

Guideline on Building up Hydrogen Refueling Stations in the Baltic Sea Region

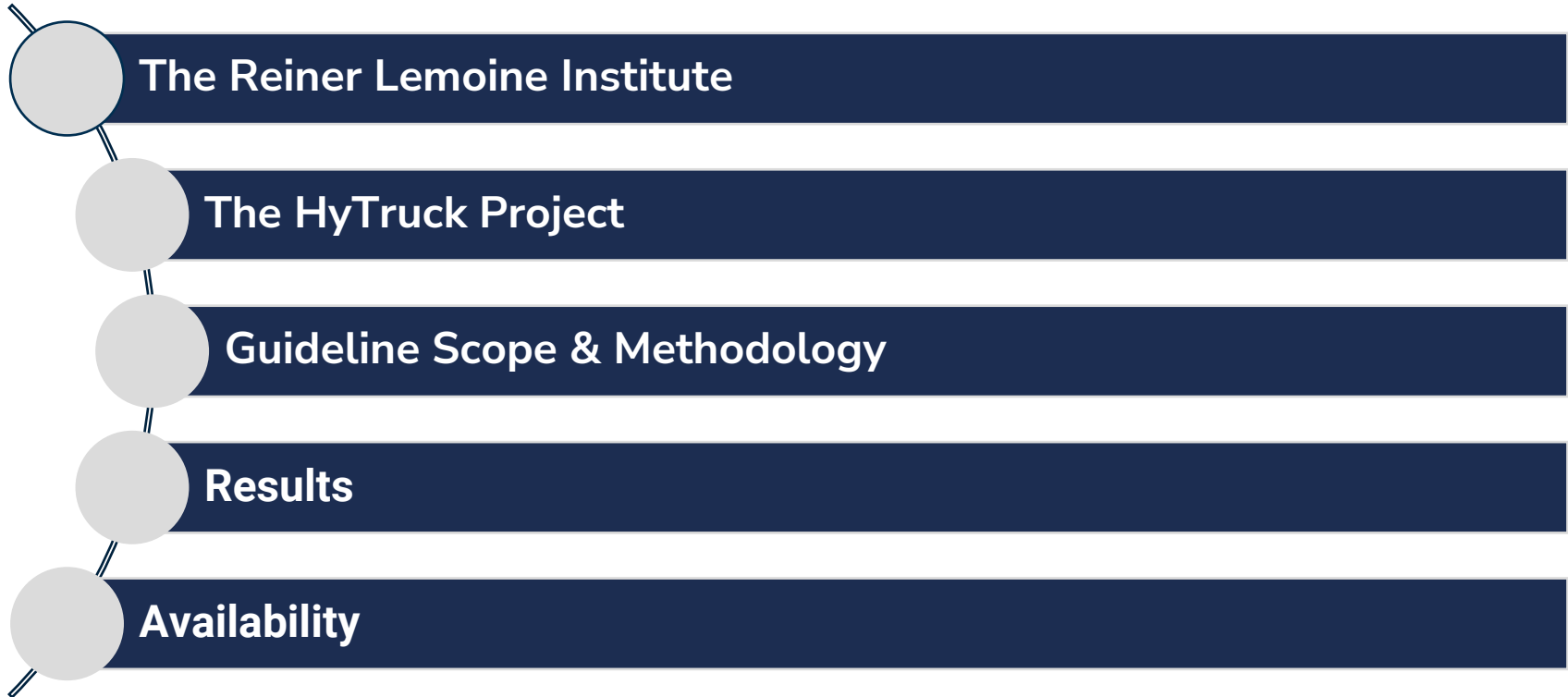
— *HyTruck WP1 Output*

05.02.2025

*Marcus Schober
Scientific Researcher
Reiner Lemoine Institut gGmbH*



Agenda



Reiner Lemoine Institut

- Non-profit research institute
- 100 % subsidiary of Reiner Lemoine-Foundation (RLS)
- Founded 2010 in Berlin
- Managing Directors: Dr. Kathrin Goldammer & Dr. Christine Kühnel
- ≈ 100 researchers and students
- Three different research departments

Mobility with Renewable Energies

- Transportation system based on 100 % renewable energies (RE, BEV, FCEV, H2, PtX,...)
- Traffic avoidance and modal shift
- Sustainable and socially just transport transition

We conduct applied research and offer consultancies to scientifically support the long-term transition of the energy supply system towards renewable energy.

The HyTruck Project

2 Solution(s)
in preparation

2 Solution(s) planned
for use / upscale

30 Benefitting
organisations

2 Pilot
activities

19 Organisations
in the project

HyTruck in numbers.

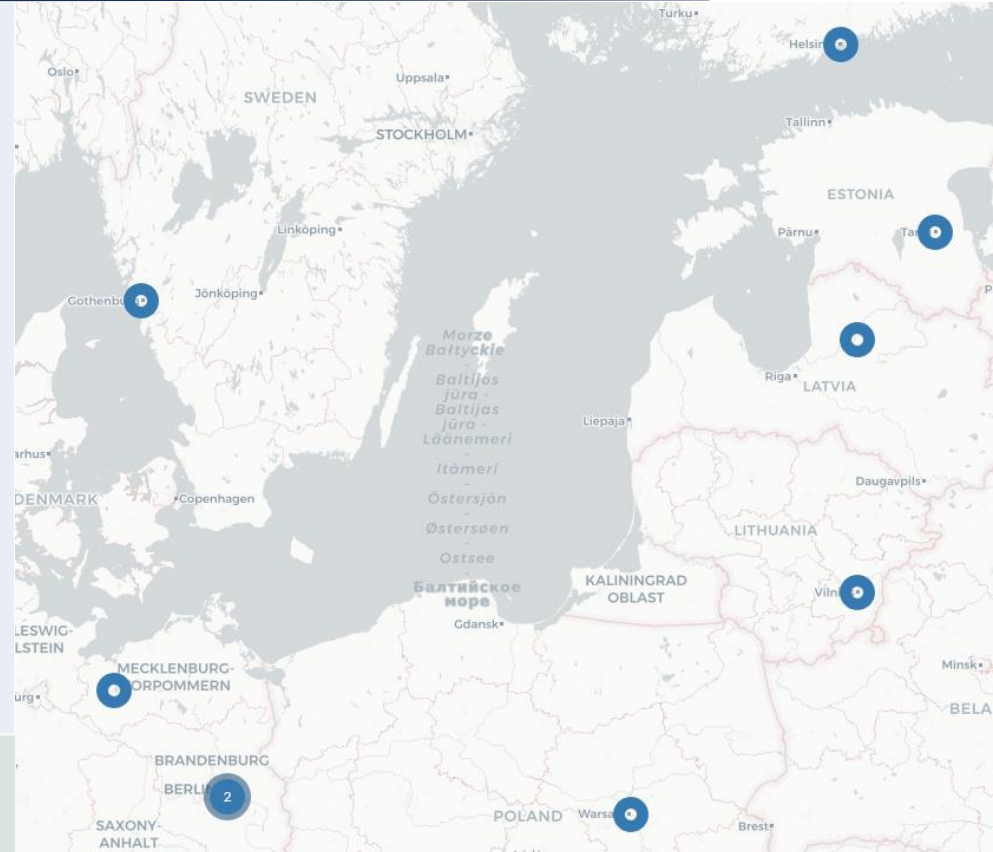
Budgets

HyTruck
In numbers.

€2.56
MILLION
TOTAL

€2.05
MILLION
ERDF

€0.00
MILLION
NORWAY



Key Questions

- ▶ AFIR requires member states to provide hydrogen refueling stations along the so called TEN-T core network by the end of 2030:
 - ▶ **What Technology** is best suited for long-distance heavy-duty transport?
 - ▶ Under which conditions and when **hydrogen** as a fuel becomes **competitive**?
 - ▶ How to make sure that hydrogen refuelling infrastructure in the member states is constructed in a **coordinated** way, **avoiding** spatial **gaps** and technological **incompatibilities**?
 - ▶ How to **simplify permission** procedures?
 - ▶ How to **incentivise first movers**?

The HyTruck Project

Workpackages

WP1: Preparing Solutions

Spatial Planning Toolkit development

Economic & Environmental Considerations for ramp-up HRS

Technical Standards

Guideline for planning HRS

WP2: Piloting and evaluating Solutions

Joint preparation of the parallel pilots for HRS

Development of a spatial planning concept for each pilot region

Spatial development concept for HRS

Memorandum of understanding for HRS

WP3: Transferring Solutions

One-stop shop for HRS planning in the BSR

Funding and and policy programmes

Transnational exchange on HRS

Guideline Scope & Methodology

Goals and Objectives of the Guideline

The guideline is set to assist **public authorities** in:

- ▶ Building the **most suitable** infrastructure
- ▶ Fitting the **regional needs** and **legal requirements**
- ▶ Taking an **active role** in building up regional hydrogen infrastructure
- ▶ **Cooperation** with other regions to avoid gaps

Guideline Scope & Methodology

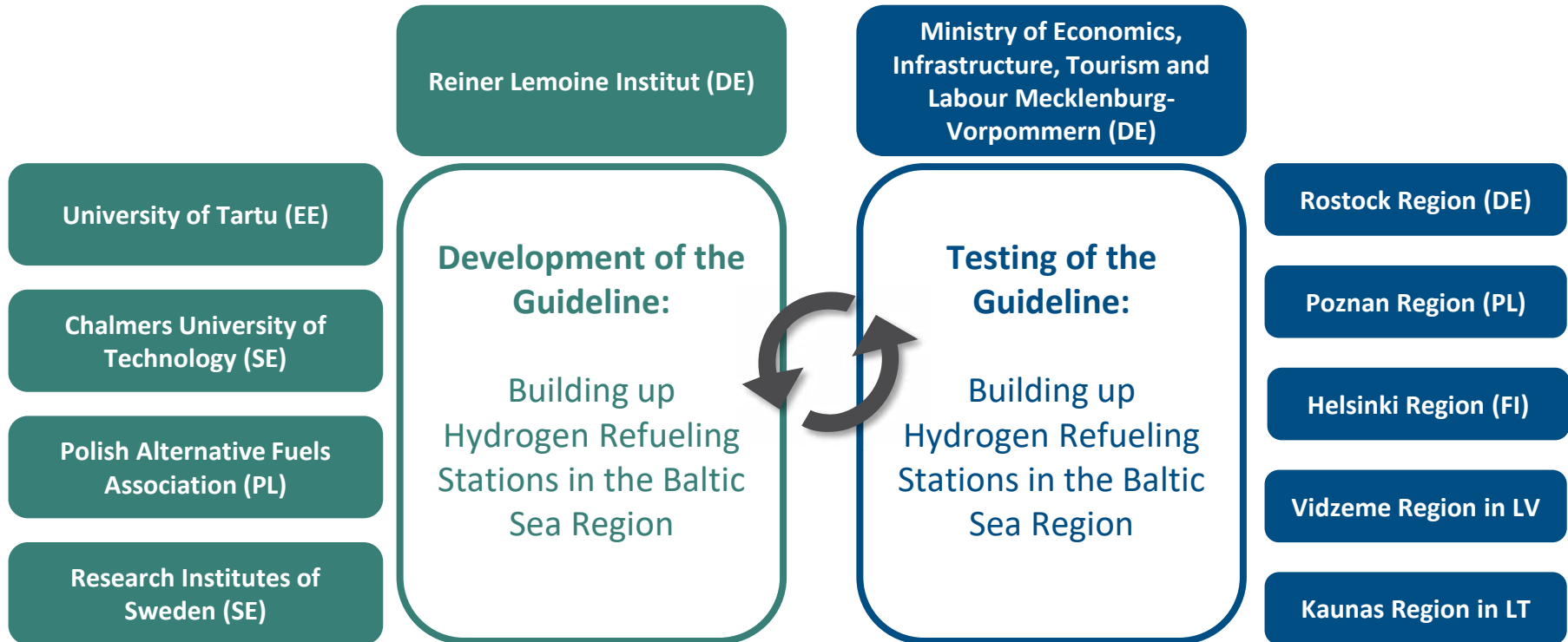
Goals and Objectives of the Guideline

The guideline should therefore:

- ▶ Retrace the **major findings** of the HyTruck-project
- ▶ Provide **knowledge** and give usable insight in development in **hydrogen technology**
- ▶ Focus on the **target group**

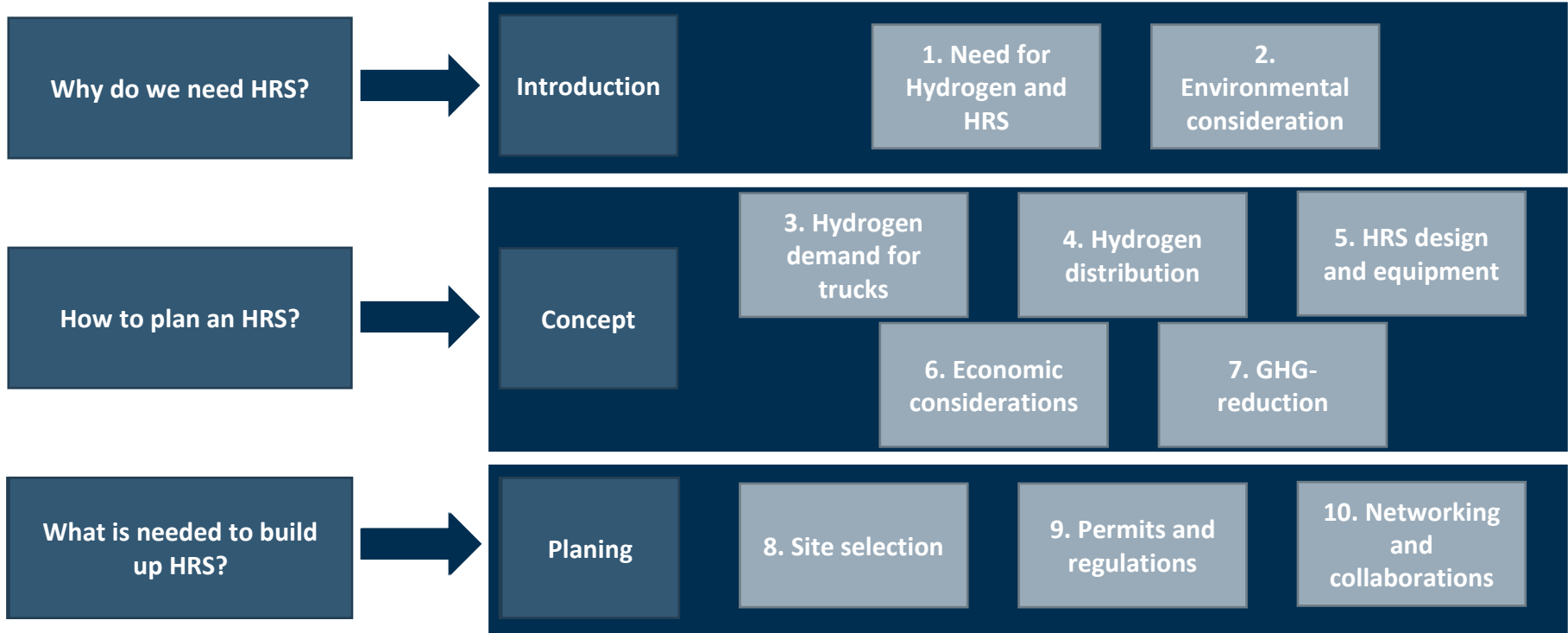
Guideline Scope & Methodology

Methodology



Guideline Scope & Methodology

Scope



Results

Example results: How to supply a HRS with Hydrogen?

Within the guideline we compare three different supply options of hydrogen refueling stations:





On Site Production



Trailer Delivery



Pipeline Supply

Recommended H2-Storage Size

Large scale storage
due to fluctuation of
renewables

Smaller storage with
daily delivery

Small storage for
pressurizing

Site Selection Criteria

Water availability,
Renewable energies
or strong grid access

- None -

Available pipeline
access point



On Site Production



Trailer Delivery



Pipeline Supply

GHG Emissions

Low carbon footprint due to transport and local used renewables

Carbon intense transport

Depending on hydrogen origin high emissions possible

Economic Considerations

No transport cost,
Low hydrogen cost with good renewable conditions,
High investment

Higher cost due to expensive trailer delivery

Unknown cost for pipeline access,
Low hydrogen price expected due to large scale production

Summary



On Site Production

- Very good hydrogen costs possible
- Higher effort for permits
- Balance H₂ production and demand

HRS as side project to bigger hydrogen production (e.g. for industrial use)



Trailer Delivery

- Supply dependencies
- Higher GHG-emissions and transport cost
- Flexibility in site selection

Most common way to supply HRS at the moment.



Pipeline Supply

- Low availability of pipelines

Promising future option for hydrogen supply if available

Where to find the guideline?

- ▶ The Guideline is **now** available on the HyTruck Website.
- ▶ Other interesting outputs by HyTruck Partners are/will be available as well. So check it out!

The HyTruck Website: <https://interreg-baltic.eu/project/hytruck/>

Thank you for your attention!



Your ideas?

- ... Partnerships
- ... Research Cooperations
- ... Joint Project Proposals



Tel: +49 (0)30 1208 434 86
E-Mail: marcus.schober@rl-institut.de
Web: <http://www.rl-institut.de>

LinkedIn:

