Why hydrogen?

- Expected to be a “game changer” in energy production and consumption: contribute to net zero emission pathway

1. Decarbonizing hard-to-abate industries (where RE is not a substitute) e.g., steel, cement, and petrochemicals.
2. Energy storage: seasonal/long-term; excess of RE
3. Source of revenue from export

Benefits

Exporters

- Source of revenue
- Low carbon production only if using RE or CCS
- If can export can produce for local demand at lower cost (due to scale)
- Examples: SEA, MENA, Australia, and Central Asia?

Importers

- When consumed - zero carbon (any hydrogen even if grey)
- Energy security
- Examples: Japan, EU.

Issues with Hydrogen: production, storage, transportation and utilization

1. Safety:
   - If used at unprecedented scale
   - New applications
2. Cost: H2 Demand in CA?
   - Green hydrogen is expensive (but falling), better to use RE where possible
   - Need to produce at scale to drive cost down (but what is demand for local H2?)
3. Infrastructure: Central Asia is land locked
   - Low volumetric energy density (energy per volume)
   - Production, Transportation (short and long distance) and Utilization: all require infrastructure (better to use existing infrastructure where possible)

Hydrogen in Central Asia: Overview

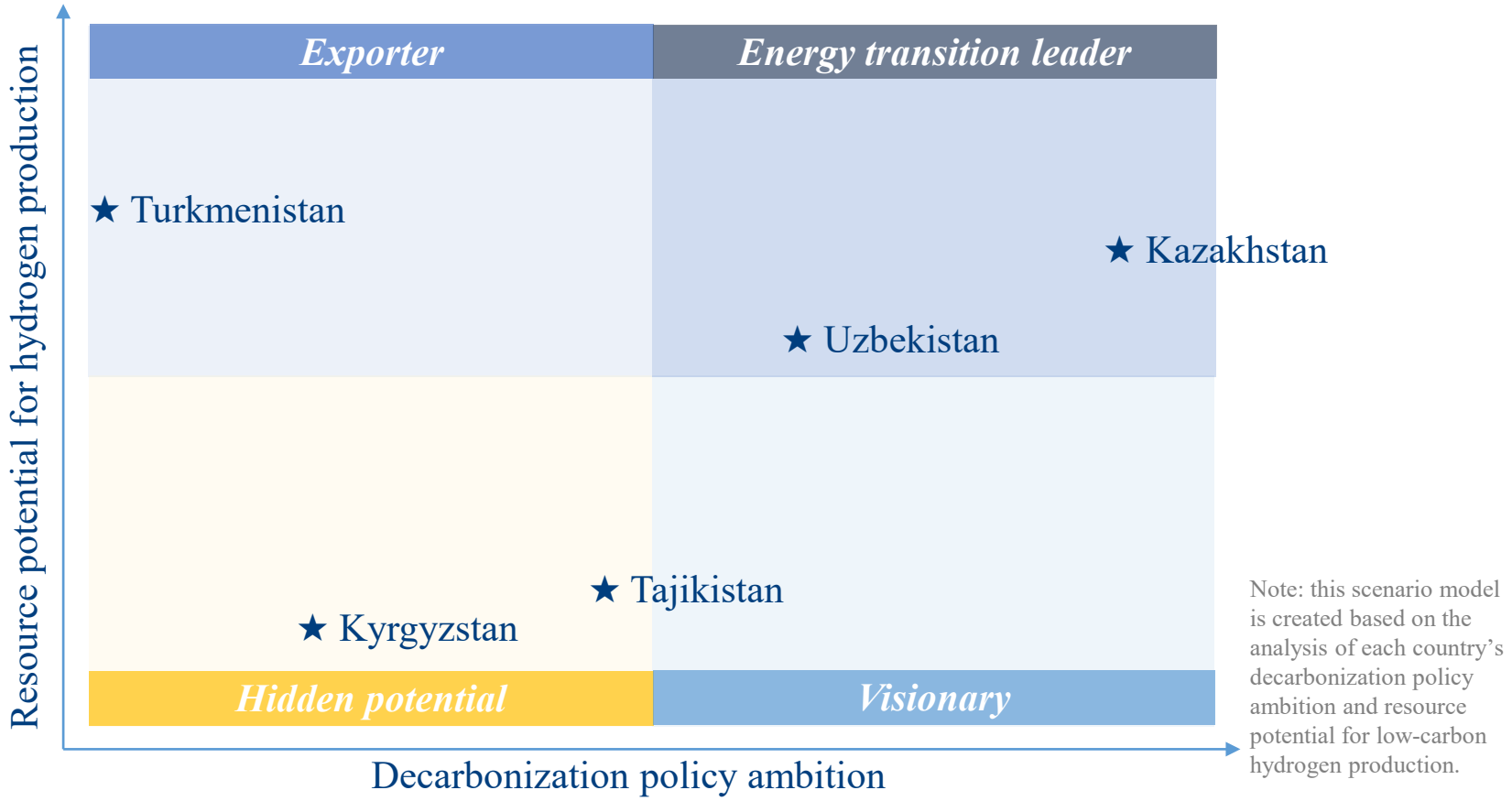
- As of 2022, more than 70 countries globally have drafted or already adopted national hydrogen policies as one of their strategic priorities for the energy transition.

- Yet, the countries in Central Asia are still at the early stage of evaluating hydrogen's role in long-term decarbonization strategies.
  - Except, Kazakhstan and Uzbekistan are drafting national hydrogen strategies and increasingly deploying renewable energy.

- While Central Asia has a great potential for hydrogen production and export; (UNECE, 2023).

Hydrogen in Central Asia: Development Scenario

- The scenario model for hydrogen economy development indicates that Kazakhstan and Uzbekistan has potentials to become energy transition leaders owing to its decarbonization ambitions and resource endowment; whilst Turkmenistan could be a potential major exporter.



Note: this scenario model is created based on the analysis of each country's decarbonization policy ambition and resource potential for low-carbon hydrogen production.

Source: Authors' elaboration using UNECE (2023)

Reference

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Thank You!

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