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PROJECT ON CRA FOR TRUNK PIPELINES SAFETY IN RELATION TO HYDROGEN



Time Frameworks – 05 January 2024 - 04 July 2025

The project seeks to provide guidance on harmonizing standards and conformity assessment systems for the transportation of hydrogen through trunk pipelines, using the template of Recommendation L for a Common Regulatory Arrangement.



The project team will develop guidance for the harmonization of approaches to the development of standards and conformity assessment systems for the transportation through trunk pipelines of hydrogen.



SCOPES OF THE PROJECT ON CRA FOR TUNK PIPELINES SAFETY IN RELATION TO HYDROGEN



Develop a common regulatory arrangement for trunk pipeline safety in relation to hydrogen.

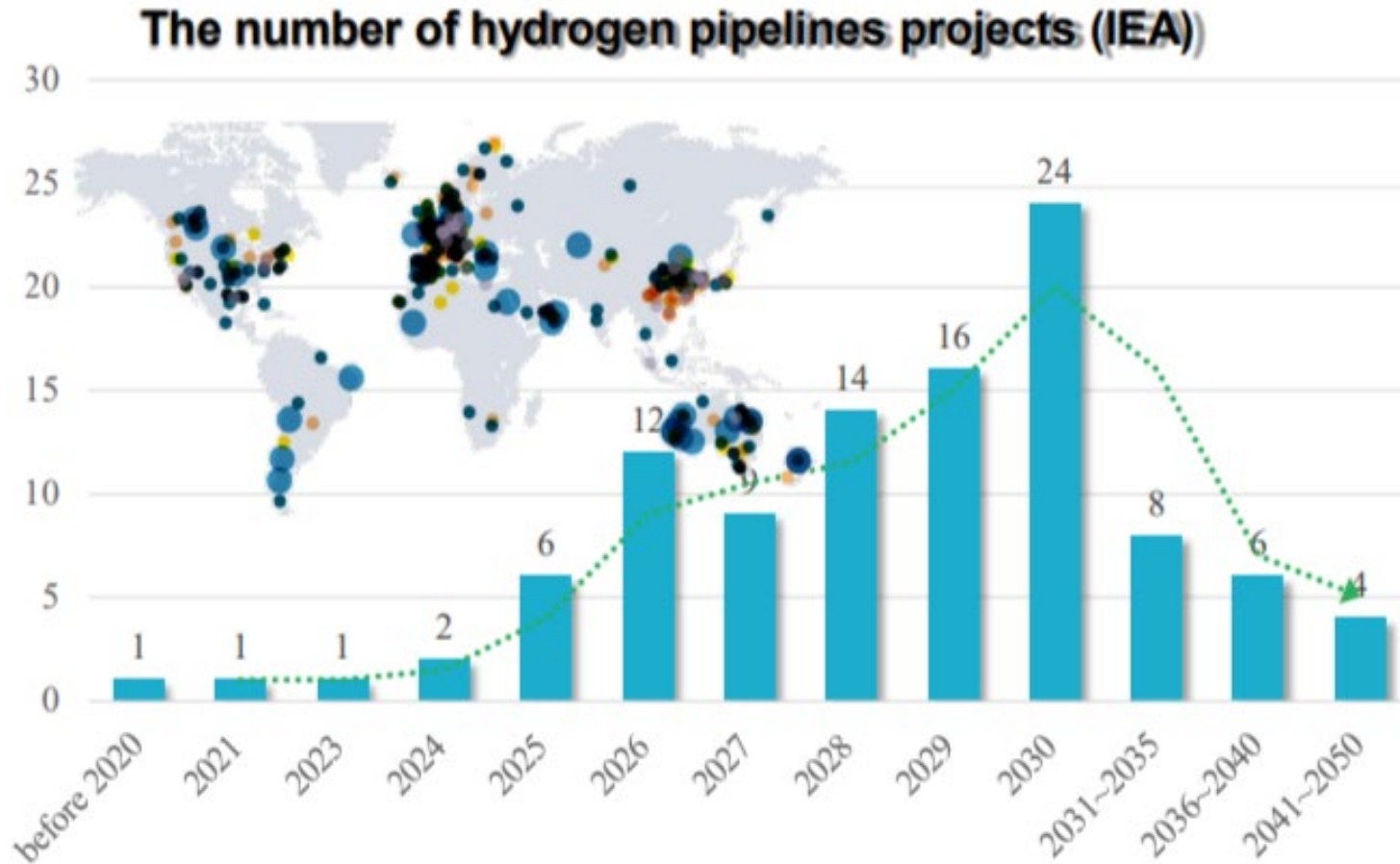
Develop guidance for the harmonization of the conformity assessment requirements concerning hydrogen transportation.

Prepare a questionnaire on the application of regulations concerning the transport of hydrogen by trunk pipeline. The resulting questionnaire would be reviewed by the WP.6 Bureau and then circulated for responses by the UNECE Secretariat. The information received would inform the next steps of the project and help to develop the requirements for common approaches.

Analyze the legislative framework, including national legislation and standards developed for example, within the framework of ISO (TC 67 and TC 197), regulatory documents of the Hydrogen Council, legislation of the EAEU, the EU, US and other countries). This analysis will inform the details of the common regulatory arrangement.

Develop guidance for the harmonization of the conformity assessment requirements concerning hydrogen transportation.

HYDROGEN PIPELINES PROJECTS



From World Energy Outlook 2023

HYDROGEN PIPELINES PROJECTS

Hydrogen transport

Hydrogen onshore pipelines

Parameter	Units	Small	Medium	Large
Lifetime - pipelines	years	42	42	42
Lifetime - compressor	years	24	24	24
Operation conditions	% of design capacity	75%	75%	75%
Diameter	inch	20	36	48
Design Capacity	GW H ₂ , LHV	0.9	3.6	12.7
Inlet pressure	bar	30	30	40
Outlet pressure	bar	50	50	80
Utilisation	%	57%	57%	57%
Compression power	MW _e /1 000 km	6	40	183
CAPEX - new pipeline	MUSD/km	1.8	2.6	3.2
CAPEX - repurposed pipeline	MUSD/km	0.3	0.5	0.6
CAPEX - compressor	MUSD/MW _e	4.0	4.0	4.0

Note: MUSD = million USD.

From **Global Hydrogen Review
2023: Assumptions Annex**






MAIN CHALLENGES FOR HYDROGEN PIPELINES

Greater resistance on legal (treaty, statutory, and contractual) and regulatory obstacles

Pipeline operations are more complex

LIST OF STANDARDS



TYPE OF HYDROGEN	NUMBER OF STANDARDS
A- Hydrogen Generation Codes and Guidelines	10
B- Hydrogen storage and transport Codes and Guidelines	18
C- Hydrogen Compressors, Pumps and Turbines Codes and Standards	4
D- Hydrogen fuel cells/ refueling Codes and Standards	11
E- Hydrogen safety Codes and Standards	9

More than 50 standards for hydrogen pipelines have been developed globally

Main problems touched in the project

Risk Assessment

- Conducting a thorough risk assessment to identify potential hazards associated with hydrogen systems.

Material compatibility

- Ensuring the compatibility of materials used in the construction of hydrogen infrastructure and withstands the specific properties of hydrogen.

Leak Detection

- Implement advanced leak detection systems to quickly identify and repair hydrogen leaks.

Emergency Planning

- Develop comprehensive emergency response plans to mitigate the impact of any incidents.



THANK YOU FOR YOUR ATTENTION!