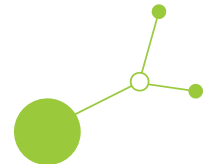


Work Package (WP) 1: H2-ready for European and regional spatial planning and development



Version 1
09 2023

H2CE - Deliverable 1.1.1 - Fact sheet of common indicators for H2-readiness in planning and development processes

submitted by Joint Spatial Planning Department Berlin-Brandenburg

(PP1 - JSPD), WP1 Lead; September 2023





Introduction:

Work package (WP) 1 of H2CE “H2-ready for European regional spatial planning and development” will analyze and identify common challenges & solutions in planning and governance processes for H2-ready regions from a regional, transregional & transnational perspective to develop joint strategies and action plans.

Activity 1.1 deals with “Planning the transition in European regions: challenges and solutions in H2-ready regions and establishes the foundation for the WP’s outputs. In the first stage (during Period 1) PPS jointly developed a set of common indicators, which will create the basis of the “template” for the Factsheets for each of the regions participating in H2CE. In a further step (until Period 6), PPs will carry out their regional analysis based on this set of common indicators and elaborate their regional Factsheets on H2-readiness. Eventually, a Summary of regional results transferable to other regions, including challenges, best practices, and solutions will be developed.

The common indicators for H2-readiness of regions presented in this Deliverable (D.1.1.1) are the result of the discussions amongst all PPs. They will start to carry out their regional analysis on this basis.

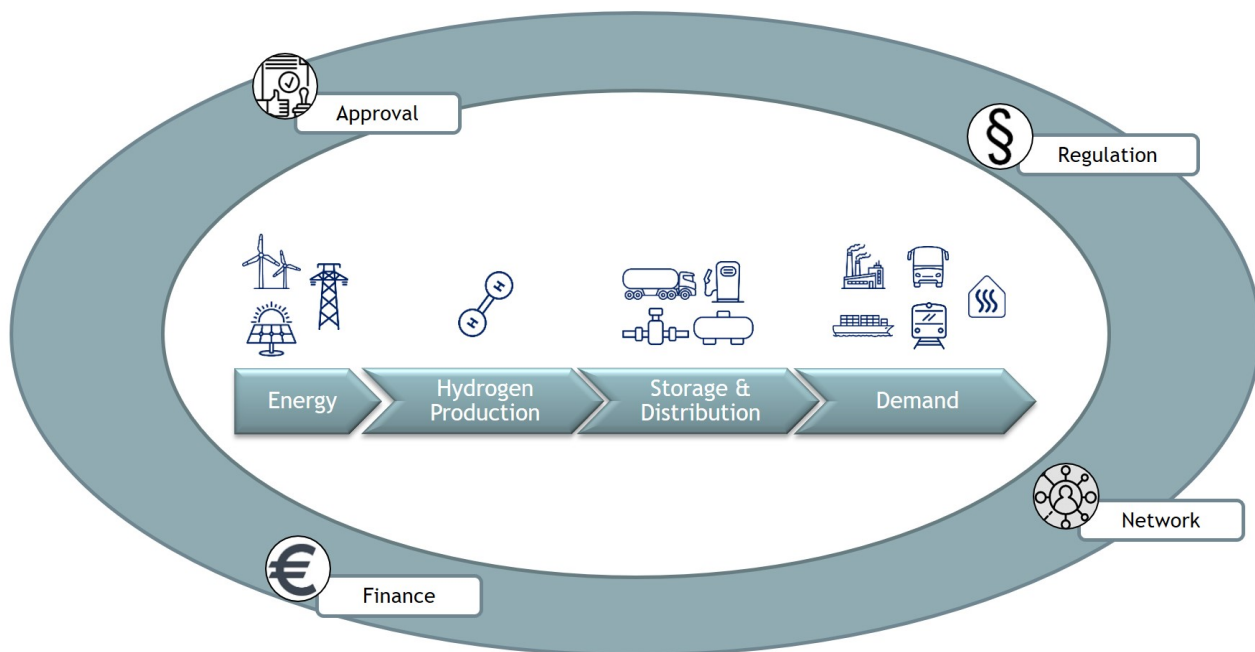
Assessing Hydrogen Readiness: Key Indicators for Regions

The global transition to a more sustainable and cleaner energy future hinges on the widespread adoption of hydrogen as a versatile energy carrier. Hydrogen offers the promise of decarbonizing various sectors, including transportation, industry, and power generation, thereby contributing to reduced greenhouse gas emissions and a more sustainable planet.

The successful integration of hydrogen into our energy landscape requires regions to be adequately prepared and equipped for this transformation. To measure a region's readiness to embrace hydrogen as an integral part of its energy portfolio, it is essential to consider a range of critical indicators that encompass various aspects of hydrogen adoption.

To evaluate a region’s hydrogen readiness understanding the hydrogen economy is key. The central element is the value chain. The value chain starts with the production of renewable energies in electrolyzers. The produced hydrogen can be used in different sectors as fuels, substitution for natural gas, or chemical raw material. Storage and Distribution of hydrogen and its derivatives functions as a link between the demand and production.

All the parts of the hydrogen value chain are embedded in a larger system. Regulation, approval, finance, and network are the wider range of indicators to successfully build up a regional hydrogen economy. The indicators describe the regional hydrogen readiness consequence of the interaction between the hydrogen value chain and the supportive governance surrounding it. They provide a holistic view of a region's capacity to produce, distribute, and utilize hydrogen sustainably.



As we delve into these indicators, it becomes evident that hydrogen readiness is a multifaceted concept that encompasses technological infrastructure, regulatory support, market dynamics, and environmental commitments. Each indicator serves as a building block in understanding a region's strengths and areas that may require further development to accelerate the hydrogen transition.

From evaluating a region's hydrogen production capacity and renewable energy potential to examining the presence of supportive government policies and collaborations, these indicators offer a comprehensive framework for assessment. Furthermore, they consider the crucial role of public awareness and market demand in driving the adoption of hydrogen technologies.

As the world collectively strives to reduce carbon emissions and combat climate change, understanding a region's hydrogen readiness becomes increasingly vital. This knowledge empowers decision-makers to allocate resources effectively, foster innovation, and facilitate the growth of a sustainable hydrogen ecosystem.

In the following, each indicator and all related sub-indicators will be presented in a table, giving an overview and providing insights into their application in assessing a region's readiness for the hydrogen era. By utilizing these indicators, regions can chart a course towards a cleaner, more sustainable energy future, and contribute to a global hydrogen economy.



<i>Indicator</i>	<i>Sub-Indicator</i>	<i>Explanation</i>
Production	Production Pathways	Existing production pathways
	Renewable Energies Capacity	Regional installed capacity and future potential
	Electrical Infrastructure	Grid capabilities and expansion plans
	Water	Conflicts, Stress, Desalination, public debate
	Landuse	Conflicts regarding landuse for renewables/electrolysers
	Existing Stakeholders	Active stakeholders in RE/hydrogen Production
Storage	Existing Storage methods	Implemented storage methods and plans to build up
	Local Stakeholders	Active stakeholders from the storage sector
Distribution	Existing Hydrogen distribution methods	like pipelines, trailers
	Existing distribution methods for natural gas	like pipelines, trailers
	Import/export possibilities	Part of long distance distribution network
	Existing gas stations	Existing regional gas stations for distributing fuels/gas
Demand mobility	Regional Transportation Systems	Existing Transportation Systems like Bus lines, Trains, harbours or airports
	Regional fuel demand	Regional fuel demand in transportation sector (air/shipping/street)
Demand Industry	Regional Industries	Existing of temperature intense (e.g. steel) or chemical industry
	Current hydrogen demand in industry	Already existing hydrogen demand e.g. chemical industry
	Natural gas Demand	Gas Demand in temperature intense, or chemical industries
Demand Heat	Existing heat Infrastructure	Existing heating grids (local or district)
	Possibilities to include waste heat	Possibilities to include electrolysers waste heat in heating infrastructure



Governance

Key Actors	Local actors in hydrogen
Strategies/Action Plans	Existing strategies/action plans on hydrogen (national and regional)
Decarbonisation Targets	Targets for decarbonisation
National Funding Schemes	Funding for companies, regional actors and projects
Existing Stakeholder Network	Network to connect stakeholders from different sectors and parts of the hydrogen value chain
Knowledge in approval authorities	Knowledge about approval for planning and construction of hydrogen plants.