

24 March 2021

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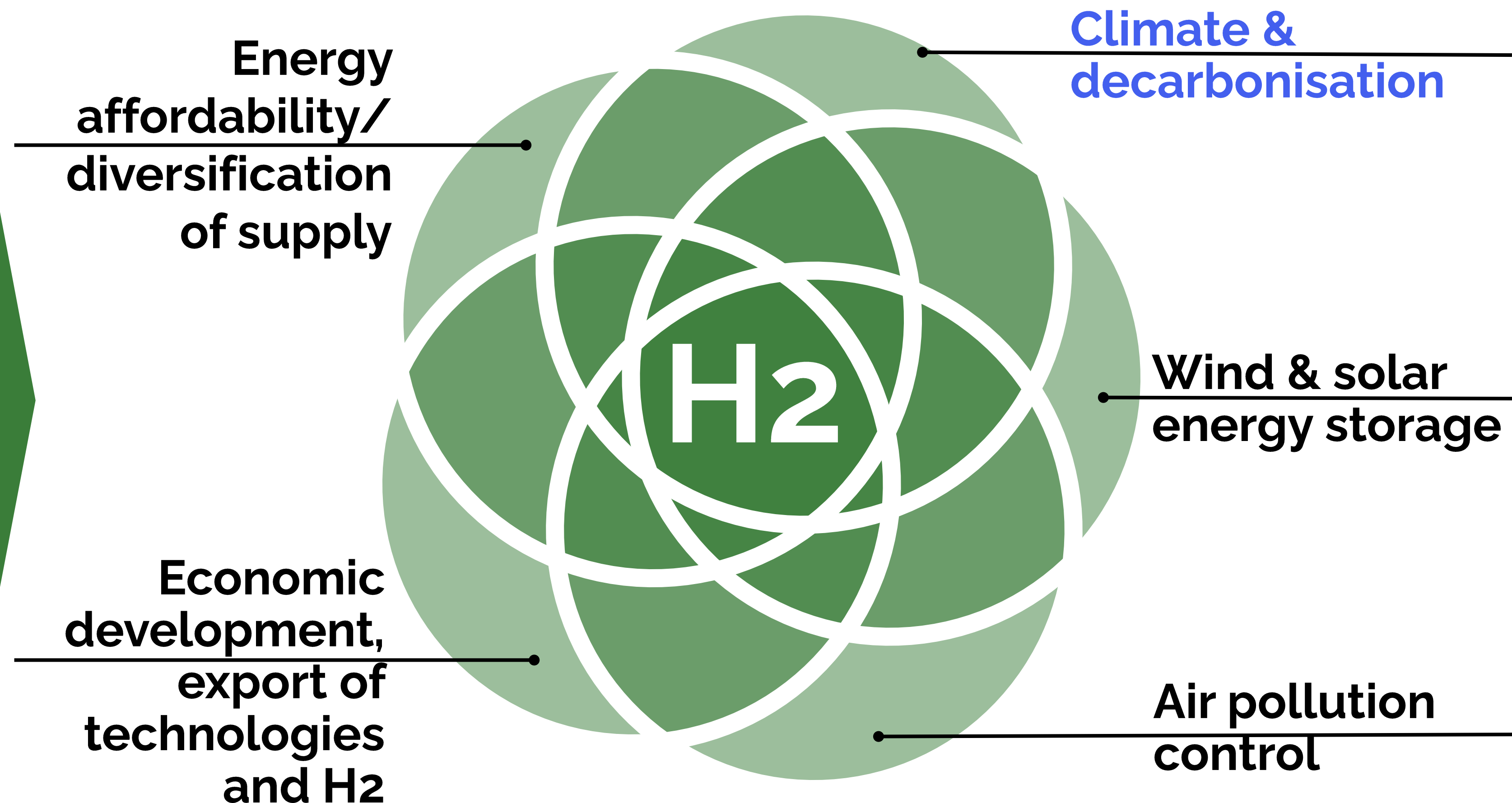
# Hydrogen Development in Russia:

Energy & climate policy framework, forthcoming hydrogen master-plan,  
key milestones and stakeholders

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# Common incentives for hydrogen development on the policy level



# Russian climate policy:

focus on maintaining of achieved GHG emission reduction level

**-30%  
by 2030**

National Determined Contribution of Russia (including LULUCF compared to 1990)

**-50%**

GHG emissions level already achieved in 2017 (including LULUCF compared to 1990)

Most likely, long-term emission goals (by 2030 & 50) could be achieved without active efforts

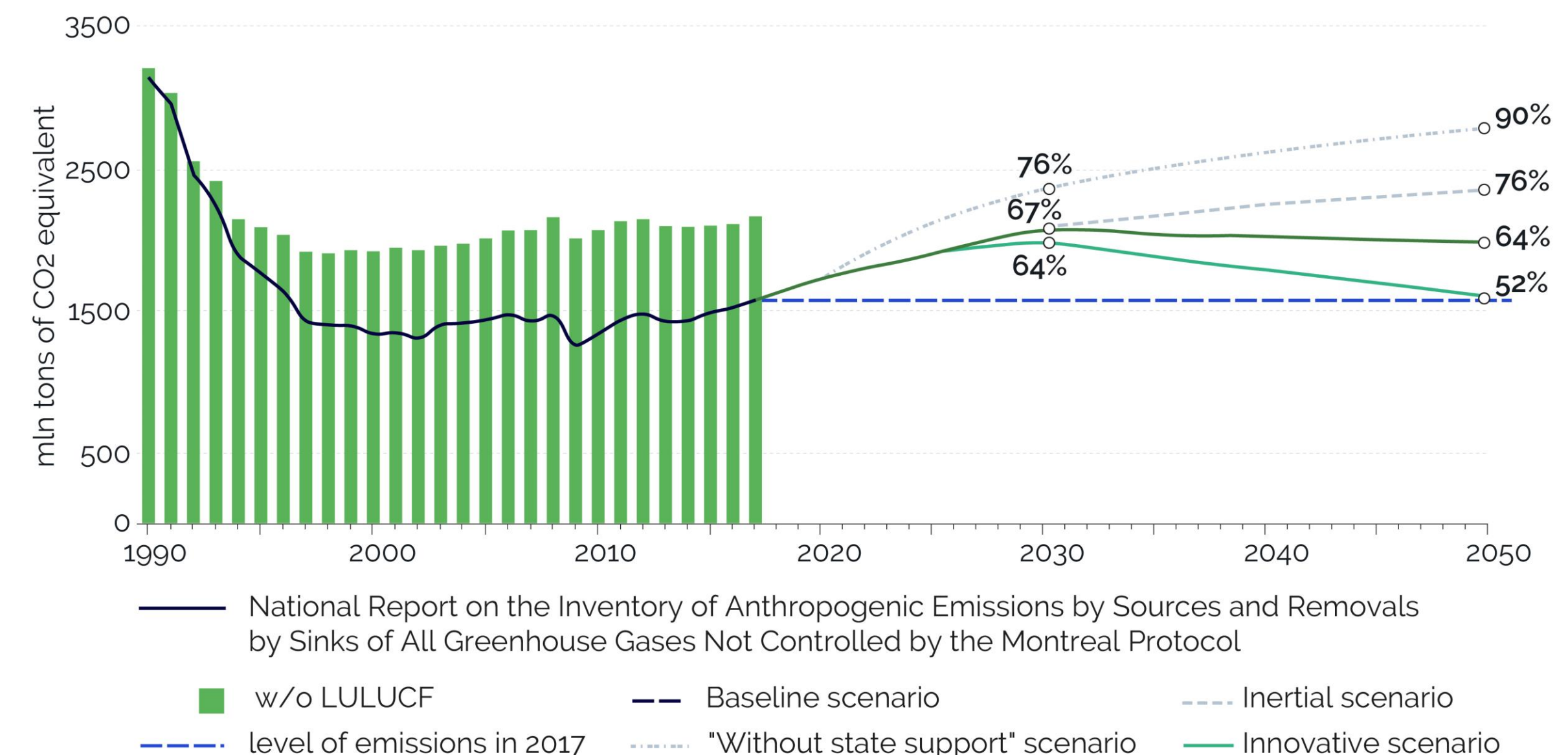
Energy efficiency improvement is considered as the main tool of GHG emissions management

Carbon pricing is not considered in strategy so far

Significant changes in energy mix (and hydrogen) are not in the agenda

## Anthropogenic GHG emissions targets in Russia are planned at the same level by 2050 as in 2017 (best case)

Anthropogenic GHG emissions (including and excluding LULUCF) in Russia from 1990 until 2017 (current data) and from 2017 until 2050 (outlook according to the Low Carbon Development Strategy draft).



Source: SKOLKOVO Energy Centre analysis

# The EU's CBAM initiative could incentivize Russian exporters of metals, chemicals, paper, oil and gas to reduce their carbon footprint



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## EU Green Deal (carbon border adjustment mechanism)

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 In preparation

 Roadmap

Feedback period

04 March 2020 - 01 April 2020

FEEDBACK: CLOSED

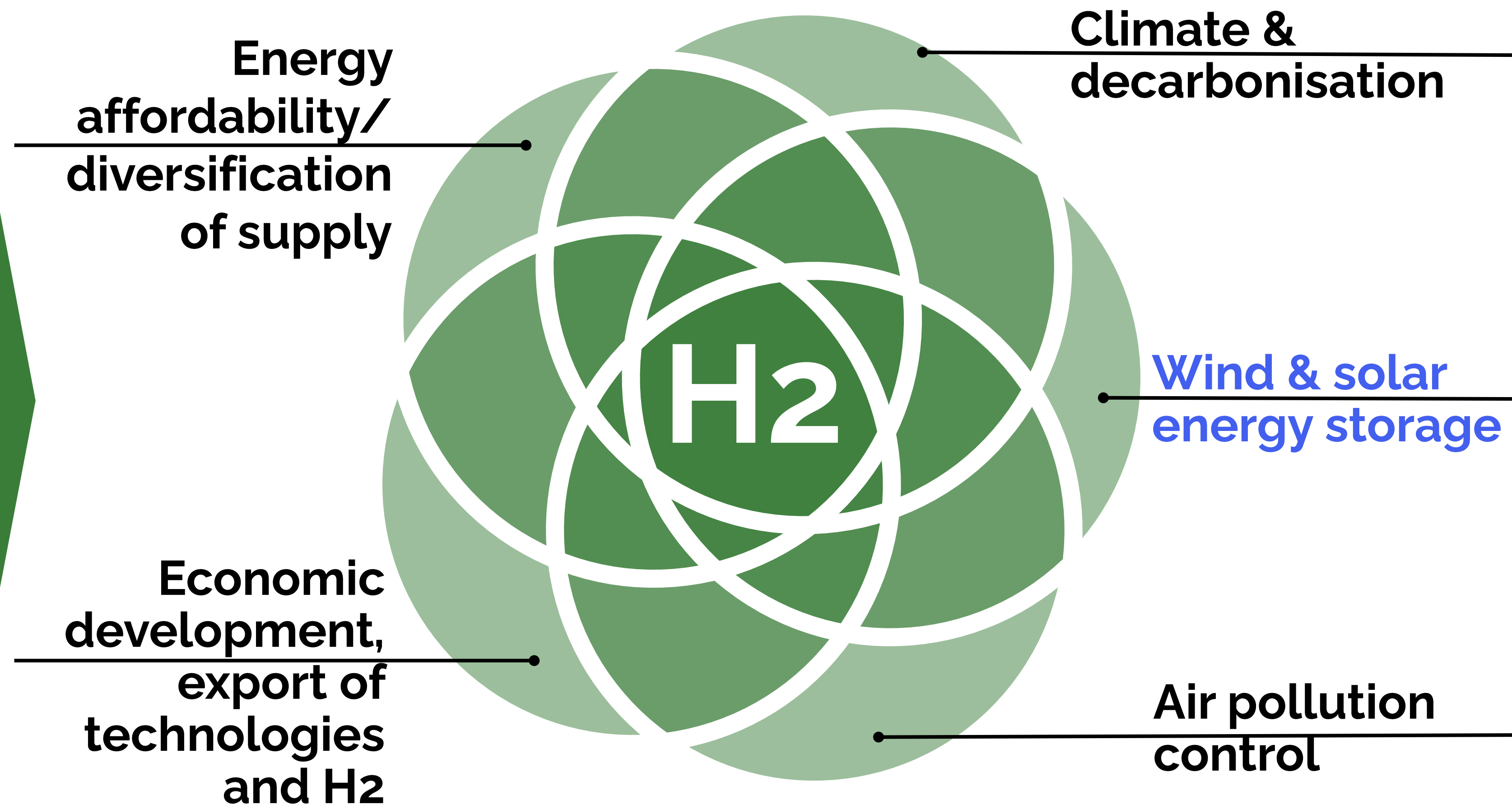
### About this initiative

#### Summary

Europe's efforts to go climate-neutral by 2050 could be undermined by **lack of ambition by our international partners**. This would mean a risk of carbon leakage. This occurs when companies transfer production to countries that are less strict about emissions. In such case global emissions would not be reduced.

This new mechanism would counteract this risk by putting a carbon price on imports of certain goods from outside the EU.

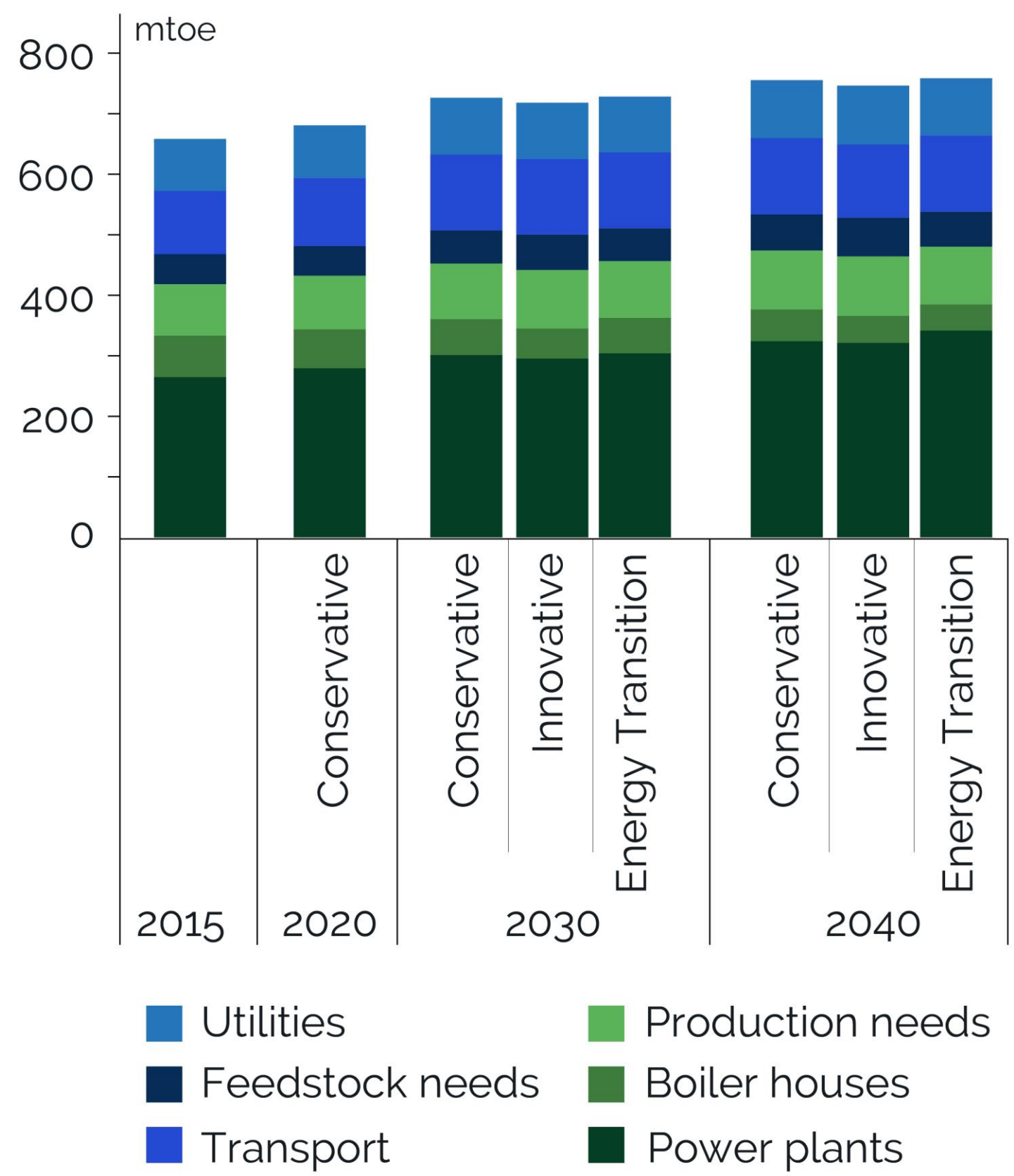
# Common incentives for hydrogen development on the policy level



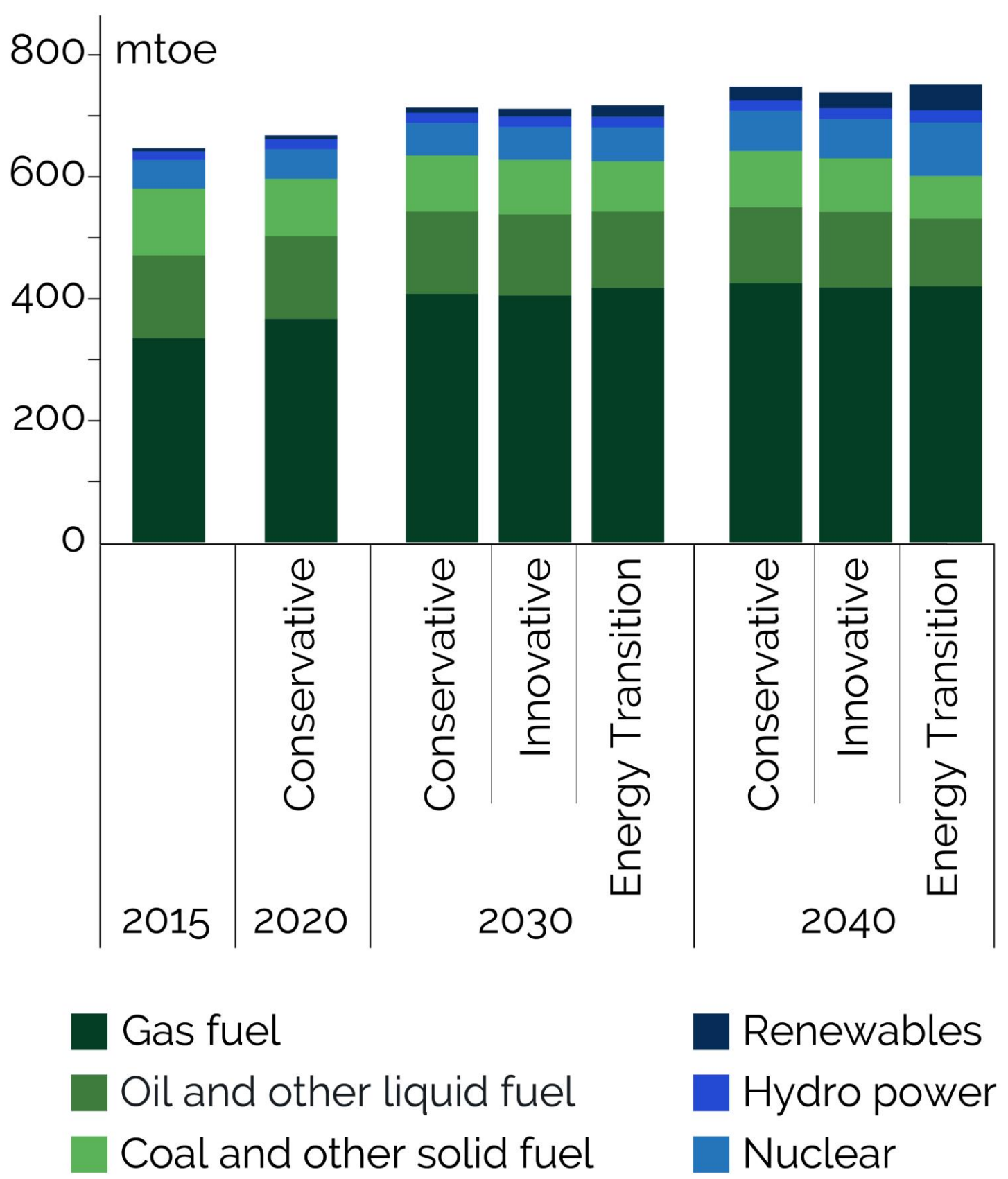


# Primary energy consumption and energy mix unlikely to change significantly before 2040

PRIMARY ENERGY CONSUMPTION BY SECTOR



PRIMARY ENERGY CONSUMPTION BY SOURCE

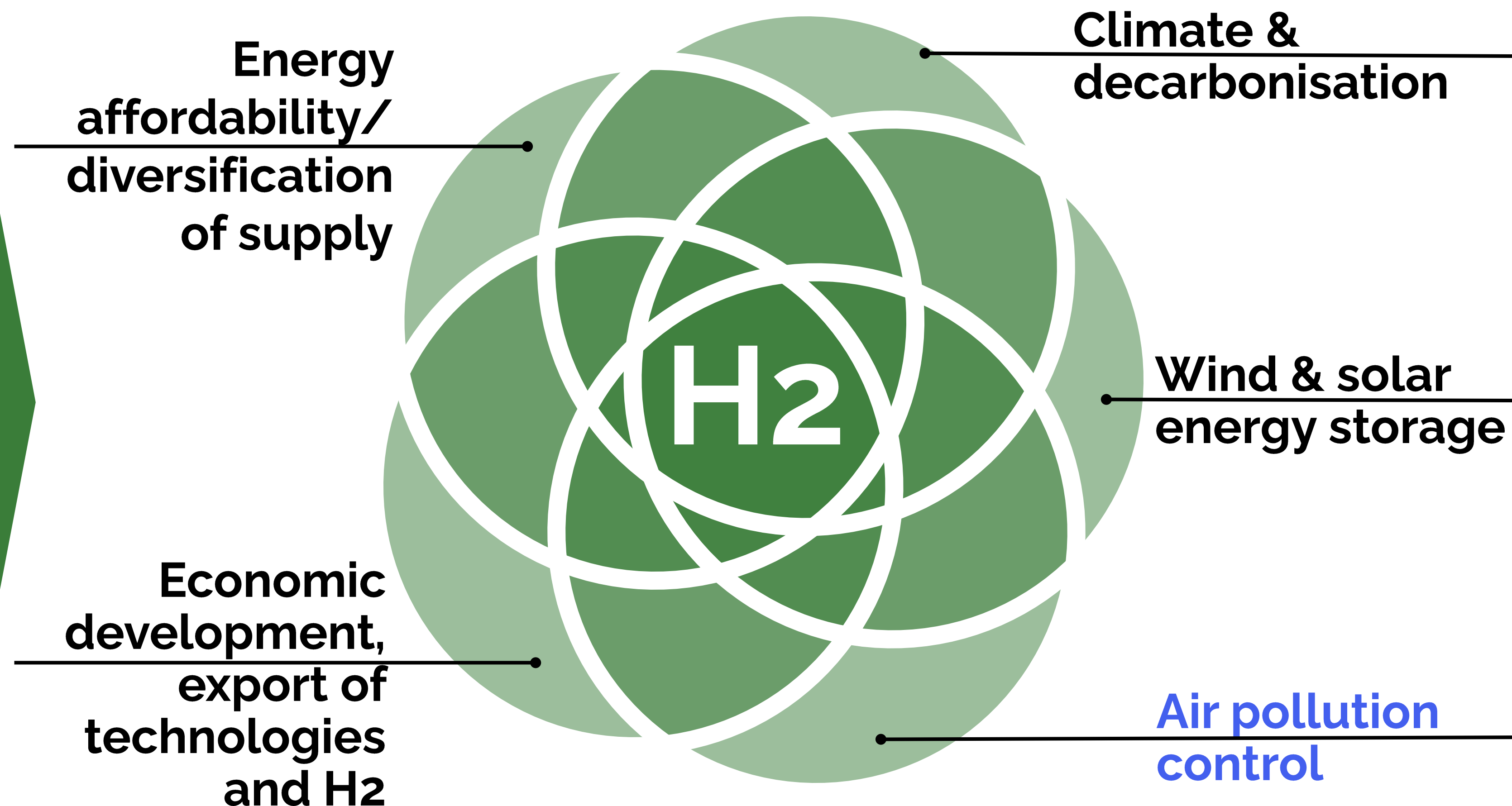


Natural gas remains the main energy source – and the most affordable one

Wind & solar electricity will stand for 2-2,5% in electricity mix by 2035 – no incentives for storage

Source: ERIRAS-SKOLKOVO Energy Outlook (2019)

# Common incentives for hydrogen development on the policy level

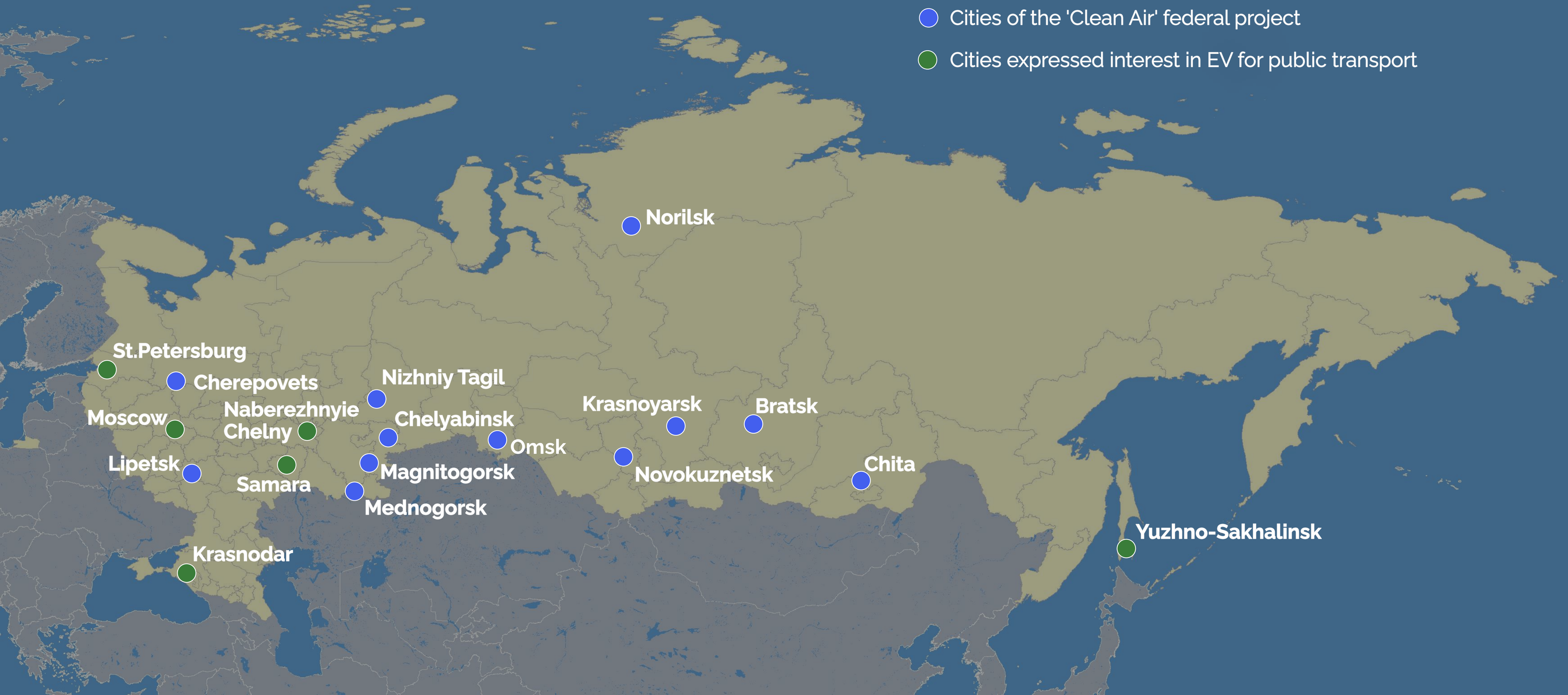




# Potential domestic market: FCEV for public transport

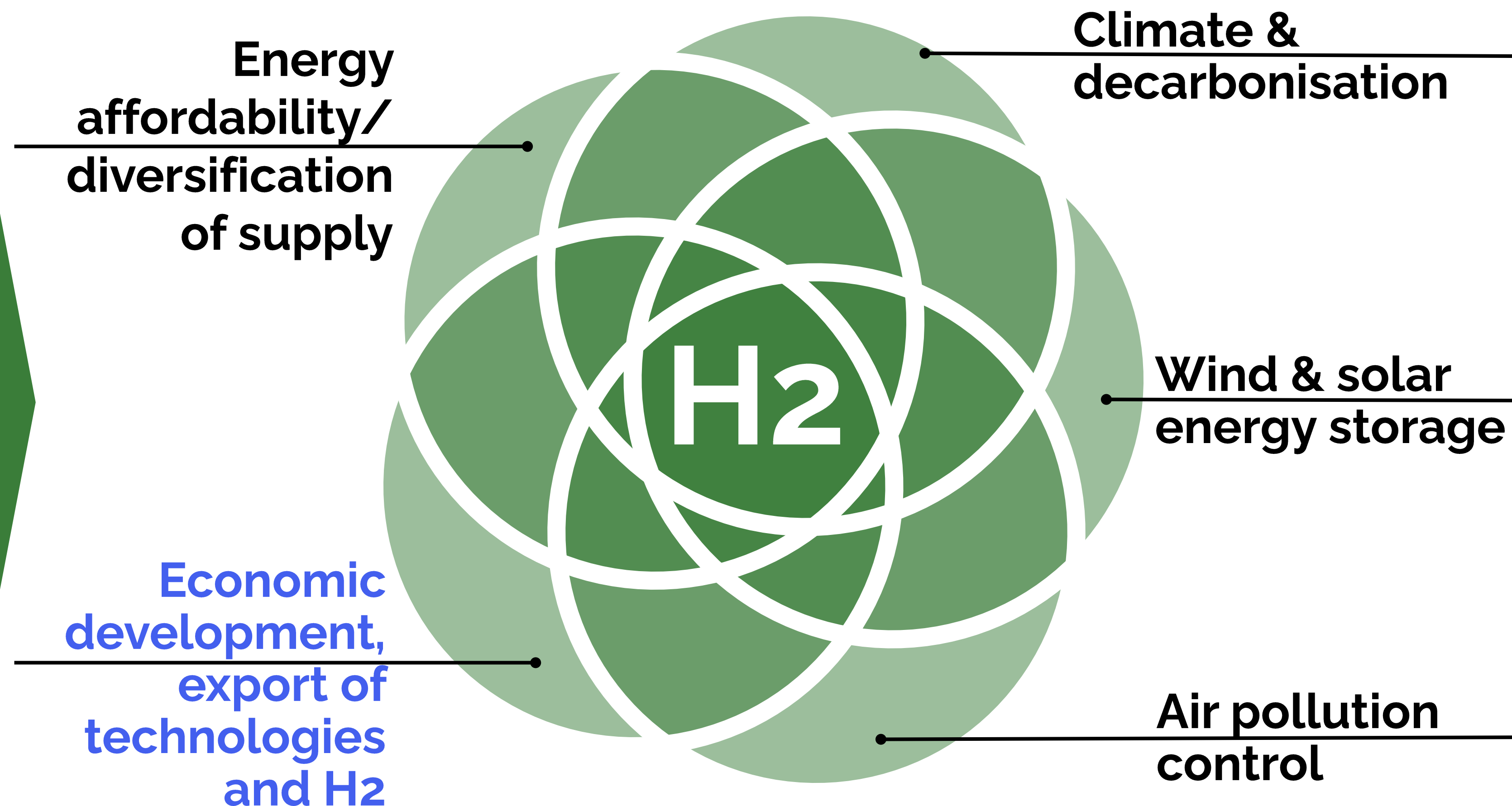
## potential major cities

- Cities of the 'Clean Air' federal project
- Cities expressed interest in EV for public transport





# Common incentives for hydrogen development on the policy level



# Energy Strategy-2035:

focus on energy exports increase  
(especially to Asian Pacific markets) -  
by 15-46% by 2035 from the level of  
2018

## Hydrogen export goals:

**0,2 Mt** by 2024

**2 Mt** by 2035

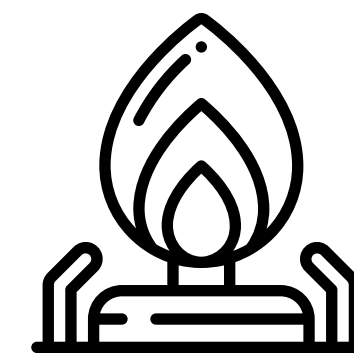
(=0,7% of total Russian energy exports)

(H2 'origin' is not mentioned, as well as  
domestic H2 market KPIs)



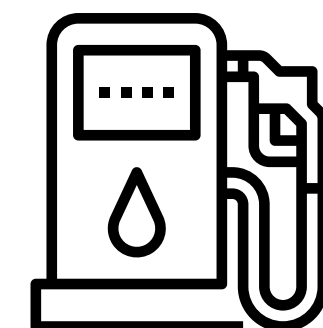
**+20-86%**

coal export growth (planned)



**+47-98%**

natural gas + LNG export growth  
(planned)



**+80-110%**

gasoline + diesel export growth  
(planned)

**+85%**

growth in Asia-Pacific market  
share of total Russian energy  
exports (planned)

Source: Energy Strategy of Russia (adopted in June 2020)

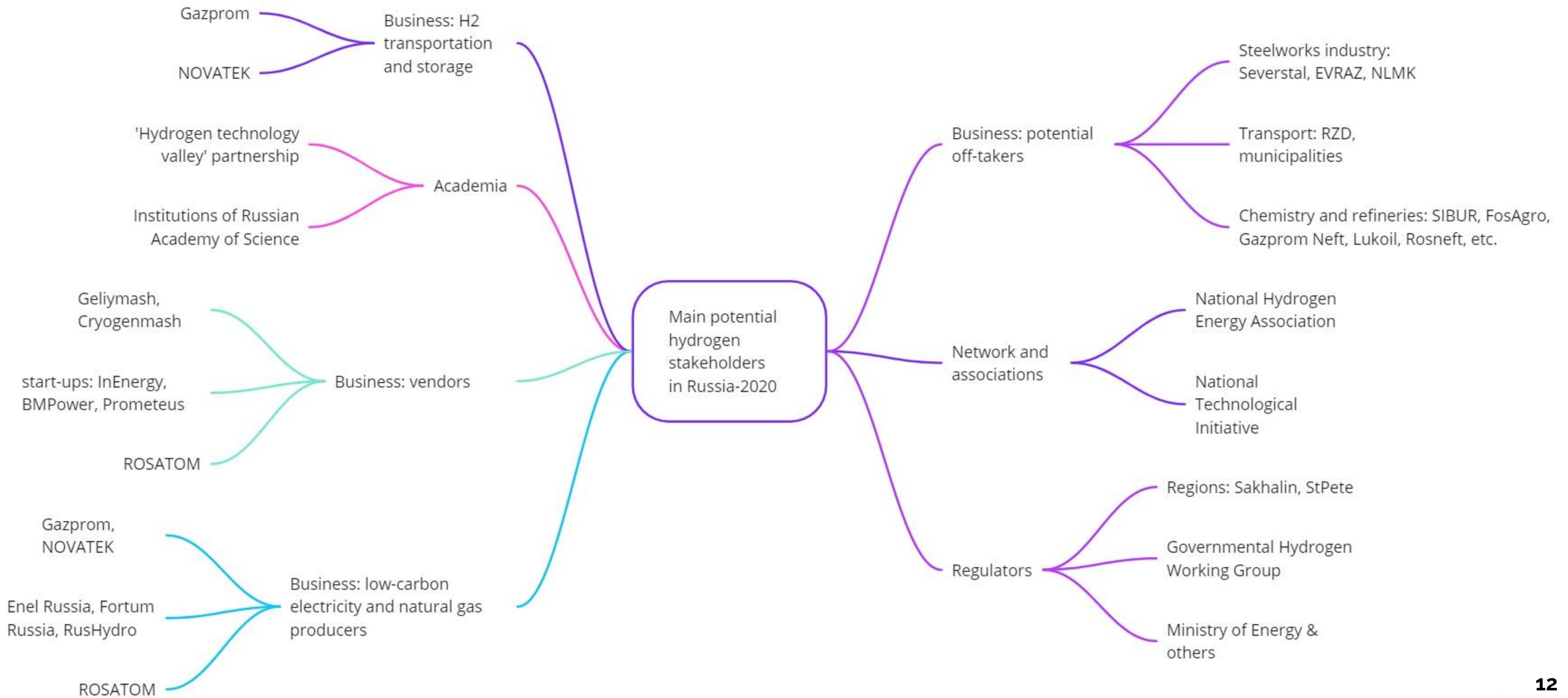


# Future hydrogen production sites in Russia: past & ongoing studies

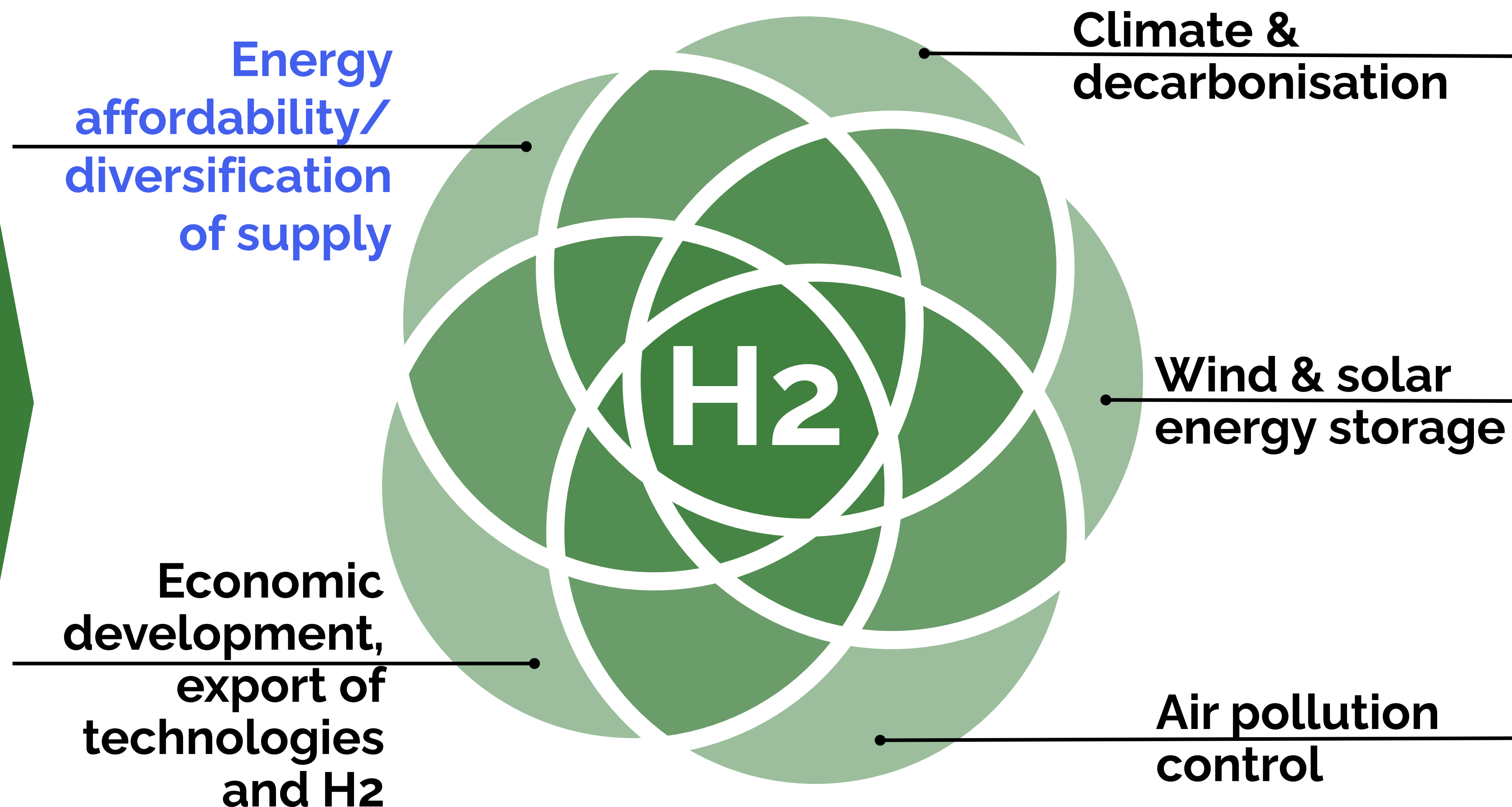




# Russian academia and industry stakeholders could bring added value to H2 strategy towards economy growth



# Common incentives for hydrogen development on the policy level





# Potential domestic market: remote areas energy supply

More than 350,000 people in Russia live in remote areas, their lives depend on expensive diesel fuel

**Republic Sakha  
(Yakutia)**

**281 GWh**

**Magadan Oblast**  
**21 GWh**

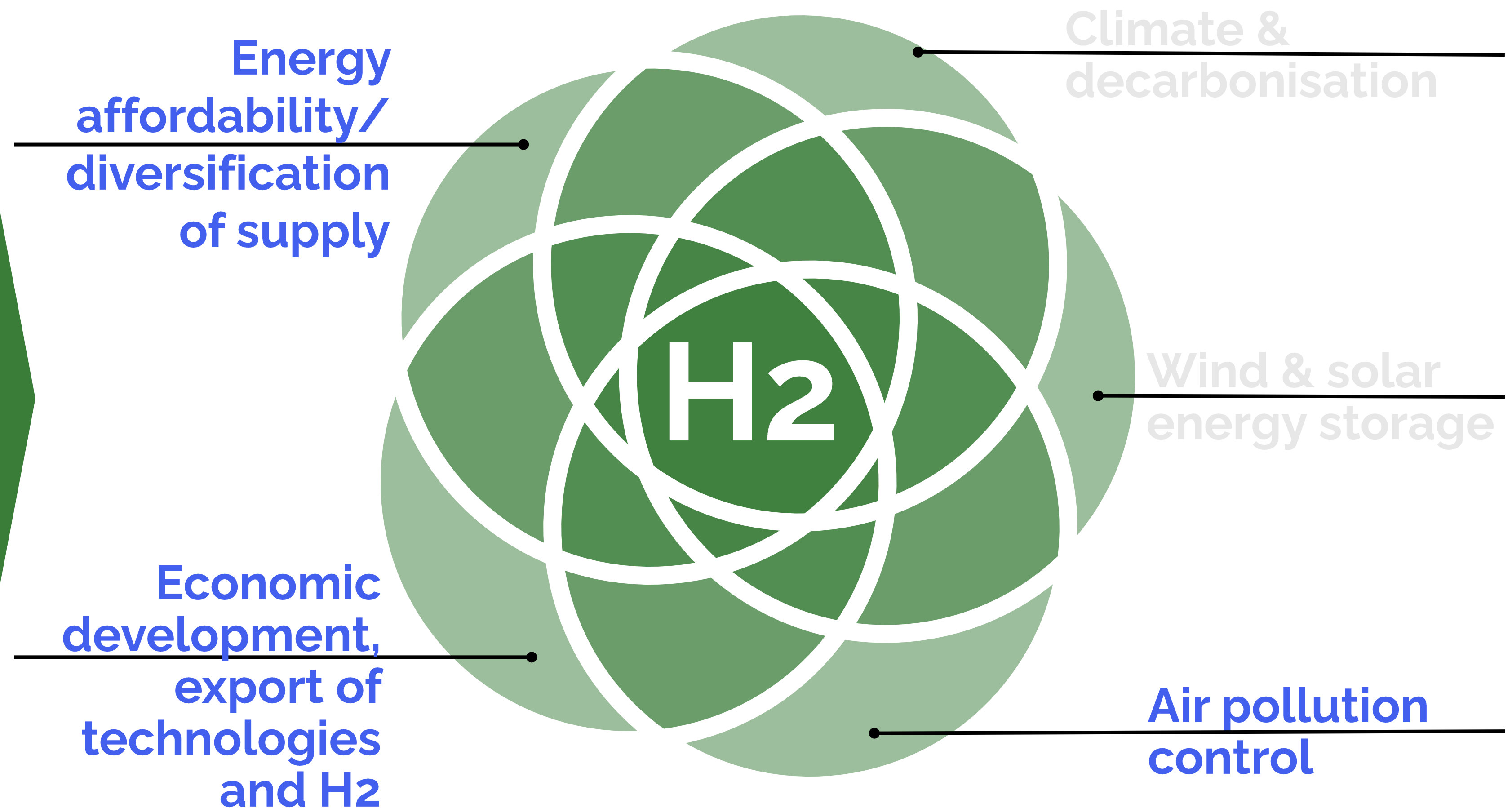
**Kamchatka Krai**  
**182 GWh**

**Sakhalin Oblast**  
**114 GWh**

Source: SKOLKOVO Energy Centre analysis based on the Ministry of Energy data for 2018. Figures show annual electricity generation in remote areas.



Only **three** incentives for hydrogen are in place in Russia



# Questions for forthcoming H2 strategy

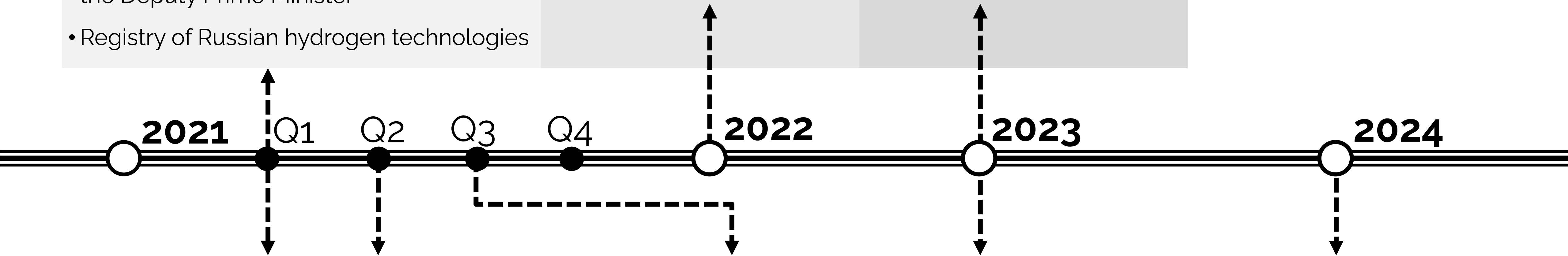
- Hydrogen export goals: how to make export-oriented projects feasible, if domestic H2 demand is limited up to zero?
- National CO2 pricing – is this necessary to boost domestic hydrogen demand?
- Air pollution standards - will tightening them help the FCEV deployment and how will it affect outdated car owners?
- 'Local content' requirements for imported technologies: reaching hydrogen export goals VS boosting Russian-based vendors
- Japan, Korea Rep., China declared carbon neutrality targets - does Russia's energy export strategy take this into account? Can hydrogen export serve as response to this threat and how to ensure its global competitiveness?

# H2 action plan: milestones

## To be published

- Hydrogen energy development master-plan
- Interdepartmental working group led by the Deputy Prime Minister
- Registry of Russian hydrogen technologies
- Methodology for assessing the life cycle of hydrogen production methods
- Methodology for the classification of hydrogen by GHG emissions level

Source: SKOLKOVO Energy Centre analysis based on Hydrogen Energy Action Plan (adopted in October 2020)



- measures of state support for pilots
- hydrogen certification
- hydrogen export support measures
- technical regulation
- international cooperation
- measures to support domestic H2 demand
- proposals for clusters, landfills, engineering centers

## Intergovernmental closed discussions

- low carbon hydrogen production (particularly in the gas industry)
- pilot electrolyzer on nuclear power plant site
- tests of gas turbine on methane-hydrogen fuel
- hydrogen train prototype

## Major target pilots



Thank you!  
Any questions?

