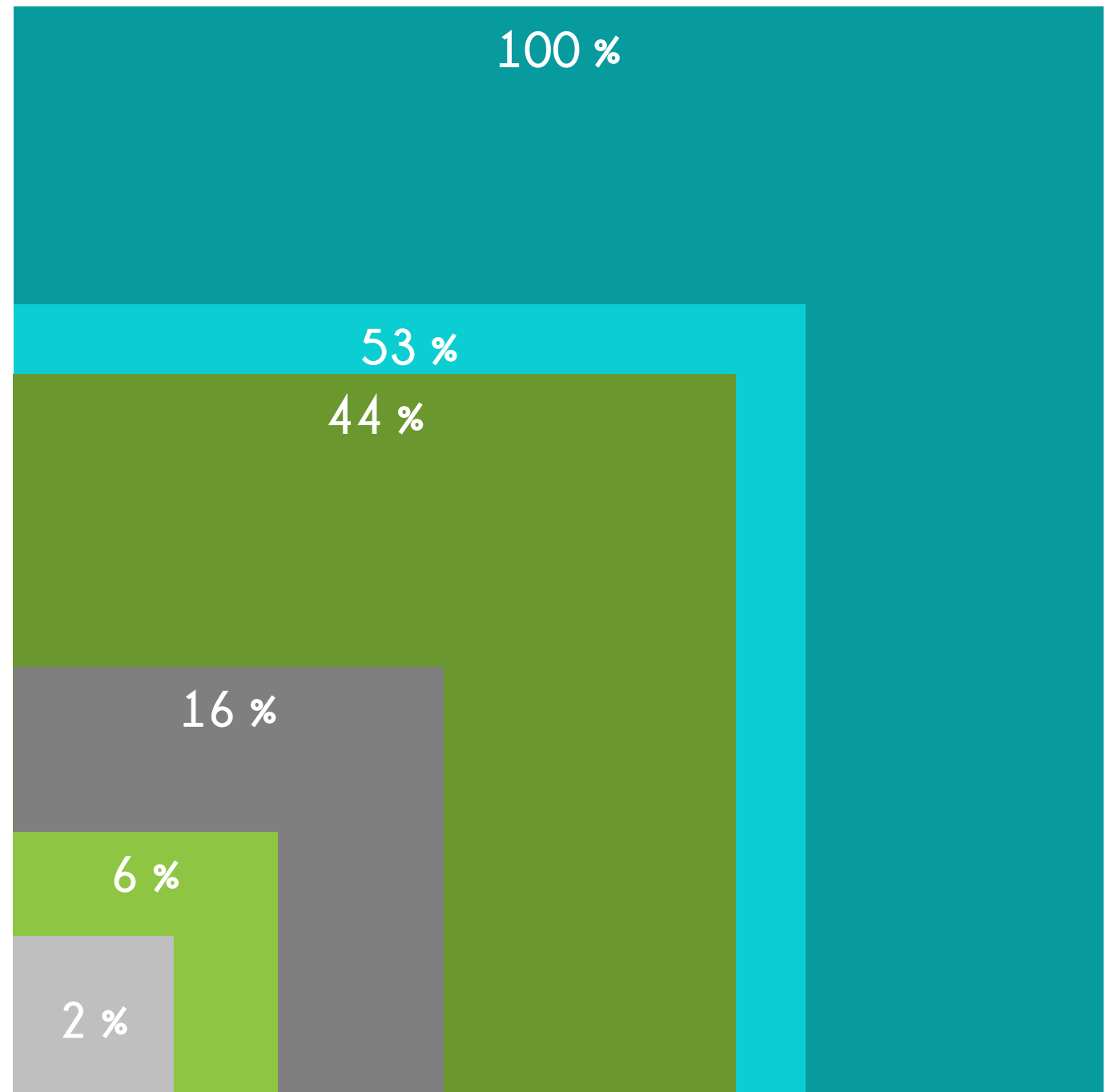
~ 248 billion TKM*

*year 2021

Shift potential road to Danube

Danube Countries road transports:

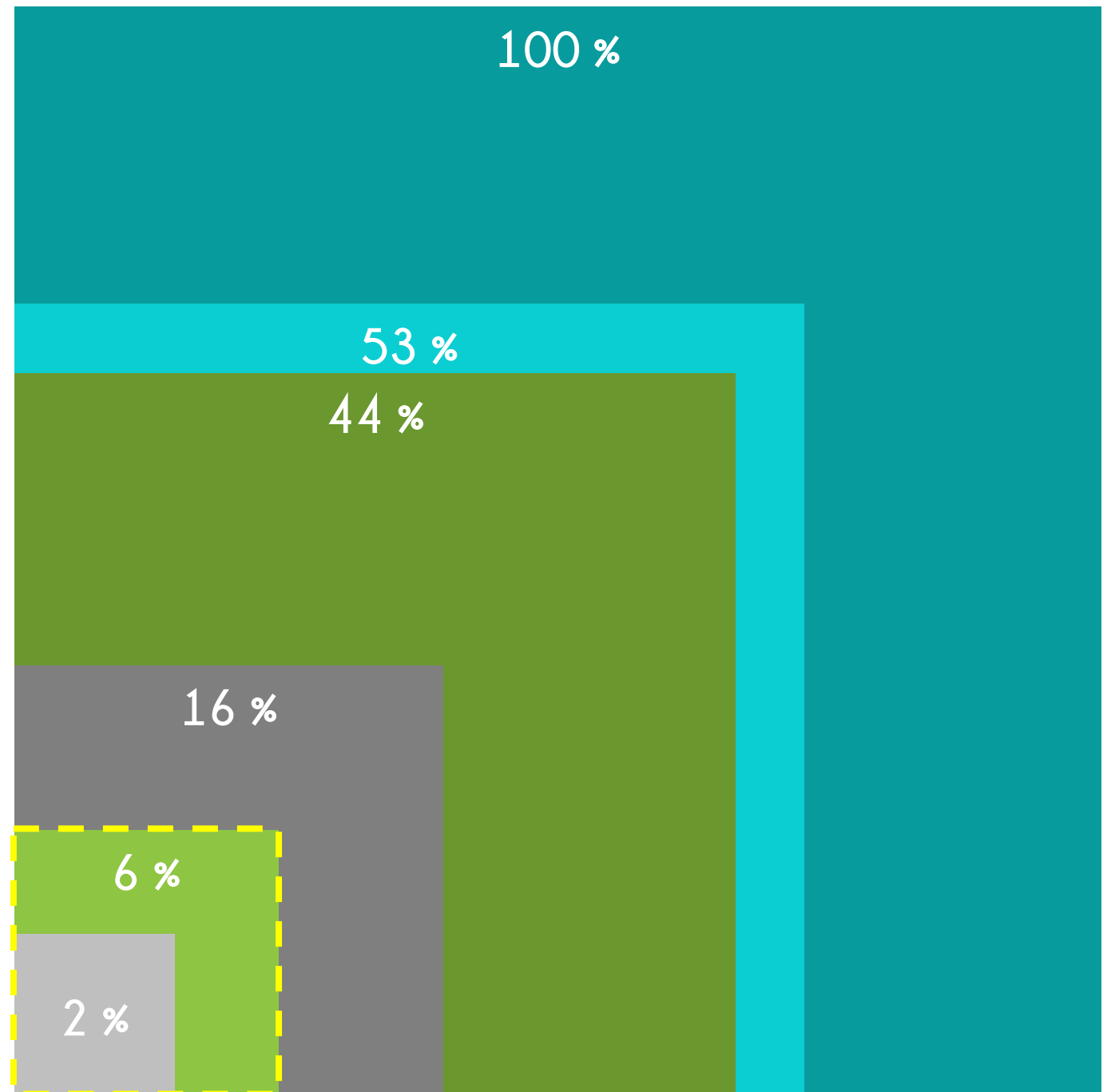
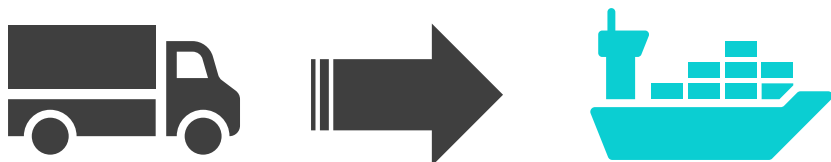
- Total: 681 billion TKM
- $\geq 300\text{km}$: 359 billion TKM
- Identified products: 106 billion TKM
 - Within service area (80 km) of ports: 15 billion TKM
- Potential cargo types: 299 billion TKM
 - Within service area (80 km) of ports: 40 billion TKM



Shift potential road to Danube

2% to 6 % shift potential of TKM from
road to Danube shipping!

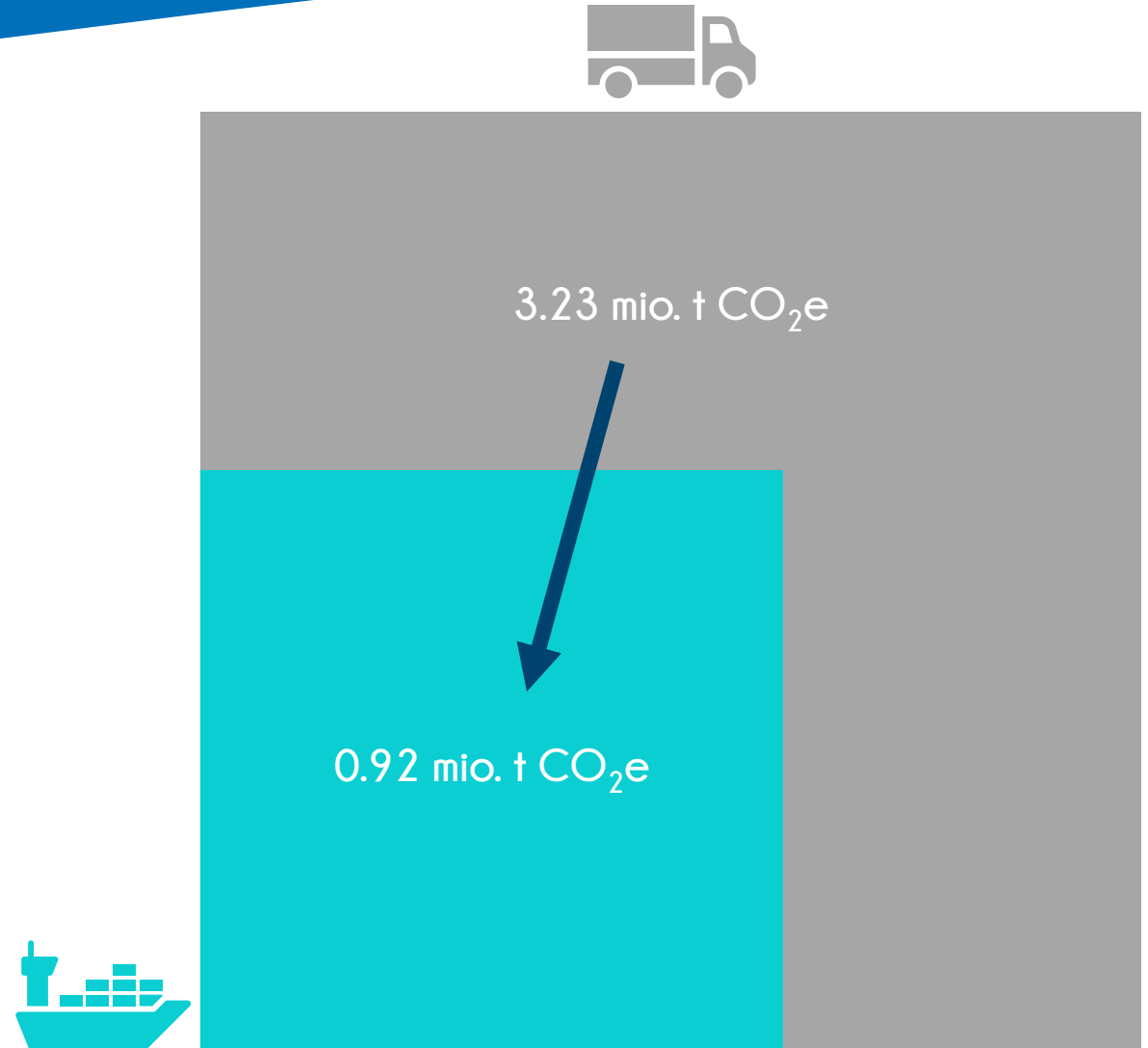
≈ 14.8 to 40.1 billion TKM market
potential for IWT (base year 2021)



Outlook (1/3)

Potential cut of emissions:

- ~34 billion TKM (5%) shift from road to IWT results in a drastic cut of GHG emissions!
- Containerized IWT causes approx. only **one third** of the emissions compared to transport by truck. ⁵



Outlook (2/3)

The full study will be published in
Spring 2024 at
www.multireload.eu!

Deliverables 2.4 and 2.5 contain:

- Full market potential analysis
- Quantitative survey on mode choice barriers towards IWT
- Expert interviews on containerization



Outlook (3/3)

- Discussion on **modal shift scenarios** (pessimistic, optimistic, realistic) regarding
 - Catchment area of ports (≤ 60 / **80** / 100 / 120 truck-km to Danube port)
 - Transport distance (\geq **300** / 500 km)
- How can the potential volumes be attracted to Danube shipping?
 - A demonstrator will be conducted by TTS in April 2024
- Containerization opens up possibilities!
 - What other (palletized, general, ...) products could be attracted to Danube shipping?
 - Consolidation of goods from different customers?
 - Cooperation between IWT and road/rail?

References

1. CCNR (2022) Market Observation Inland Navigation in Europe: Container transport per Country in Europe https://www.ccr-zkr.org/files/documents/om/om22_IL_en.pdf
2. CCNR (2023) Market Observation Inland Navigation in Europe: Container transport per Country in Europe https://www.ccr-zkr.org/files/documents/om/om23_IL_en.pdf
3. Modal shift potential of long-distance road freight in containers - tonne-kilometre: https://ec.europa.eu/eurostat/databrowser/product/view/tran_im_mosp
4. EUROSTAT transport database: <https://ec.europa.eu/eurostat/web/transport/data/database>
5. GLEC Framework v.3 https://smart-freight-centre-media.s3.amazonaws.com/documents/GLEC_FRAMEWORK_v3_UPDATED_25_10_23.pdf