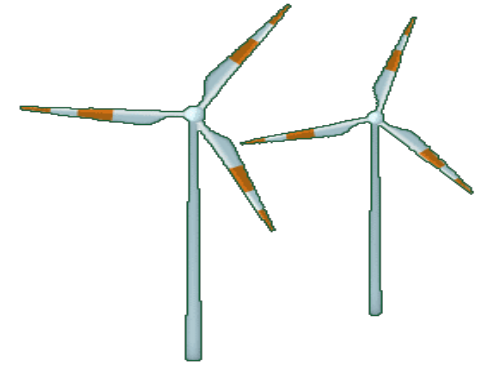
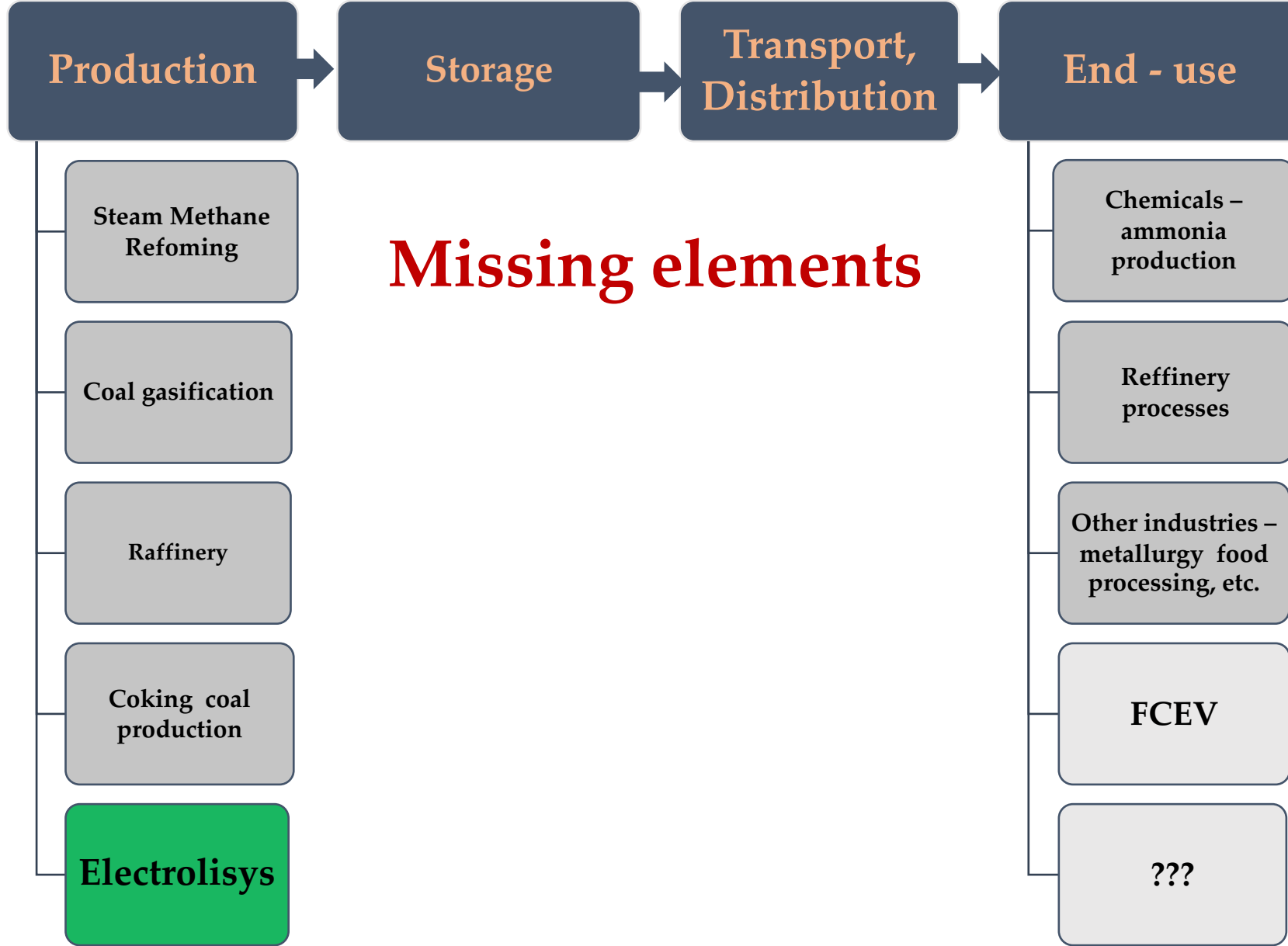
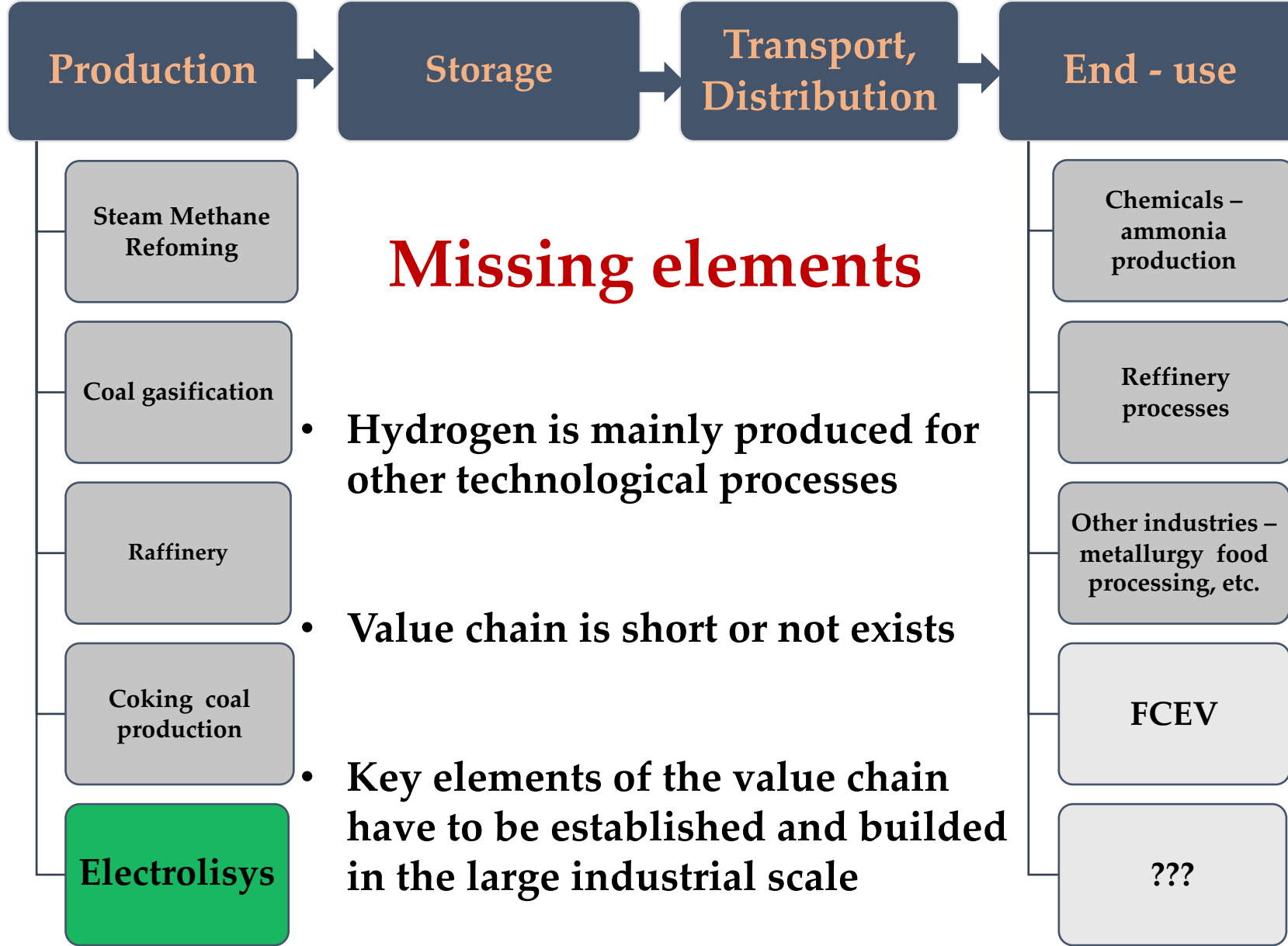


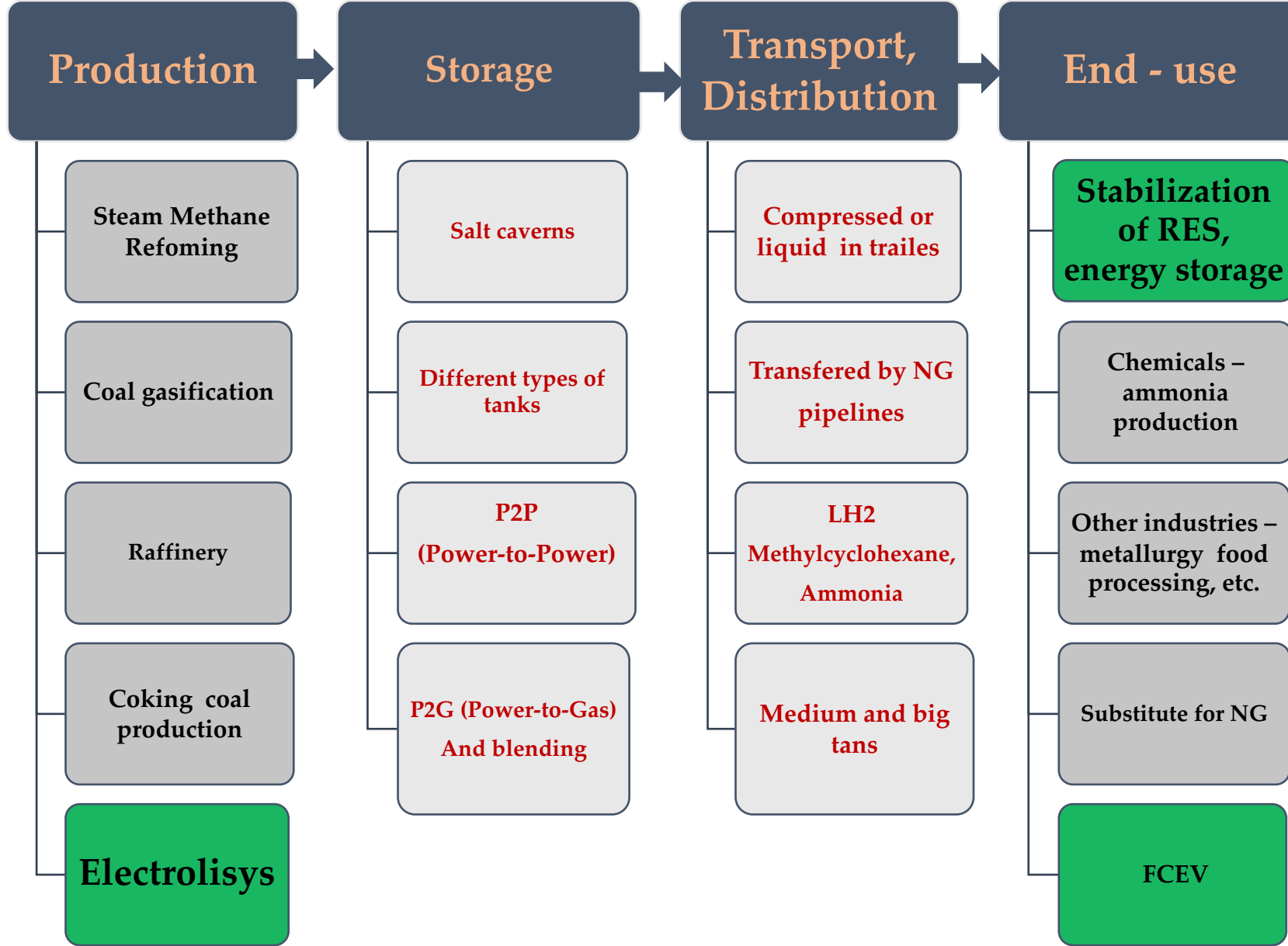
Different modes of the hydrogen value chains supply: Where is the market potential in/for Poland ?



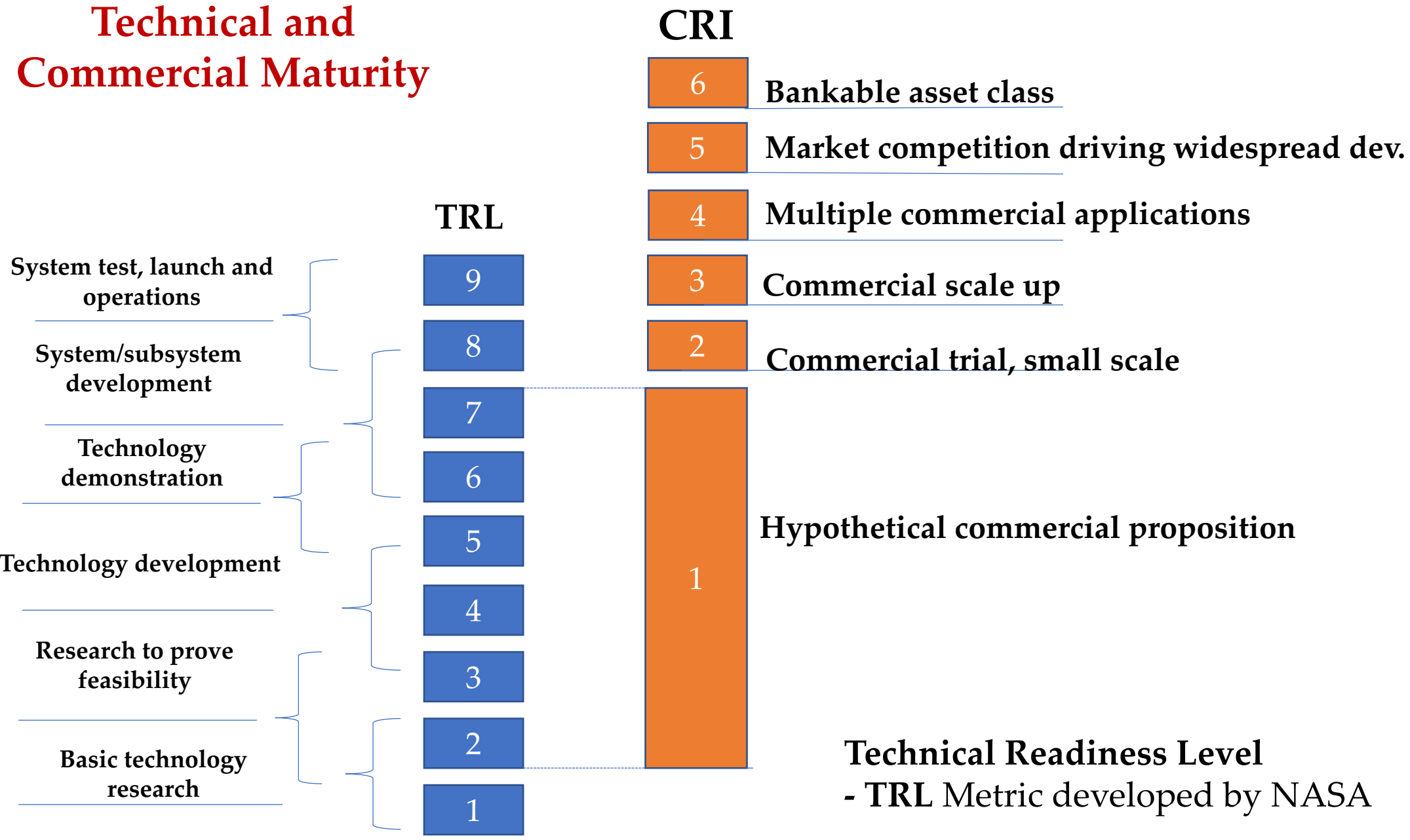
Dr hab. Grzegorz Tchorek
University of Warsaw
Faculty of Management







Technical and Commercial Maturity



Technical Readiness Level
 - TRL Metric developed by NASA

Commercial Readiness Index
 - CRI developed by ARENA

Technical and Commercial Maturity

CRI

TRL

Missing elements

Hypothetical commercial proposition

Technical Readiness Level

- TRL Metric developed by NASA

Commercial Readiness Index

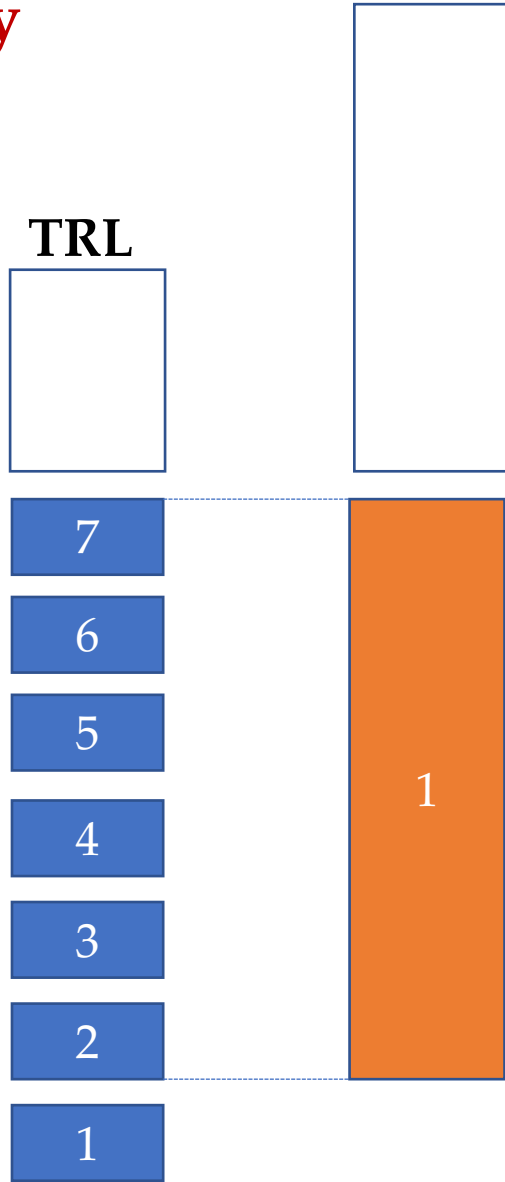
- CRI developed by ARENA

Technology demonstration

Technology development

Research to prove feasibility

Basic technology research



Polish Hydrogen Strategy

- proposal, under consultations

Goal/time	2025	2030
FCEB	500	2000
HRS	32	150
Electrolysers/Fuel Cell	50 MW	2 GW
H2 Storage	-	4700 MWh
Small CHP	use	use
Hydrogen valleys	-	5
H2 in NG pipeline	-	Up to 10%
PtX		10-50 MW
PtG	1 MW	-

FCEB – 2030; 5,8 mld PLN – 1,2 bln Euro

HRS – 2030, 1,2 mld PLN - 0,25 bln Euro



Polish Hydrogen Strategy

- proposal, under consultations

National Resilience and Recovery Plan

- close to 200 mln Euro on hydrogen technologies

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2025	2030	Remarks/value chain
Tier 3- Tier 2	Tier1 or OEM	PL - Leading in ZEB
Tier 3- Tier 2	Tier1 or OEM	Different systems
Tier 3- Tier 2	Tier1 or OEM	Mainly stationary
Tier 3- Tier 2	Tier1 or OEM	Different tanks, sizes
Tier 3- Tier 2	Tier1 or OEM	Different types, sizes
Potential location: Tricity, Włocławek, Poznań, Katowice,		
Tier 3- Tier 2	Tier1 or OEM	Pipe, compressors, equi.
Beyond 2030 because synthetic fuells needs: a lot of RES and a lot of H2		

FCEB – 2030; 5,8 mld PLN – 1,2 bln Euro
HRS – 2030, 1,2 mld PLN - 0,25 bln Euro



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Recommendations

- Start with 20-30-50 demonstration and pilot projects - choose a few specialisations within 5-10 years within a few hundredst of partners
- Try to establish a few Tier 3-1 or OEM in some segmetns of the H2 value chain