UIRR/IBS Intercontinental Collaborative Platform

Online Webinar on the Eurasian corridors for Combined Transport

03.05.2023

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement No. 860274

Welcome, agenda & introduction

- 09:30-09:40 : Welcome & Introduction to ICP - *Ralf-Charley Schultze (UIRR)*
- 09:40-09:50 : The EU-China connectivity platform & the Global Gateway concept - *Mona Björklund (DG MOVE.A)*
- 09:50-09:55 : PLANET project: main scope of Living Lab 2 - *Eric Feyen (UIRR)*
- 09:55-10:15 : Intercontinental Document Management Demonstrator for Combined Transport - D*r. Roland Klüber (Consilis) /Aljosja Beije (Docklab)*
- 10:15-11:00 : ICP Manifesto Overview and Improvement Measures (incl. Q+A) - *UIRR/IBS + ICP members (min. 3)*
- 11:00-11:20 : Green Hydrogen as Future Business Potential for Combined Transport on the New Silk Roads - *Dr. Roland Klüber (Consilis)*
- 11:20-11:30 : Closing remarks - *Ralf-Charley Schultze (UIRR) & IBS*

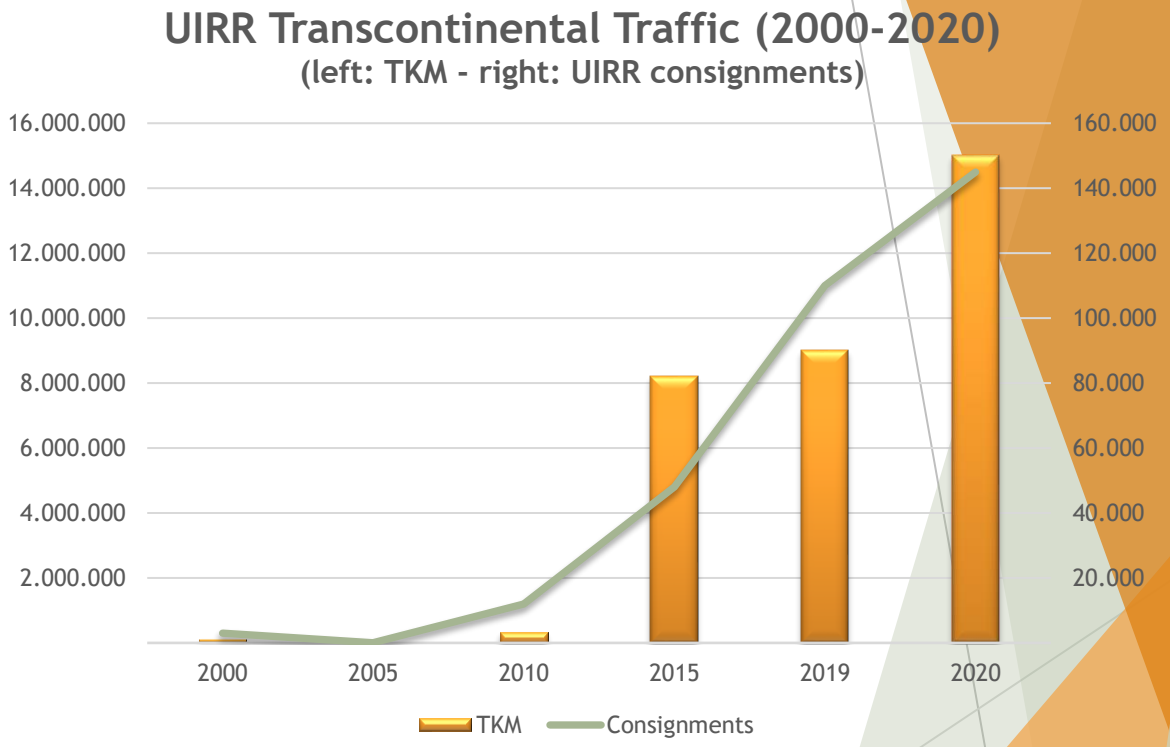
UIRR, the industry association of Combined Transport

UIRR – Importance of transcontinental transport

31%

WAS THE GROWTH OF TRANSCONTINENTAL CONSIGNMENTS TRANSPORTED BETWEEN ASIA AND EUROPE

UIRR CT Operators carried 144.000 consignments on transcontinental relations in 2020, which represented a 31% increase compared to 2019. Transcontinental intermodal rail is the most dynamically expanding segment of Combined Transport, which currently makes up about 5% of total annual Combined Transport performance.



- *Transcontinental (traffic from/to TR/RU/CN)*
- *A UIRR consignment corresponds to the transport capacity of one full size truck on road (equivalent to 2 TEU)*

Intra-EU and intercontinental: shared objectives

Regulatory alignment
harmonised technical and administrative rules

Operational transparency
real-time traffic information

Harmonised political objectives
climate, environmental, transportation

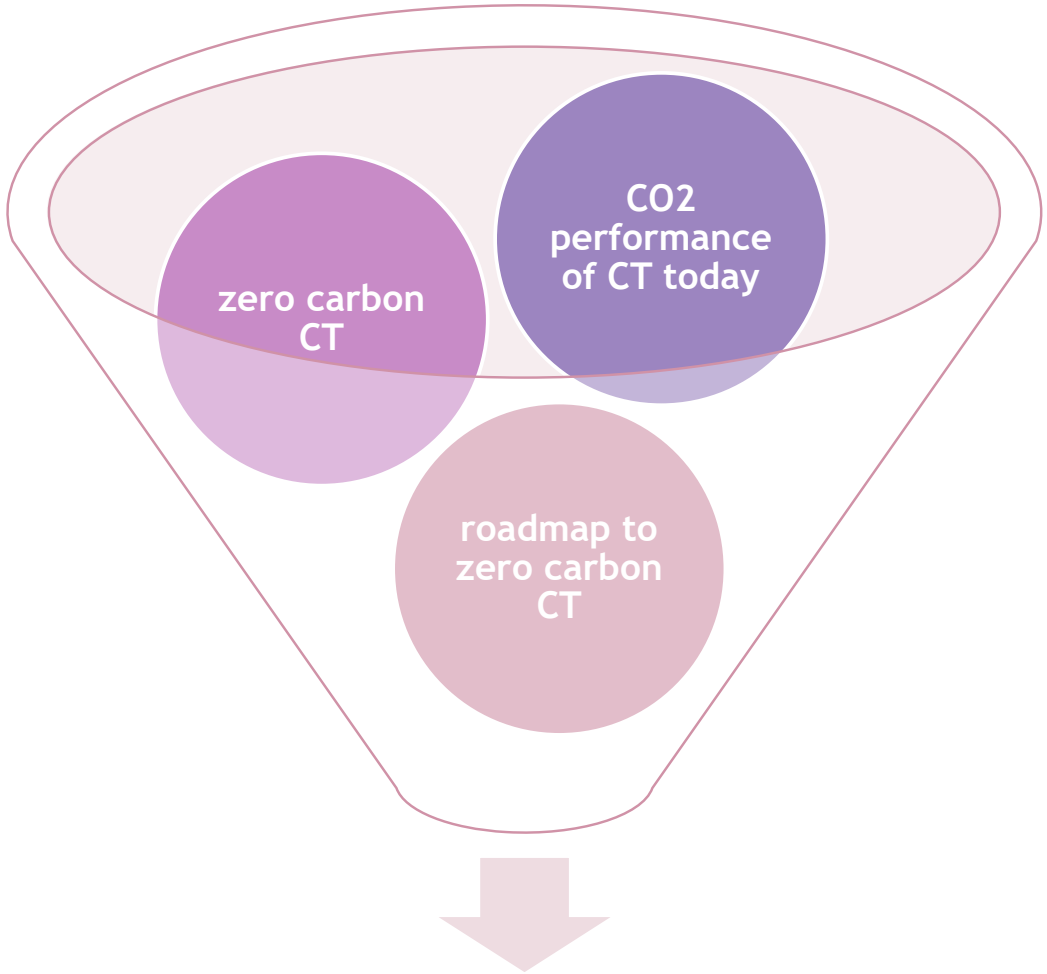
Interoperability
infrastructure, IT systems, mobile assets, technical standards

Capacity coordination
train paths and transhipment

Business models
businesses, digitalisation, authorities, products

State aid
uniform objectives, coordinated support measures

The CT4EU Campaign: based on 3 studies



Combined Transport is the low hanging fruit

- **CO2 performance of door-to-door CT today**
  - 40-70% greater energy efficiency
  - 60-90% smaller carbon footprint
- **Zero-Carbon door-to-door CT**
  - technically feasible with products marketed today
  - superior efficiency compared to alternatives
- **Roadmap to Zero-Carbon CT**
  - €16,5Bn annually into infrastructure
  - €1,5Bn annually into intermodal assets

  = 5% year-on-year growth deliver the results

Affordable, effective and low risk = Combined Transport, the solution to EU policy objectives

UIRR/IBS – Intercontinental Collaborative Platform (ICP)

- ICP is a non-commercial open (interest) group to improve the collaboration and business conditions on the New Silk Roads.
- Its core members are road-rail Combined Transport operators that are supported by two associations and other interested stakeholder roles.
- The core focus is twofold: (1) foster standardisation and harmonisation of existing standards within and across the European borders on regulatory rules, documents and IT standards and services, and (2) explore future growth opportunities for Combined Transport.

Intercontinental Collaborative Platform

DB Cargo Eurasia

FEB

duisport excellence in logistics

icl Global Supply Chain Solutions Intermodal Container Logistics

HUPAC

RTSB GROUP

InterRail Europe GmbH

Trans Container

Rail Cargo Operator Member of ÖBB

VTG

Selected guests: BASF We create chemistry, DHL

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The EU-China connectivity

Mona Björklund
European Commission

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Living Lab 2: main scope

- Assess implications of new trade routes and how best to maximise the EU's economic prospects through strategic planning
- Examine the role of new technologies (e.g. BC) on intercontinental rail services promoting EU's strategic cooperation with China and USA
- Leverage BC interoperability and federation for Supply Chain platforms extending the Blocklab repository knowledge hub with synchromodality models as a service with predictive and prescriptive analytics enabling corridor actors to establish the best multimodal solutions that can optimise the interconnection of supply chains along the TEN-T Corridors a "green" Global T&L context

- **UC1: Synchromodality in a BC enabled Platform** utilizing advanced IoT to create the best multi-modal alternatives for logistics solutions within the LL2 corridors
- **UC2: investigate Eurasian rail freight expansion in the LL2 corridor.**
- **UC3**: analyse LL2 corridor flows and assess the implication for TEN-T infrastructure

Use Case 2 – scope & main activities

- **Scope**
  - Implementing (in a test environment) the use of Blockchain on rail freight transport between China and Europe.
  - Identifying the key issues for infrastructure development and the potential for expanding services in the corridor
  - Investigating Eurasian rail freight expansion in the selected corridor
- **Tasks**
  - Design and development of a **document management platform for intermodal** on Eurasian corridors
  - Development of an **Intercontinental Collaborative Platform (ICP)** under the coordination of UIRR & IBS
  - Execution of a **prefeasibility study** to explore the opportunities to **ship green hydrogen via rail on the New Silk Road**

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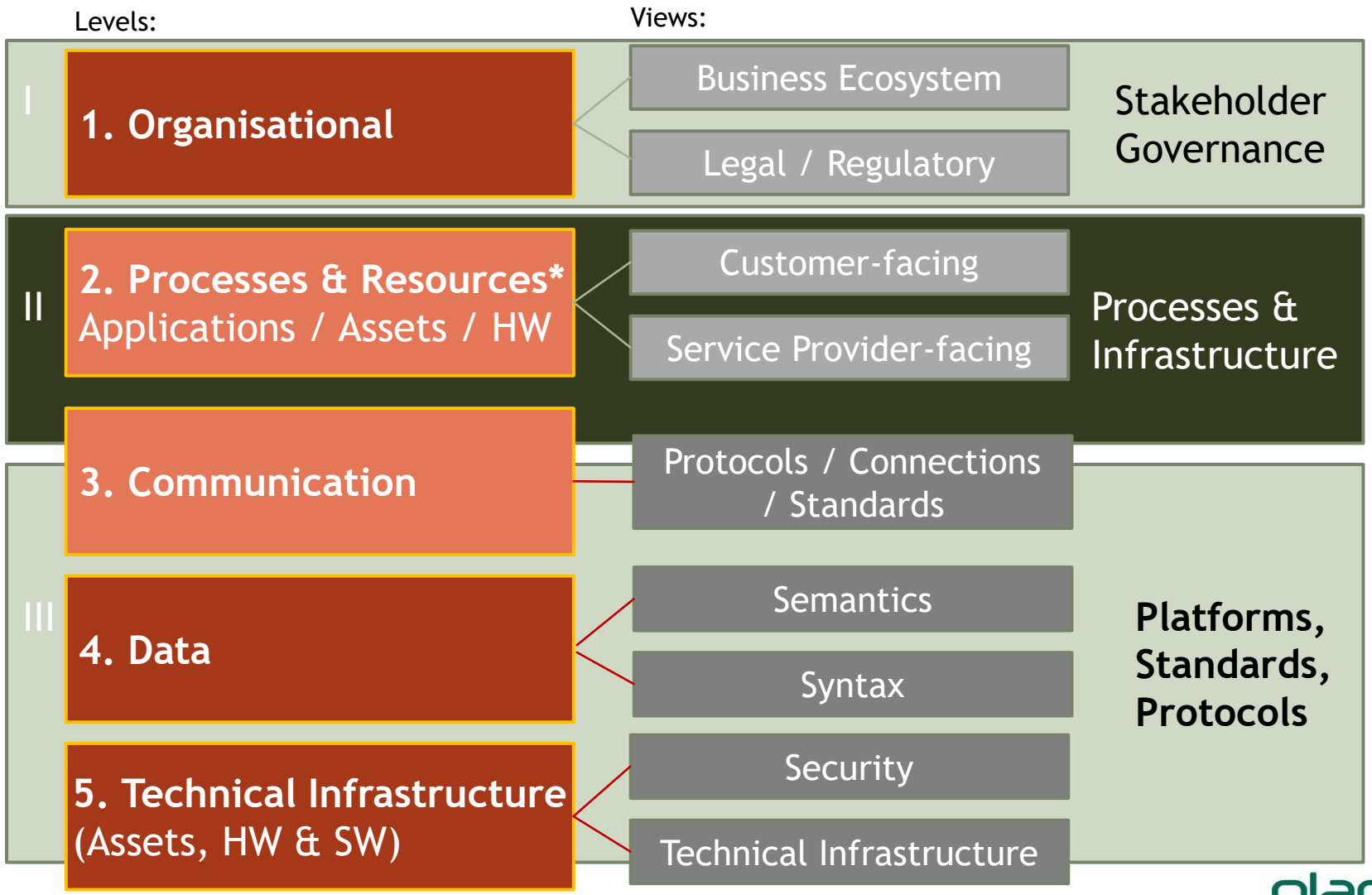
ICP focuses on holistic standardisation & interoperability improvements



Living Lab 2 Results:

- Silk Road Document Platform Pilot
- CT Silk Road Position Paper
- Hydrogen Prefeasi-bility & Roadmap Study

Source: Adapted from Nair/Klüber (2020) DIGITAL CONTACT TRACING INTEROPERABILITY: BALANCING PRIVACY AND PUBLIC HEALTH CONCERNS TO FIGHT COVID-19, In Diplomatic Courier (25.09.2020)
https://www.diplomaticourier.com/posts/digital-contact-tracing-interoperability-balancing-privacy-and-public-health-concerns-to-fight-covid-19

* non-IT

Demonstrator:
Digital Document Exchange Service (DXS)

Define scope of demonstrator (market, benefit & content analysis)

Describe scope and implementation scenario within requirements specification phase

Start coding by DockLab, reviews and sprints (1-5)

07.07.22 Presentation of DockLab's solution of a secure & distributed CT document management system & feedback collection by ICP members

Planet LL2 Demo Case Overview

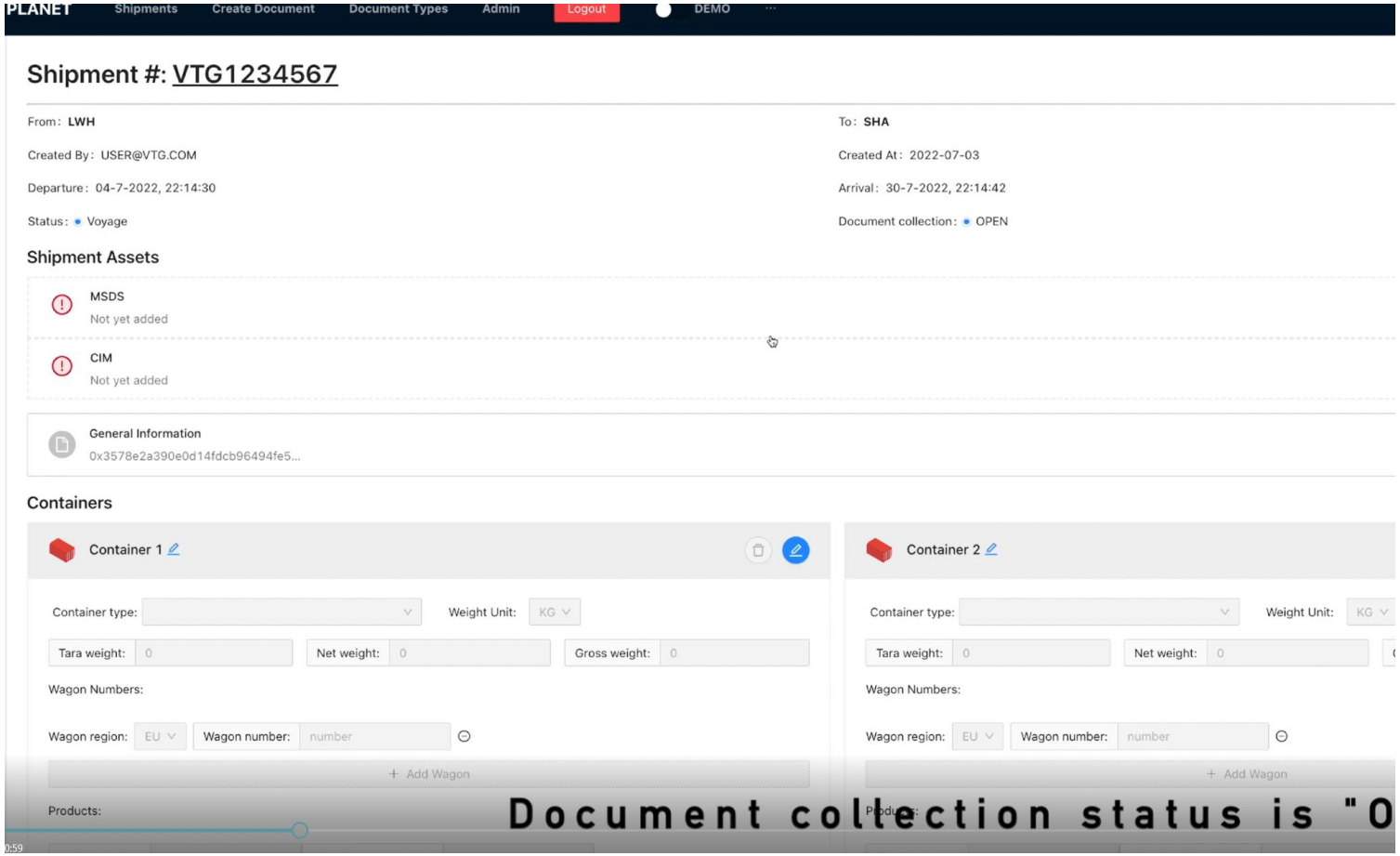
Physical	Pick-up			Main carriage		Transshipment 1		Transshipment 2			Delivery
Role	**Shipper**	**LSP**	**CTO**	**TO**	RU	TO / Customs	RU	TO	RU	TO	Consignee
Name	BASF AG	VTG	Hupac	Duisport	DB / Interrail	PKP Cargo / PL customs agent	UTLC	CN Customs Agent	CN Railway	Ishinu	BASF CN
Location	Ludwigshafen (DE)			Duisburg (DE)		Malaszewice (PL)		Alashankou (CN)		Shanghai (CN)	Shanghai (CN)
Phase	Pre-carriage (L1)			Main carriage (L2)		Main carriage (L3)		Main carriage (L4)			On-carriage (L5)
Activity	Loading			Mode change		Transshipment		Transshipment		Unloading	Delivery
Product	Hexamoll										
Document originator	☑ Commercial invoice (per con.)		☑ CIM (DE-PL)								
	☑ Packing list (per con.)		☑ SMGS 82x			☐ SMGS 82x					
	☑ Export documents (MRN)	☑ Technical description of goods									
	☑ Certificates (non-DG)	☑ Inspection report tank certificate									
	☑ MSDS (EN + CN)										

ILU Type: Tank container ☐ Matching document example to be provided

LSP: Logistics Service Provider CTO: Combined Transport Operator RU: Railway Undertaking TO: Terminal Operator

Digital Document Exchange Service Live Demo (video)

DOCKLAB



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UIRR/IBS ICP: key achievements

Kick-off meeting: July 2022 in Frankfurt

Organisation of **4 workshops** (September – October 2022) and **1 final plenary meeting** (December 2022)

Participation of **key operators representing about 85% of the Silk Road rail business**

Terms of reference adopted

Validation of the document management platform

Development of a **common manifesto** on New Silk Road Development – Recommendations to overcome hurdles for Combined Transport services

UIRR/IBS ICP – Identified areas for collaboration

	Business Ecoystem (horizontal) Associations	Business Ecosystem (vertical) Supply networks
Long > 2 years	1. EU position “terms of reference” (common rules and EU voice to CN) 2. Alternative routes & hurdles on Middle Corridor	1. Improve service quality & transparency
Short ≤ 2 years	1. Harmonize documents across supply chain 2. Harmonized custom agreements 3. Compliance to agreed standards (container types)	1. Unnecessary process hurdles (e.g. pictures of containers/wagons) 2. Payload topic and other harmonization topics (CN railways)

UIRR ICP: manifesto

8 most critical improvements

- Train composition alignment
- Facilitation of dangerous goods and customs
- Harmonisation of processes and documents
- Operational information transparency increase
- Regulatory transparency
- Transparency on temporary economic support
- New business opportunities
- Synchronised infrastructure capacity building

⇨ expected impacts on costs, reduction of disruptions, quality, capacity and speed

Recommendations to overcome critical hurdles for Combined Transport services

by UIRR/IBS Intercontinental Collaborative Platform[1]

Improving complex systems such as the New Silk Roads linking all European and Asian stakeholders requires to focus on key bottlenecks impacting interoperability and efficiency of Combined Transport (CT) services.

Under the coordination of UIRR and IBS, the Intercontinental Collaborative Platform (ICP), set up during the European project PLANET, has identified the key hurdles over the last six months and developed recommendations on how to jointly overcome these hurdles on the most utilised Eurasian corridors, the New Silk Roads. Despite serious disruptions (e.g. Covid-19 pandemic, Russia-Ukraine war), the logistics ecosystem based on Road-Rail Combined Transport solutions has proven to be beneficial to the global resilience of freight forwarding required to cope with global disruptions. ICP targets better results for shippers, logistics service providers and asset owners. The lever must be coordinated action to reduce avoidable disturbances in the supply chain stemming from a lack of information, standards, regulatory requirements, or infrastructure gaps.

ICP has identified the following eight most critical improvement areas to increase transparency, compliance, and performance:

A. Train composition alignment
B. Facilitation of dangerous goods and customs
C. Harmonisation of processes and documents
D. Operational information transparency increase
E. Regulatory transparency
F. Transparency on temporary economic support
G. New business opportunities
H. Synchronised infrastructure capacity building

Our aim is to foster actions towards increasing attractiveness for end users (shippers) and lowering cost levels of intermodal rail freight on the New Silk Roads. Thereby, the rail-related volumes increase and the greening of global freight transport can advance to meet the required EU targets[2]. The expected improvements will lead to

- a drop-down of costs (Co ↘);
- reduced risk of disruptions (D ↘);
- improved quality (Q ↗);
- increased capacity (Ca ↗) and

UIRR/IBS ICP – The manifesto - example

A. **Train composition rules** need to be known from end-to-end and usable in both directions equally. Identified hurdles and improvement needs are:

Detailed hurdles (⇔)	Co	D	Q	Ca	S	*Recommendations #1*
a. Implementation of standard infrastructure parameters within EU needs to materialise faster (# of containers per train and weight vary by up to 22%-36%) and should be in alignment with deep sea and international train standards	↘	↘		↗	↗	Foster coherence in EU member states (infra-structure + regulations) and further alignment
b. On the Westbound routes the accepted weight is restricted to 30 tons for ISO 20' tank containers, whereas on the Eastbound routes 36-39 tons are allowed	↘	↘		↗		Update & align regulatory rules
c. New build tank containers cannot be filled and moved Westbound due to insurmountable cleaning certificate and administrative hurdles. Obligation that all tank container shipments need to start or end in China limits options.	↘	↘	↗		↗	Update & align regulatory rules

UIRR/IBS ICP – The manifesto - interventions

Hendrik WEHLEN
IBS member

Samer GHANDOUR
BASF

Guanzhe CAO
DUISPORT

Erik EVTIMOV
CIT

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The Eurasian corridors for CT

Green Hydrogen as Future Business Potential for Combined Transport on the New Silk Roads

03-05-2023

CONSILIS Innovation and Business Ecosystem Transformation

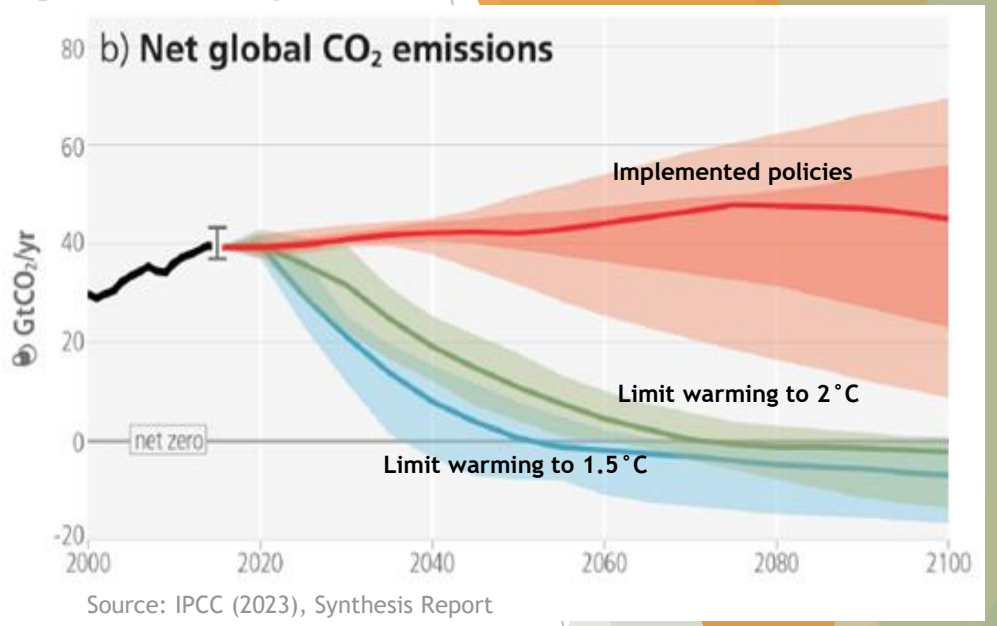
THERON ADVISORY GROUP

UIRR UNION INTERNATIONALE POUR LE TRANSPORT COMBINE RAIL-ROUTE

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement No. 860274

Target of H_2 pre-feasibility & roadmap study

- Identify potential of hydrogen as **new business segment** for combined transport with double decarbonisation benefits:
  - Resilient green transport of H_2 (the “new oil” for feedstock & energy supply)
  - Minimise CO_2 + GHG emissions during transport



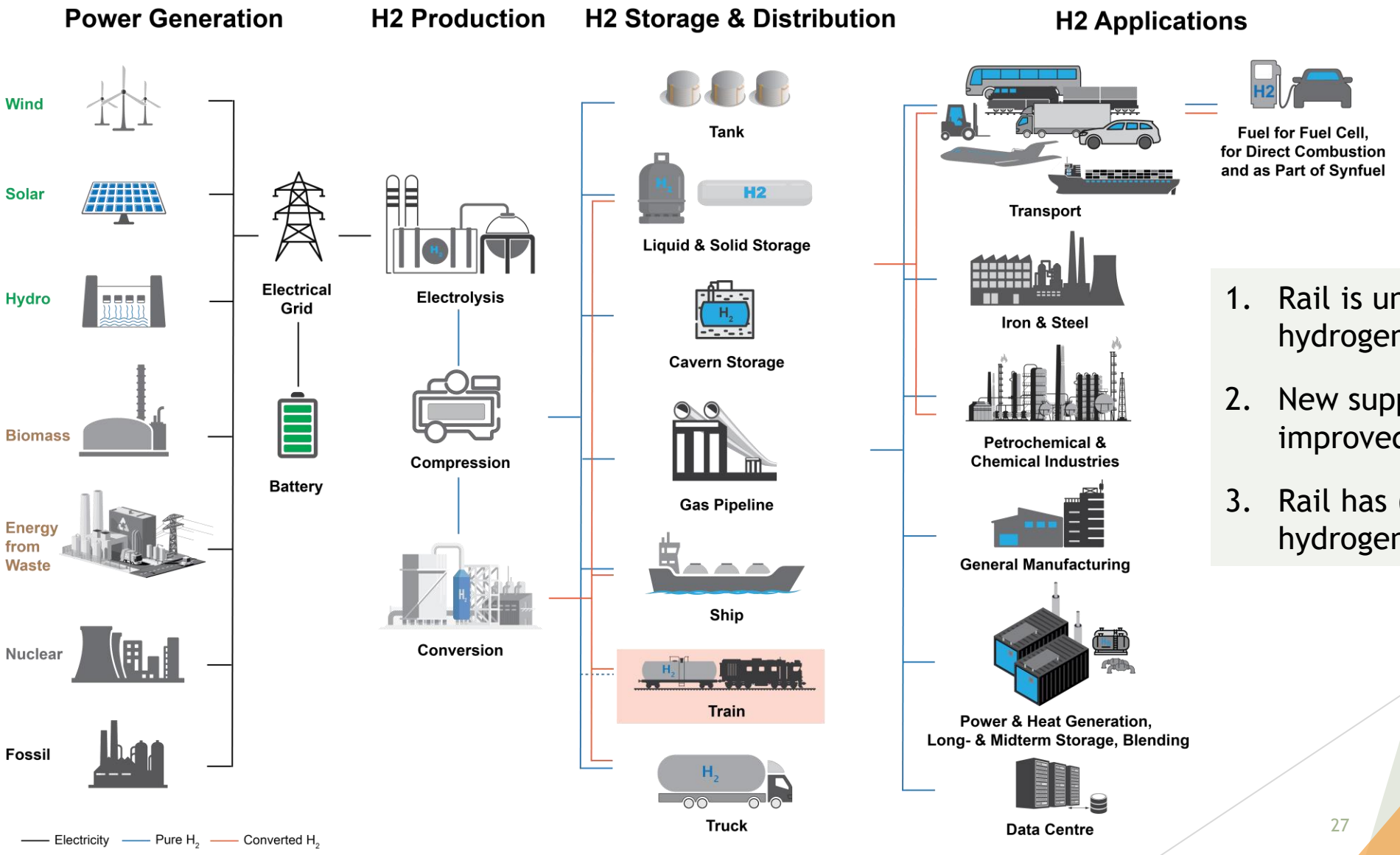
Source: IPCC (2023), Synthesis Report

- Interview partners:

DB Cargo, BERTSCHI GLOBAL LOGISTICS SOLUTIONS, Middle Corridor Trans-Caspian International Transport Route, alice Alliance for Logistics Innovation through Collaboration in Europe, BASF We create chemistry, HYRASIA ONE, SVEVIND powered by nature, Clean Hydrogen Partnership

Plus:
Several ICP CTOs active on the New Silk Roads
Several asset producers
Some startups of the H_2 Business Ecosystem

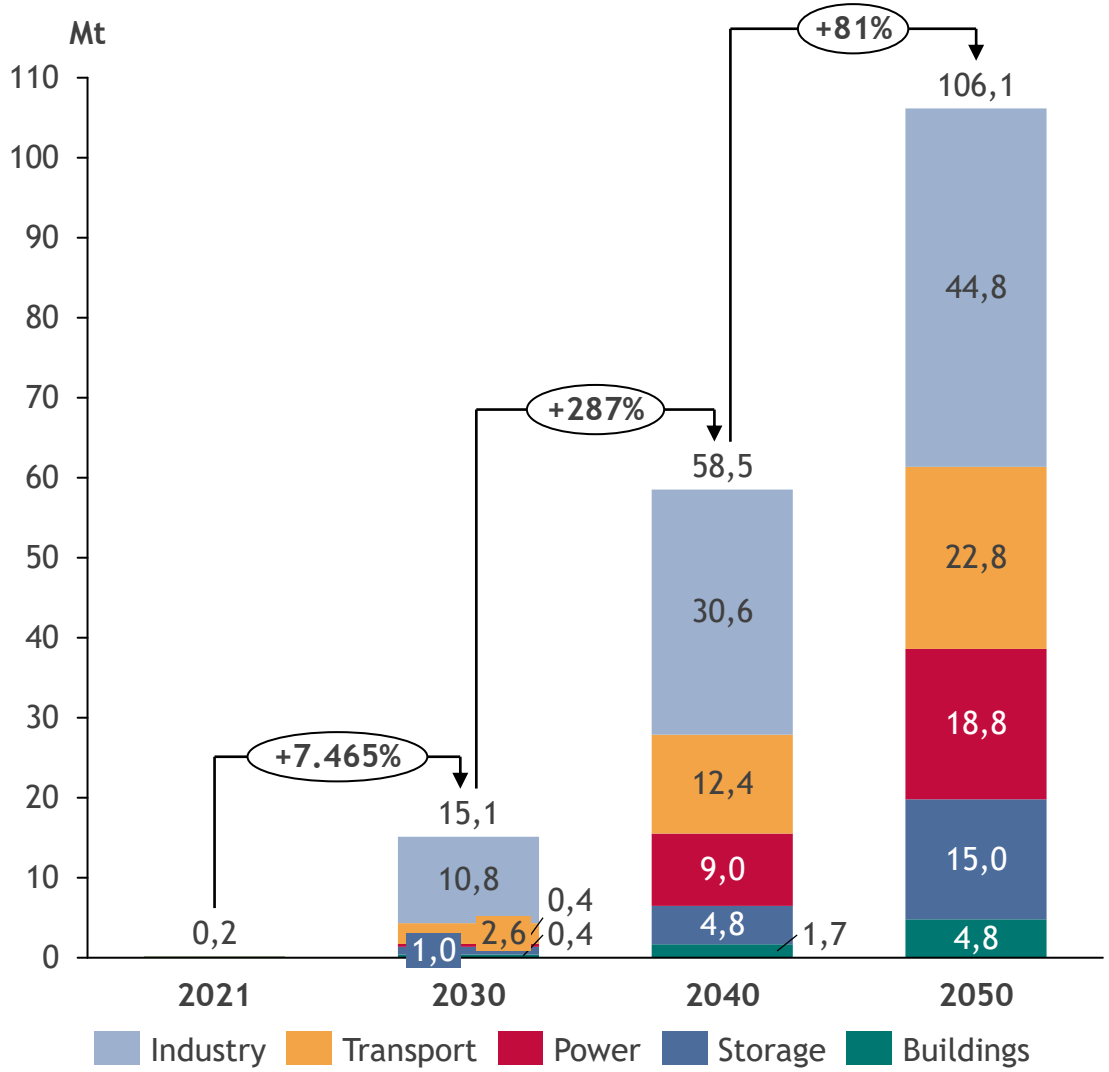
Green H_2 business ecosystem transformation



1. Rail is underrepresented for hydrogen
2. New supply volumes require improved services
3. Rail has (small) own hydrogen shipping needs

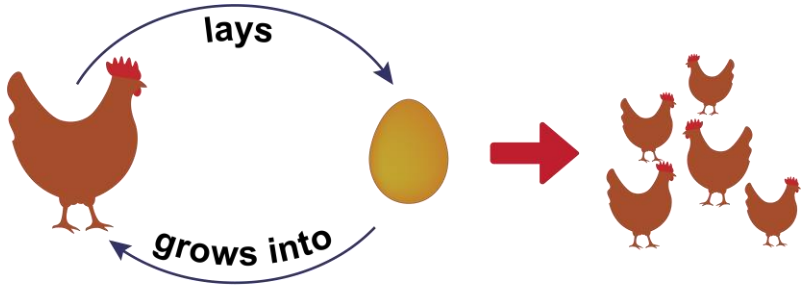
Demand & supply development
(ambitious scenario)

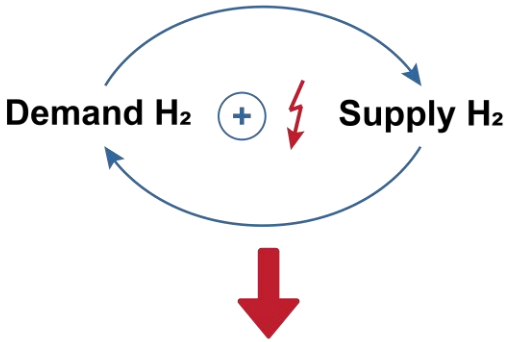
EU H_2 demand forecast by sector (target close to 1.5°C)

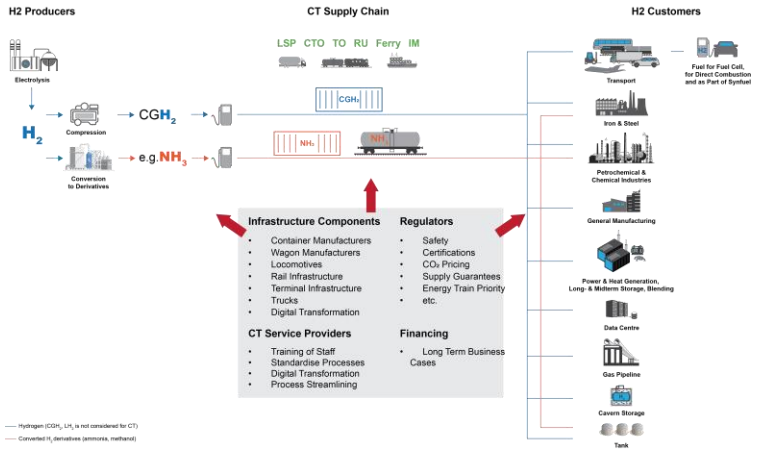


- Steep increase of green H_2 demand
- Demand will be decentralised
- Supply gap 2030 will increase (EU import of 10 Mt H_2 planned)
- Land-locked suppliers and customers exist

Action: Overcoming H_2 chicken & egg challenge







Avoid deadlocks and enable positive network effects:

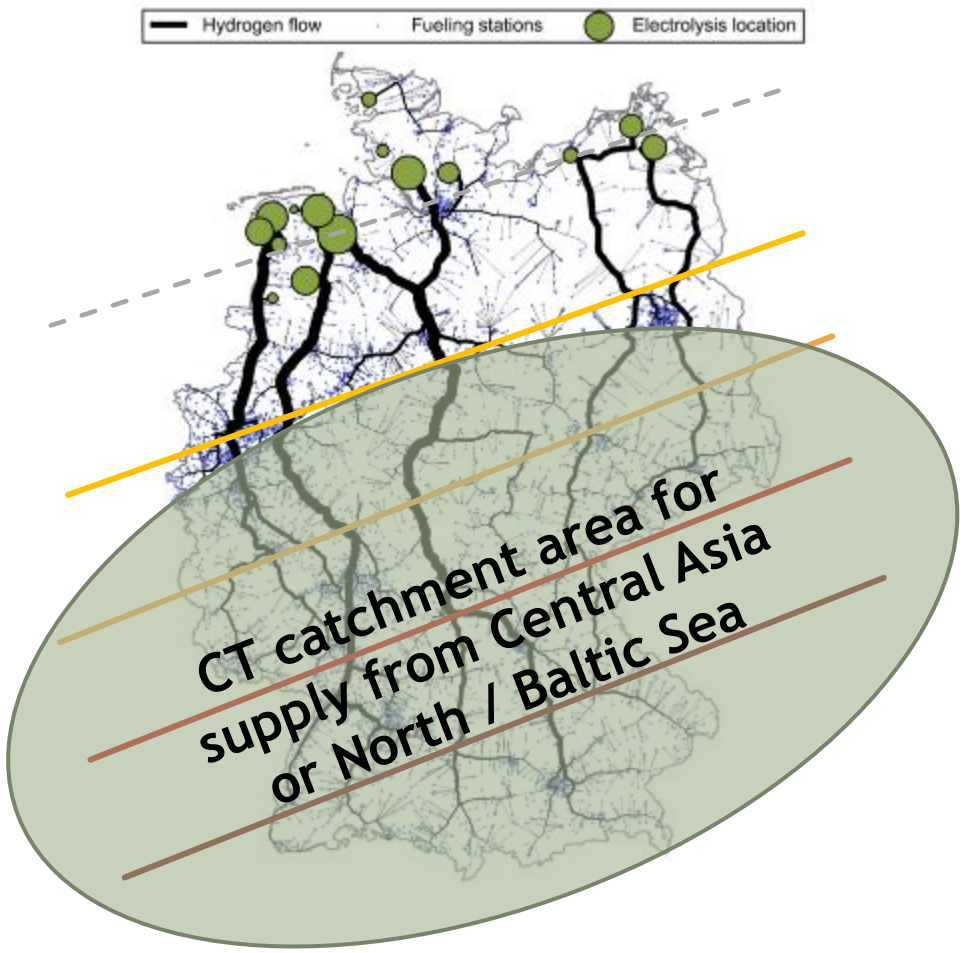
a) Facilitate H_2 demand
- Risk mitigation (e.g. CCfDs)
- Build stable business ecosystem

b) Foster supply flexibility of H_2
- direct investment in infrastructure & production (temporary)
- Develop containers for compressed / liquid H_2

Recommendation:

Do both in parallel to speed-up and initiate a virtuous circle that enlarges the **viability** of the nascent **hydrogen business ecosystem**

Rail-road for EU needs



Road-only scenarios for distribution to filling stations[1] should be complemented by CT shipments:

A) avoid congestions on road

B) include additional volumes from Central Asia

C) capacity constraints

D) driver shortage etc.

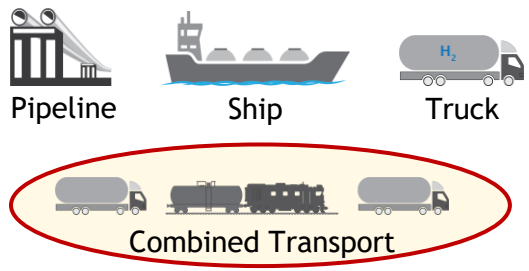
Location	Distance	Road / Combined*
Duisburg	250km	Direct shipment / CT hub
Koblenz	450 km	Direct / Combined hub
Ludwigshafen	550 km	Combined transport central Asia & national
Regensburg	750 km	Combined transport central Asia & national

* Preliminary calculation results to be corroborated with more data

Husarek, Domenik et al. (2021) "Hydrogen supply chain scenarios for the decarbonisation of a German multi-modal energy system", Int. Journal of Hydrogen Energy, 46, 5875-5890

New supply sources from Central Asia

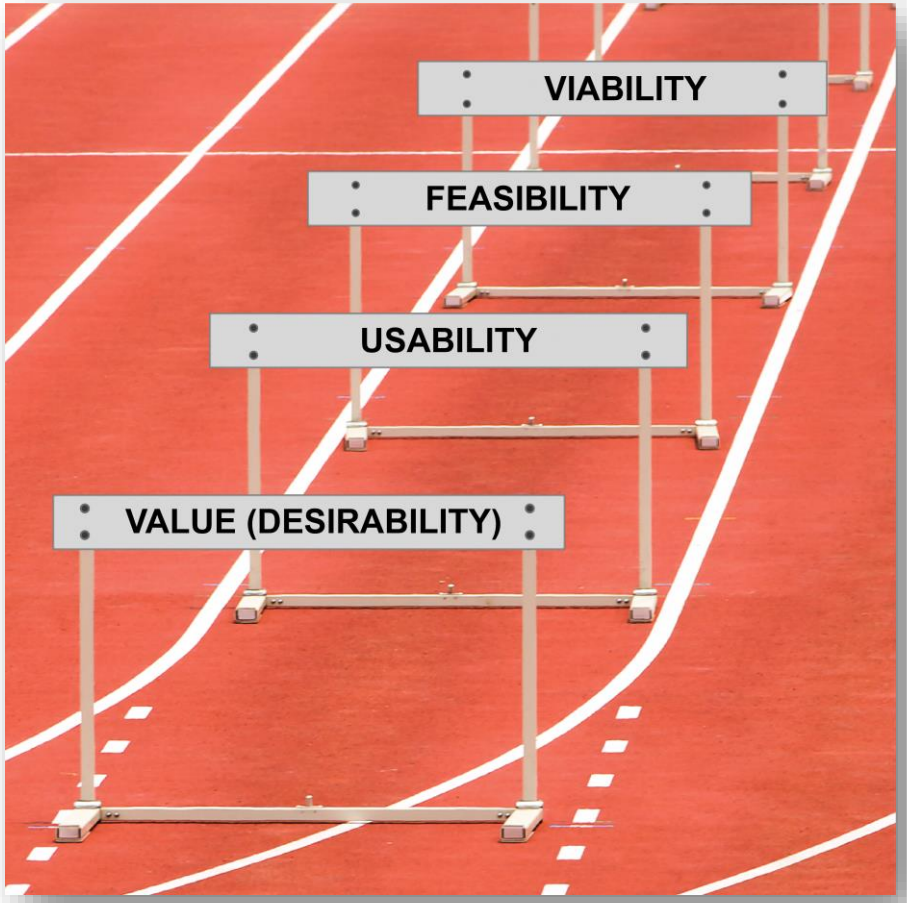
- Deep sea and pipeline shipments to Europe are currently not feasible
- Combined Transport is more favourable than high volume and long-distance road transport



- Study develops three transport scenarios for a landlocked production site in Kazakhstan
- Combined Transport solutions are used to ship H_2 to EU customers
- **Expected additional high transport volumes (400 k - 800 k TEU[1] p.a.)** will require an infra-structure and service capacity build up until 2032

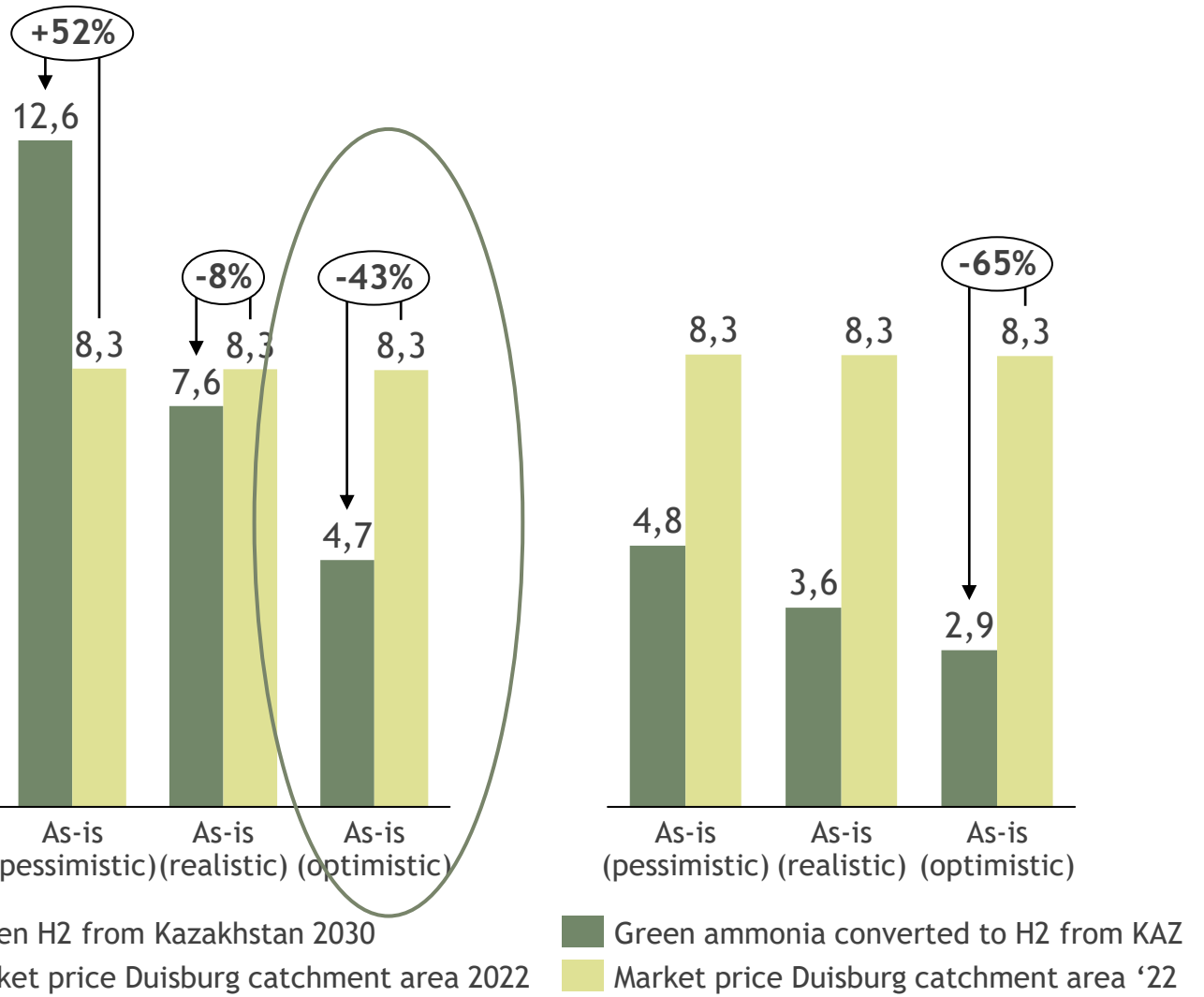
[1] depends on mix of hydrogen and derivatives shipped

Pre-feasibility assessment



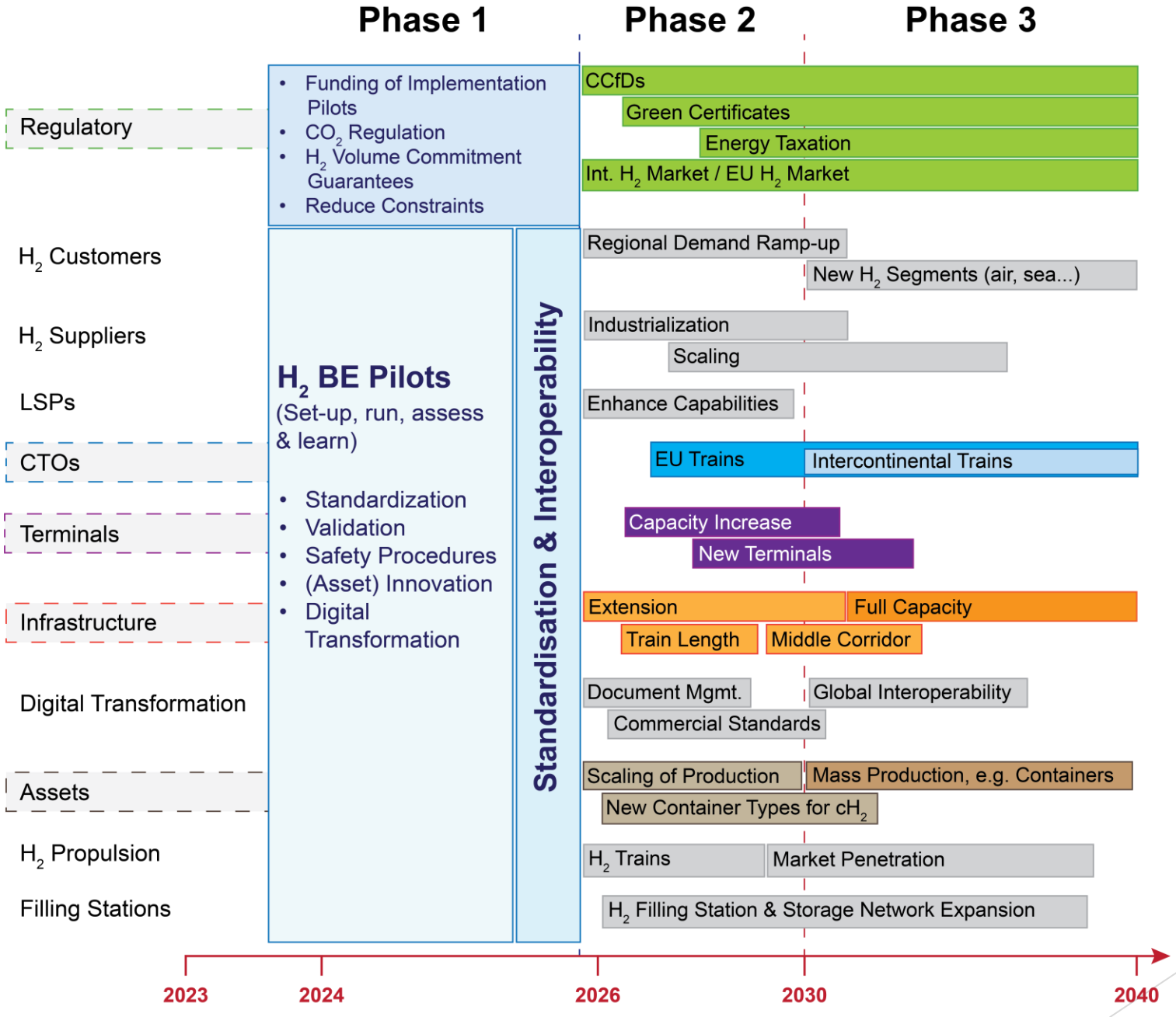
Projection to 2030 (ambitious scenario):

- Compressed hydrogen may be viable
- Ammonia seems to be viable



Note: Cost estimations based on today's infrastructures, utilisation rates and energy prices and forecasted to 2030 potential National tax levels for green energy are not included in forecast.

CT Roadmap as part of resilient green energy supply



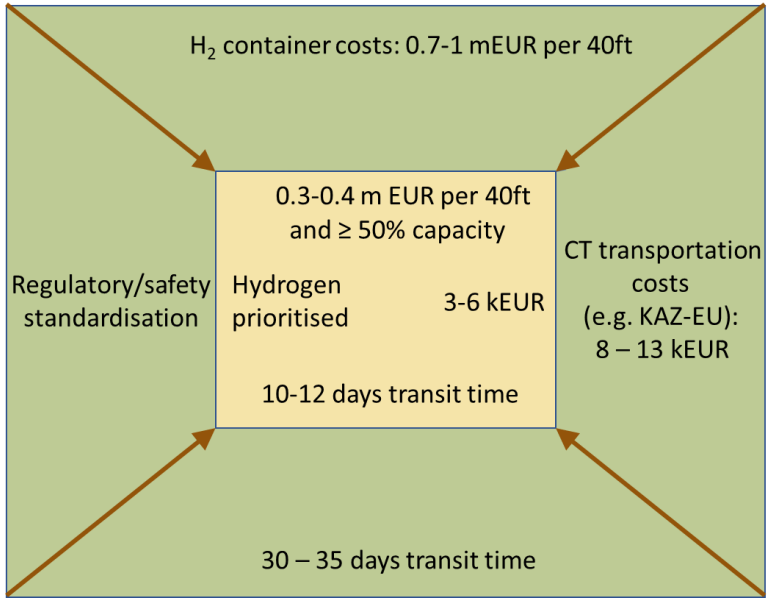
- For compressed H_2 and ammonia infrastructure capacity needs to improve (by a factor of 5-10)
- Multiple synchronised levers required (across all countries)
- Compressed H_2 requires dedicated innovation & funding to be feasible and viable for decentralised consumers (mobility, power, heat)

Ramp-up planning & activities

1 Interoperability needs:

	Variant 1	Variant 2	Variant 3	Variant 4
Pressure	300 bar	500 bar	640 bar	700 bar
Container type	Steel	Carbon-steel	Fibre-steel	
Type of H2	Liquid	Pressurized	Ammonia	Methanol
Filling station	500 bar	640 bar	700 bar (multi-modal)	700 bar
Container sizes	20ft	30ft	40ft	45ft
Crane infrastructure	40t	45t	60t	70t
Train length	650	740	850	-

2 Business context improvement in New Silk Road magic square:



High level measures:

1. Get it done fast & start now!
2. Build comprehensive CT H_2 Business Ecosystem
3. Search for funding of hydrogen implementation projects (EU and Connectivity) - include CT/rail
4. Much innovation is ongoing – as-is analysis is not sufficient (risk of closing technological paths prematurely)

Reachable Benefits:

1. Contribution to de-risk green energy plus feedstock supply
2. Further enabling shift-to-rail

Start now

- **Avoid that elapsed time kills options!**
- **Some of the measures will take 5+ years to implement and scale**

Consilis / Theron / UIRR

Dr. Roland Klüber

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- 09:50-09:55 : PLANET project: main scope of Living Lab 2 - *Eric Feyen (UIRR)*
- 09:55-10:15 : Intercontinental Document Management Demonstrator for Combined Transport - D*r. Roland Klüber (Consilis) /Aljosja Beije (Docklab)*
- 10:15-11:00 : ICP Manifesto Overview and Improvement Measures (incl. Q+A) - *UIRR/IBS + ICP members (min. 3)*
- 11:00-11:20 : Green Hydrogen as Future Business Potential for Combined Transport on the New Silk Roads - *Dr. Roland Klüber (Consilis)*
- 11:20-11:30 : Closing remarks - *Ralf-Charley Schultze (UIRR) & IBS*