



# Backing visionary entrepreneurs

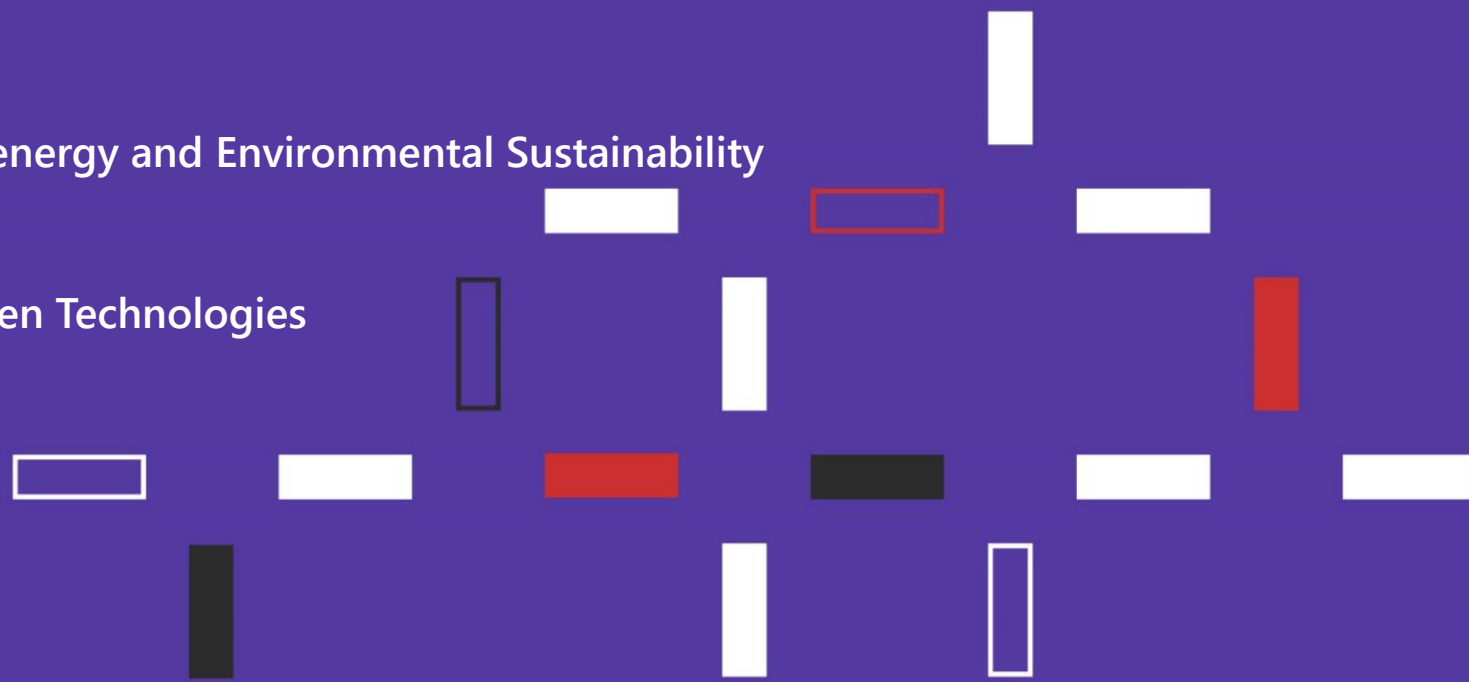
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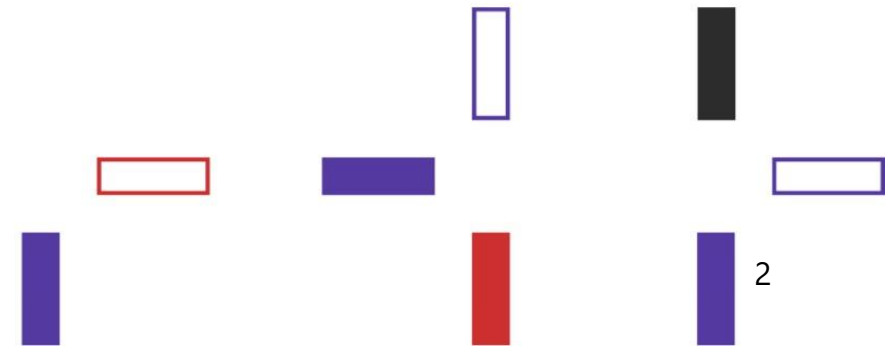
02/01/2023





# Agenda

- Overview of the EIC funding programmes
- The rationale for energy storage
- The EIC accelerator challenge: scope of the call
- Examples and key innovation needs
- Evaluation process
- Proactive management

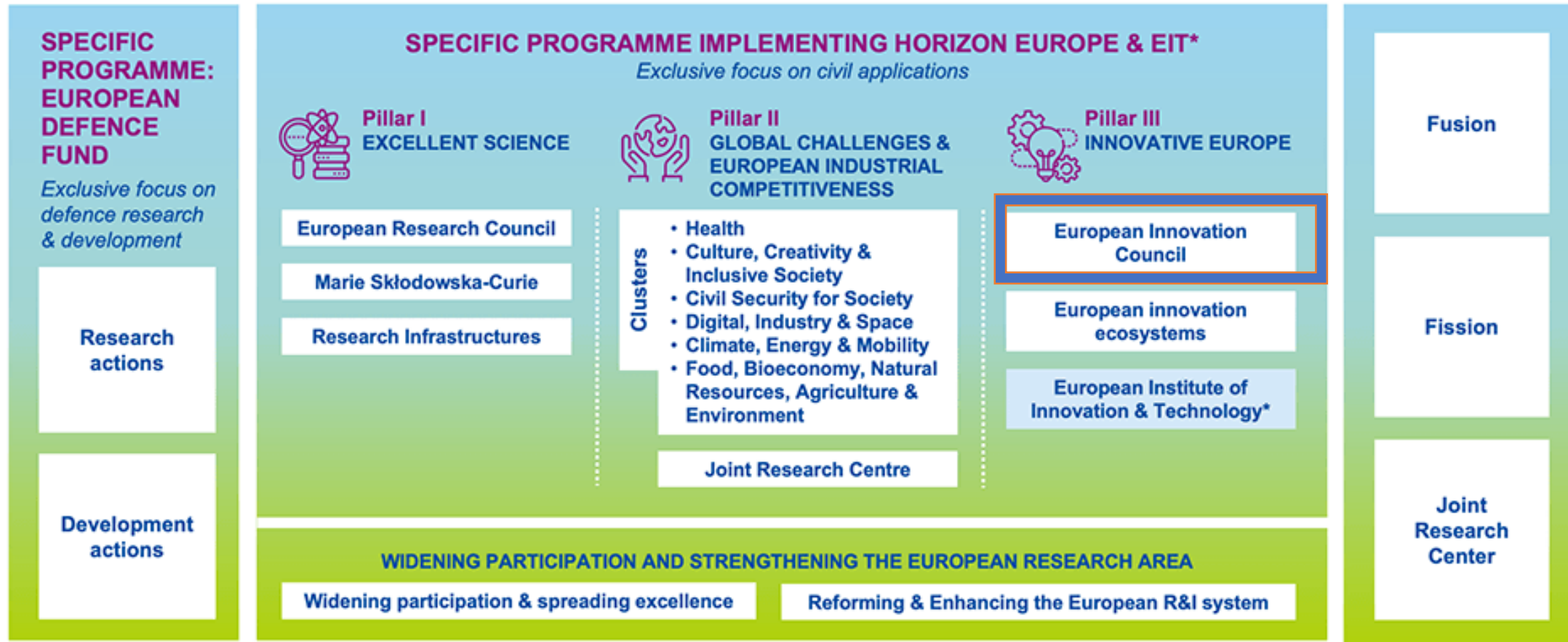


# Horizon Europe Structure



## HORIZON EUROPE

## EURATOM



\* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme



# EIC Programs

## Pathfinder (TRL1-4)

- For consortia (open and challenge calls) and single entities (challenge call)
- Early stage research on breakthrough technologies
- Grants up to €3/4 million

## Transition (TRL 4-6)

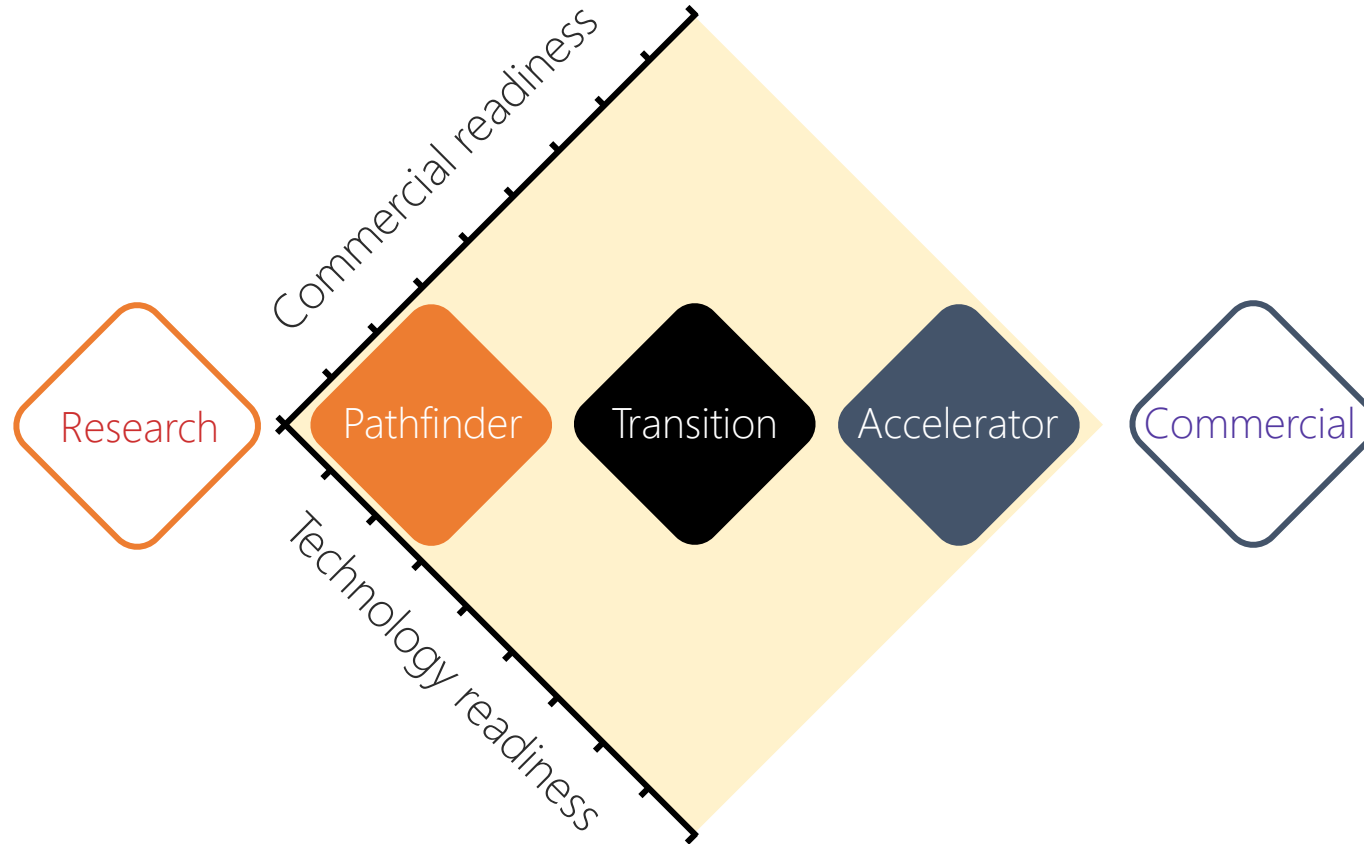
- For consortia and single entities
- Technology maturation from proof of concept to validation
- Business & market readiness
- Grants up to €2.5 million

## Accelerator (TRL 6-9)

- For individual SMEs
- Development & scale up of deep-tech/ disruptive innovations by startups/ SMEs
- Blended finance (grants up to €2.5 million; equity investment up to €15 million or above)

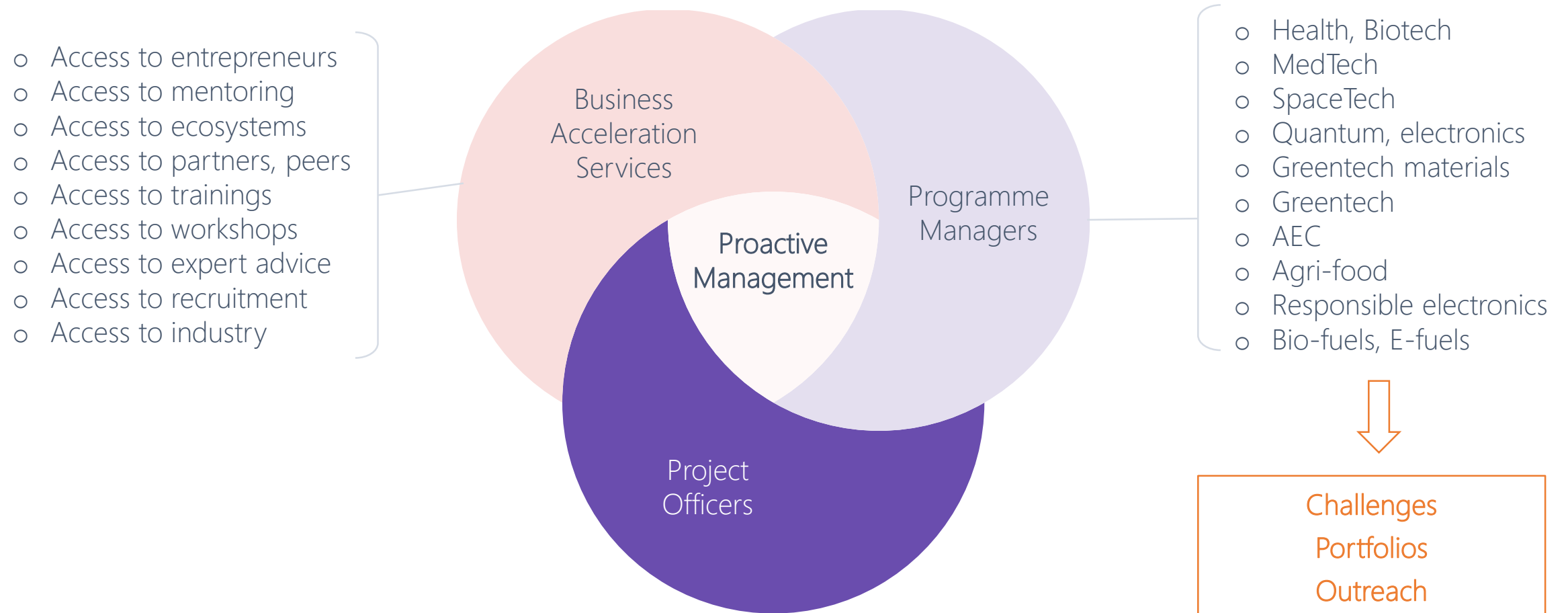
EIC stages the entrepreneurial journey as pathfinder, transition, accelerator with increasing readiness levels

**WHAT?**

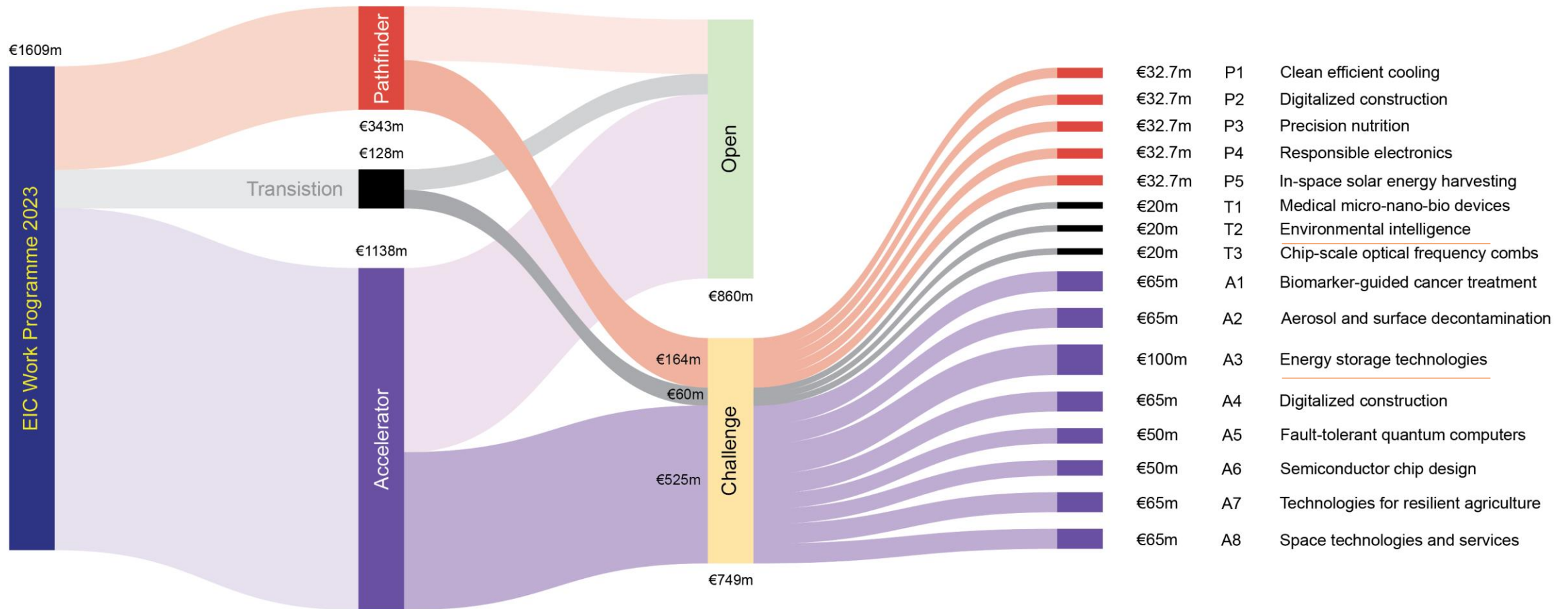


**WHY?**

# With proactive management the EIC aims to maximize its support to success of the entrepreneurial journey



# In 2023 EIC allocates ~€1.6bn to Open and Challenge calls by its Pathfinder, Transition, Accelerator programs



# Cut-off dates of the various calls

Cut-off dates:	Pathfinder	Transition	Accelerator
Open	7 March 2023	12 April 2023 27 September 2023	11 January 2023 22 March 2023 7 June 2023 4 October 2023
Challenge	18 October 2023	12 April 2023 27 September 2023	22 March 2023 7 June 2023 4 October 2023





# EIC Accelerator

Energy storage

# Positioning of EIC accelerator in deep tech

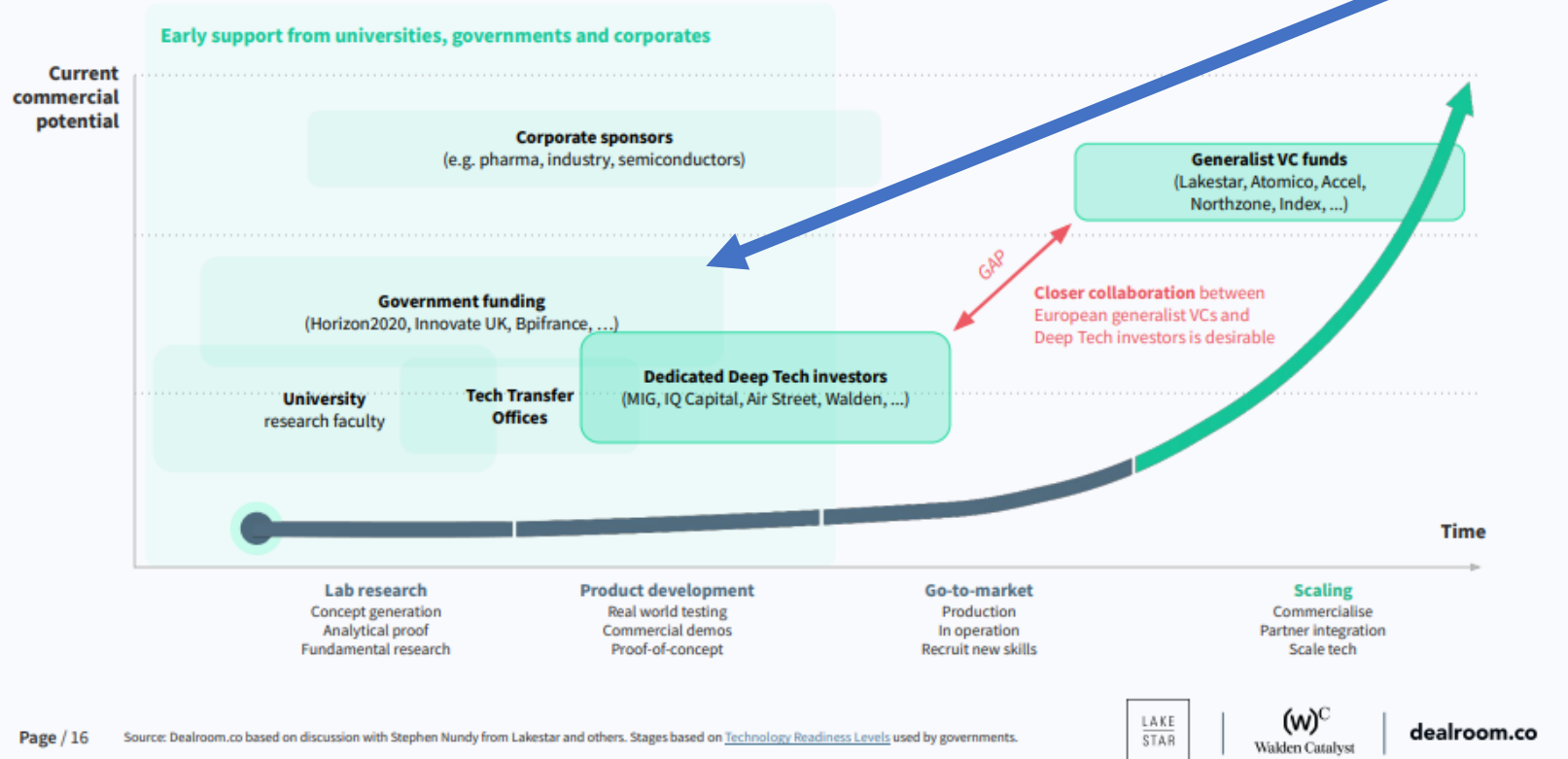


Turning innovation into solid economic success requires patience

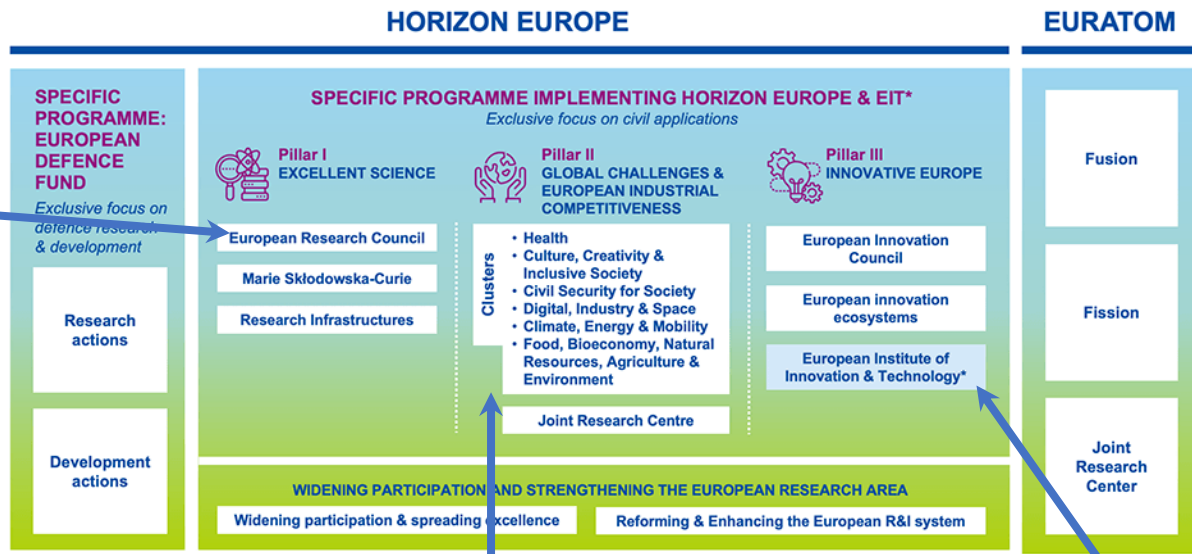
Nobel Laureate J. Goodenough developed the Li-ion battery in the 1970s, but it wasn't until 1991 that Sony first commercialised it with its camcorders

High risk emerging Deep Tech

Deep Tech startups are supported by multiple stakeholders involved in de-risking at each stage, but some gaps still exist.

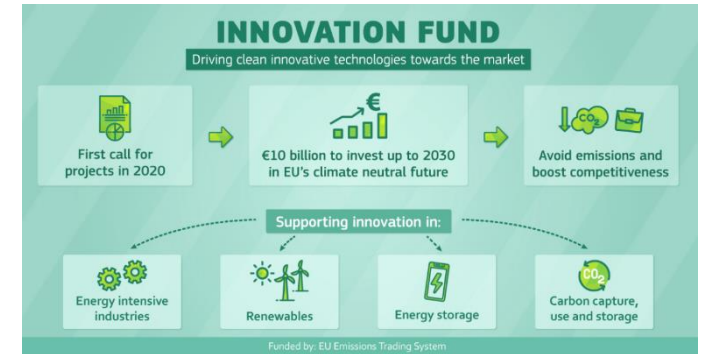


# EU instruments to support innovation in energy storage



\* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme

## Other EU public funding options



## Pillar 2 – HEU Clusters and Partnerships

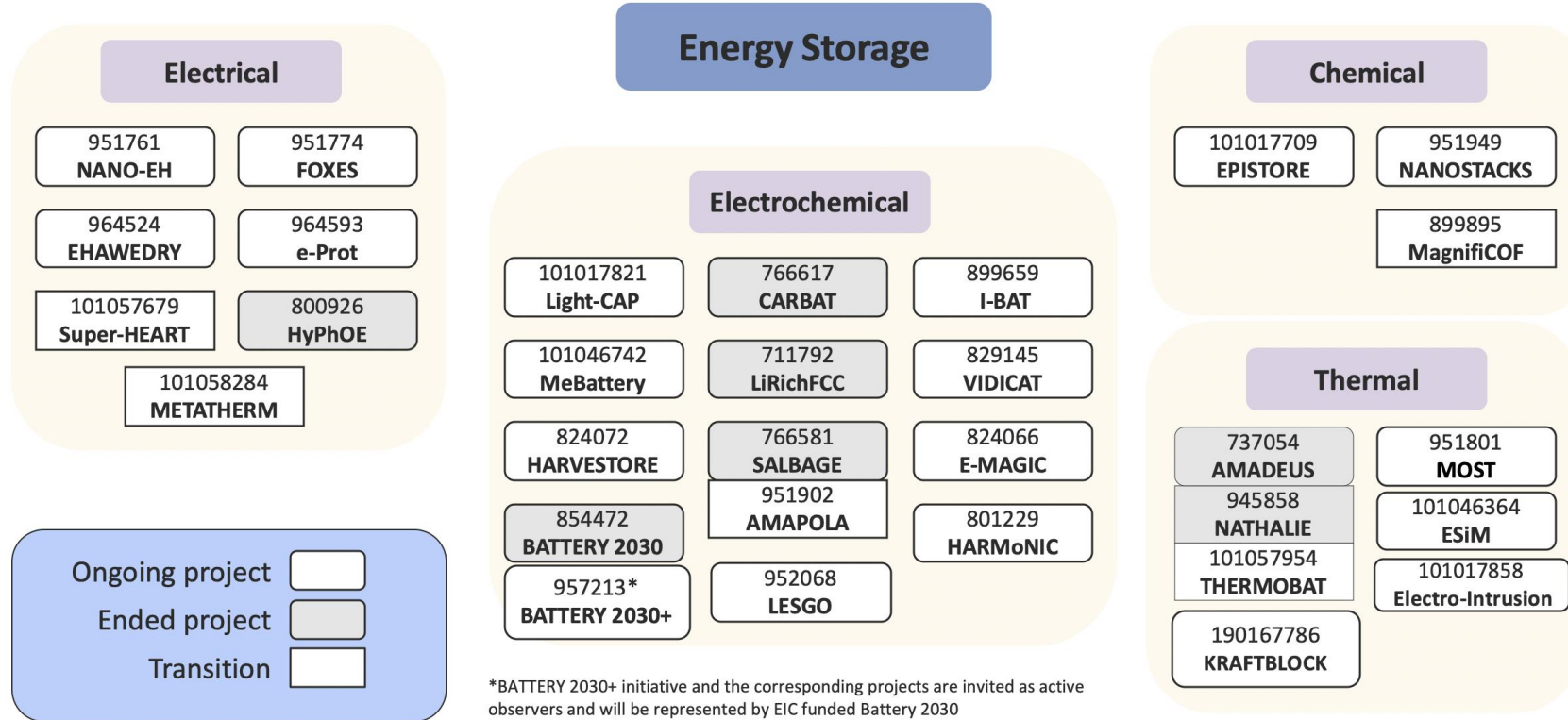


**HEU Cluster 5:** TES, transport, grids, industrial decarbonization, buildings..

**HEU Cluster 4:** EU Raw Materials Alliance, EIP raw materials; Manufacturing; automation AI and robotics; Key Digital Technologies



# Existing EIC pathfinder and transition projects on energy storage



\*BATTERY 2030+ initiative and the corresponding projects are invited as active observers and will be represented by EIC funded Battery 2030

This list is not exhaustive

+ Pathfinder challenge 2022 on mid-long duration energy storage in evaluation

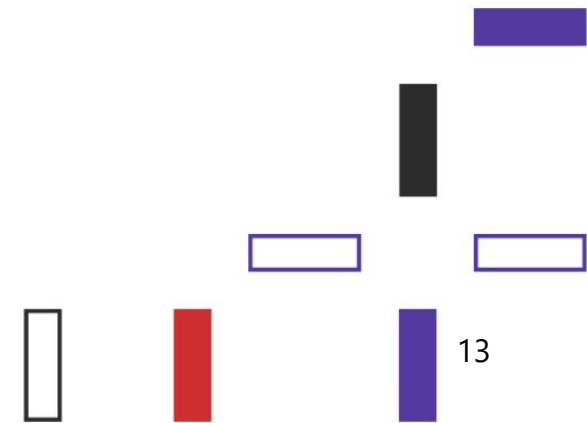
# The rationale for EU innovation in energy storage



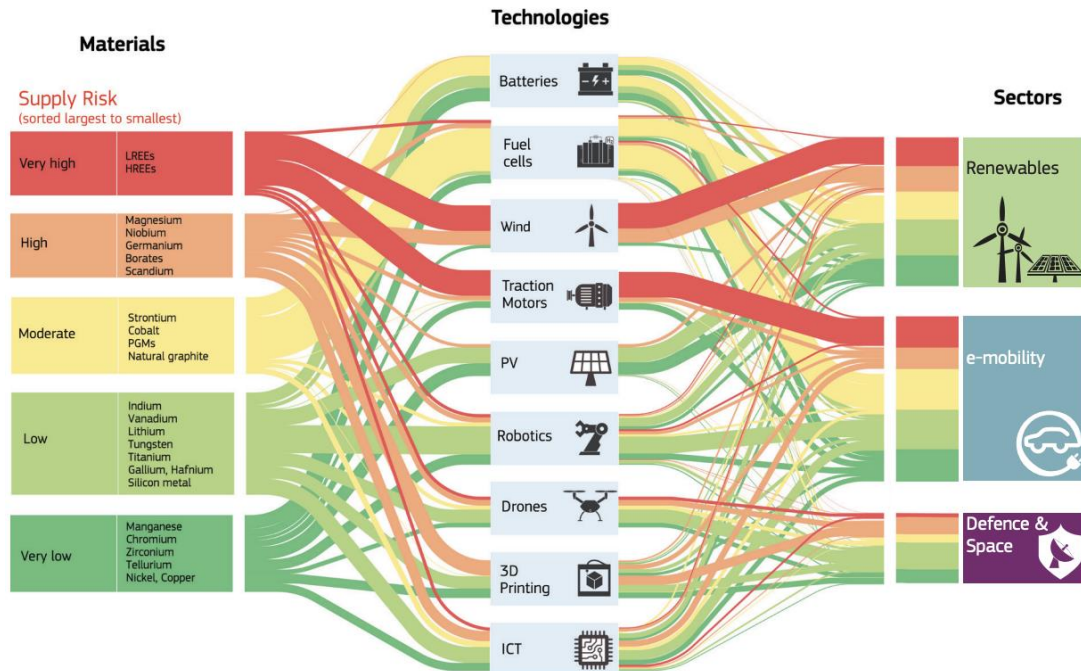
- clean energy and circularity
- EU open strategic autonomy and security of supply
- affordable energy and competitiveness (renewables curtailments, demand response, public engagement etc)

## EU Innovation gaps in energy storage

- Systems and processes integration, sectors coupling
- Circularity, Critical Raw Materials and EU supply chains
- Heating/cooling decarbonization and energy efficiency
- Demand response, 'storage as a service', digital energy



# The issue of critical raw materials: security or efficiency?



*Critical materials for strategic technologies and sectors in the EU- foresight study, 2020, JRC*

## European Commission - Statement



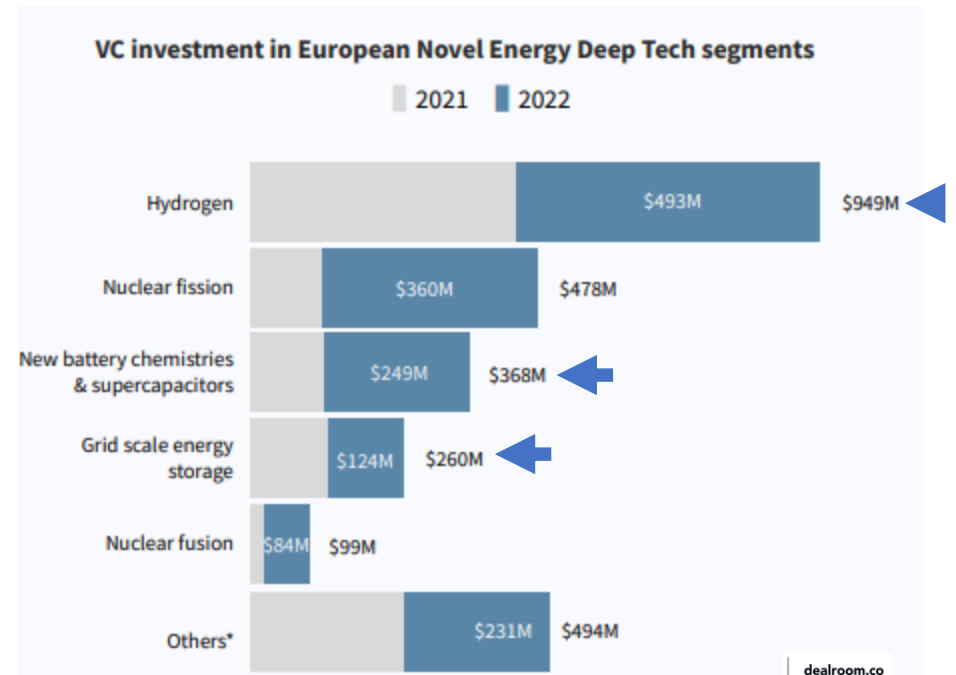
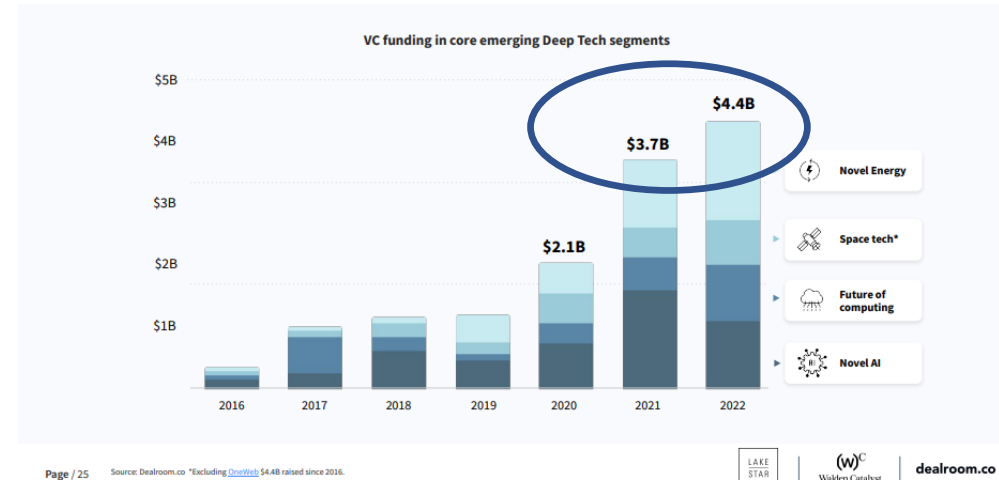
**Critical Raw Materials Act: securing the new gas & oil at the heart of our economy I Blog of Commissioner Thierry Breton**

Brussels, 14 September 2022

# PRIVATE INVESTORS SIGNALS

'Novel energy' raised the highest emerging deep tech funding in 2022

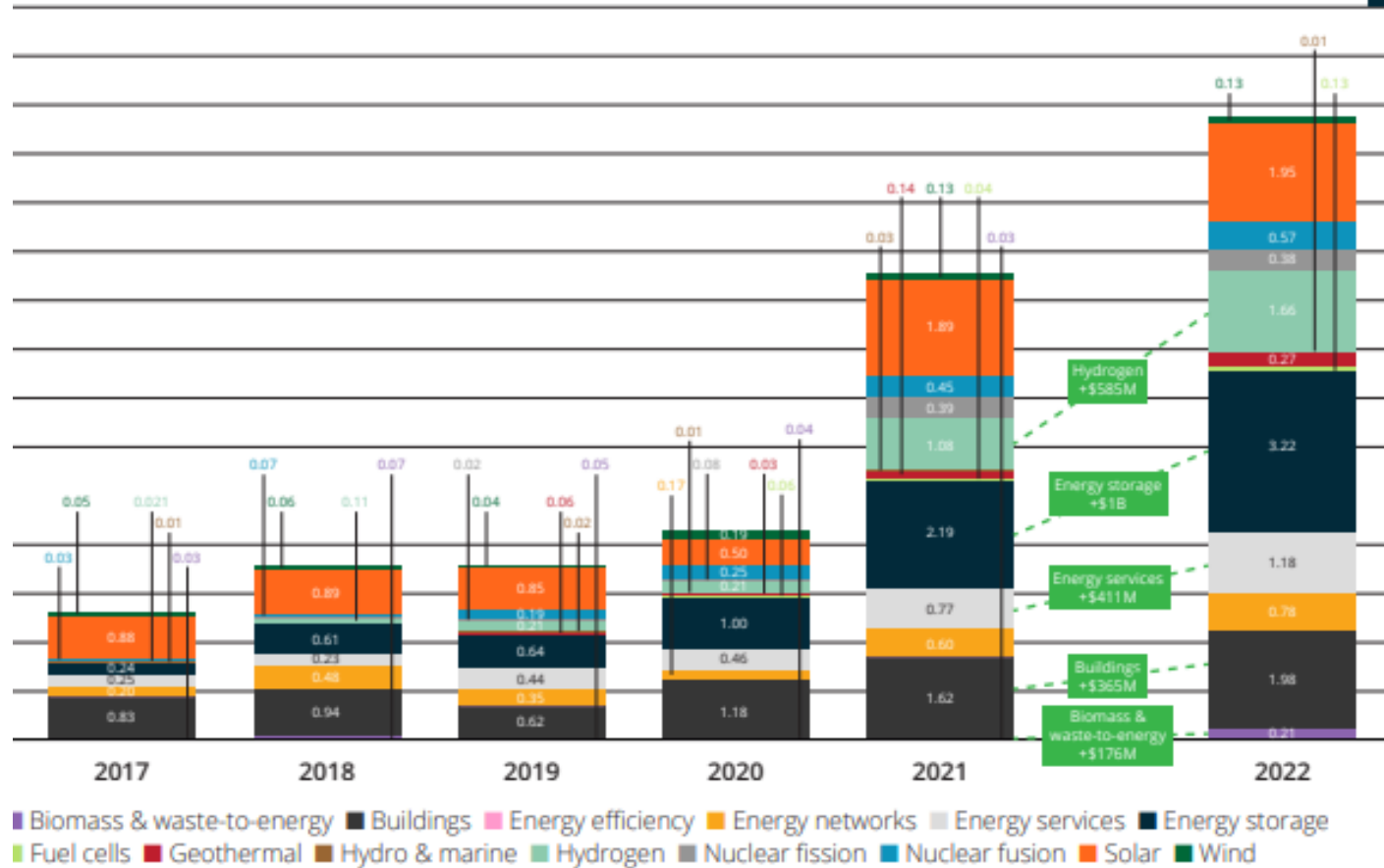
Emerging Deep Tech segments of Novel AI, Future of Computing, Novel Energy and Space Tech raised \$4.4B funding in 2022, more than doubling the 2020 total.



# PRIVATE INVESTORS SIGNALS

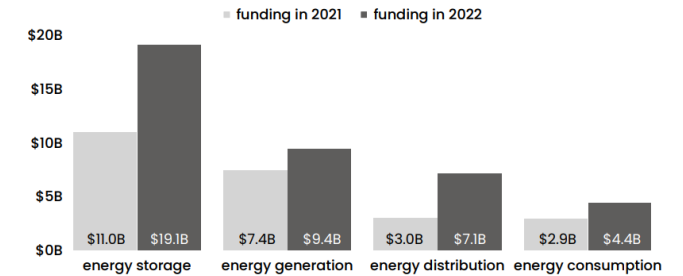
## ENERGY & POWER VENTURE INVESTMENTS BY SECTOR

Source: Cleantech Group



STATE OF CLIMATE TECH '22 | FOCUS: CHALLENGE AREAS | ENERGY

**STORAGE SOLUTIONS GOT THE MOST ATTENTION WITHIN THE ENERGY VALUE CHAIN. CONSUMPTION SEES LOWEST INVESTMENT.**



\*An organisation can fall under different categories. Therefore, the same round can be included more than once. Source: Net Zero Insights

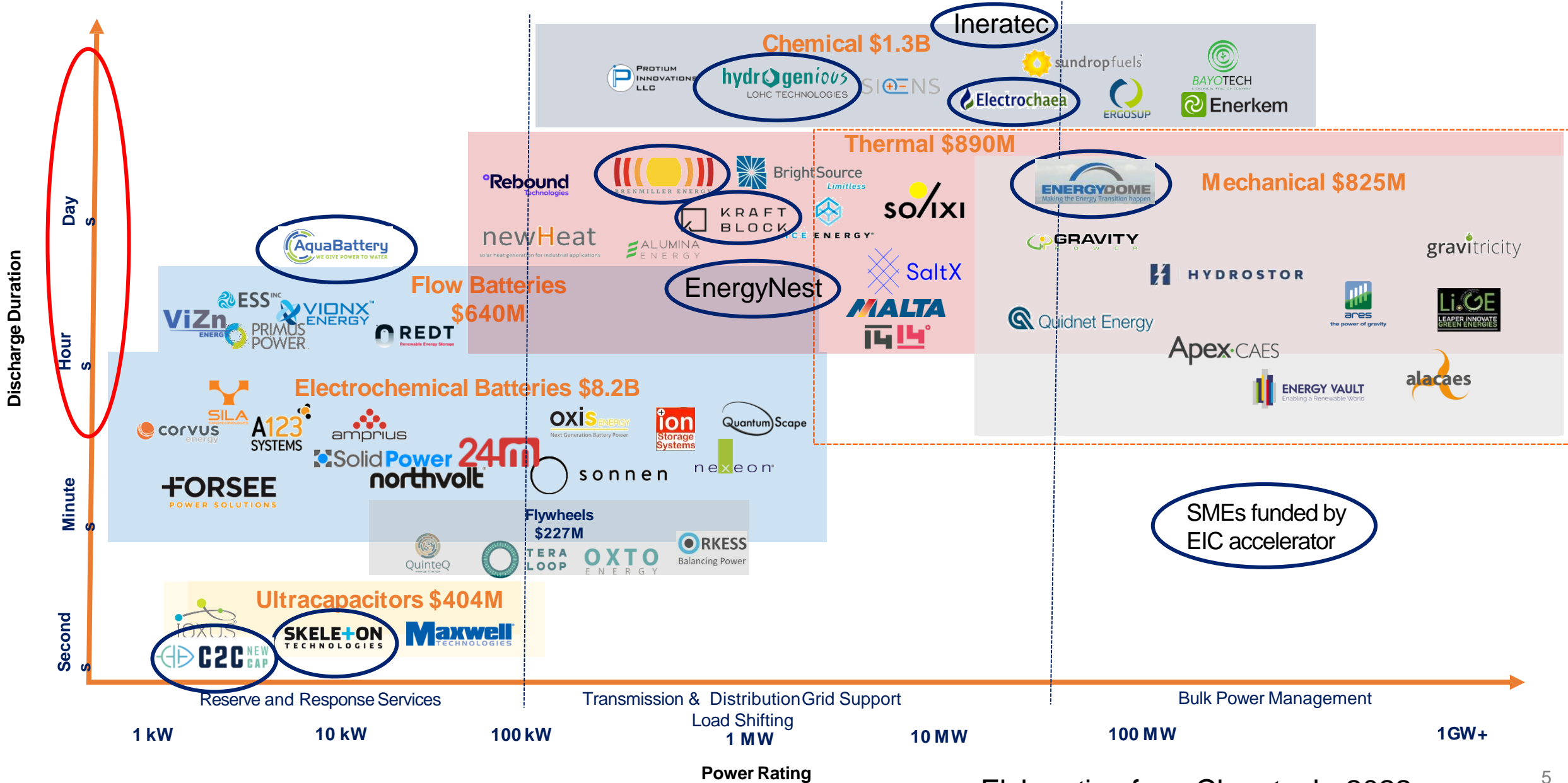
Net Zero Insights

Hydrogen, energy storage and energy services venture investments growth in 2022

**Most of these technologies are rather conventional and alternative solutions are also needed**



# Energy Storage: market trends



Elaboration from Cleantech, 2022



# Background and Scope

- The development of flexible, sector-coupled and decarbonized energy systems is crucial to achieve the EU Green Deal, Fit for 55 and Repower EU action targets.
- The possibility to store electrical or thermal energy at low cost, high density, high charging/discharging efficiency and for different duration (from short to long) will not only pave the way towards flexible energy systems but will also enable a strong penetration of intermittent renewable energy by addressing the spatial and temporal mismatches between generation and demand.
- To reach these goals, it is crucial to develop a range of breakthrough solutions for electrical and thermal energy storage. The scale-up of these technologies will set up coupled and flexible energy systems that will address the strategic EU technological and energy autonomy.





# Scope/Specific objectives of the call

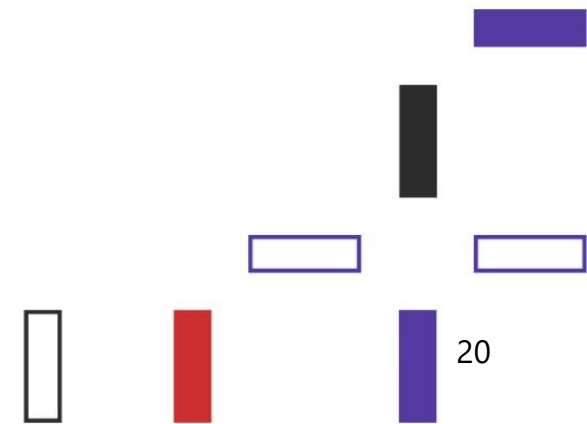
- Technologies to **store electric and/or thermal energy** - at low cost, high density, high charging/discharging efficiency and enhanced durability without the use of critical raw materials (CRM) or demonstrating the full re-use or recycle of CRM
- Broad range of technological approaches (chemical, electrical, electrochemical, mechanical, thermal, combined) for energy storage at different scales, duration, and uses, including their hybridization
- technologies that, without using CRM, embrace circular and life cycle thinking approach.
- the **smart operation** and **control of storage assets**, their integration with demand response strategies, predictive maintenance, load forecasting and decentralised renewable energy technologies, and novel business models (i.e. **storage as a service**) to increase energy systems flexibility and facilitate the integration of energy storage.





# Expected outcomes and impacts

- wider penetration of intermittent renewable energy resources by addressing the spatial and temporal mismatches between generation and demand.
- decarbonised, interconnected, sector-coupled and flexible energy systems.
- Increased Europe's energy independence from unreliable suppliers.



# Alignment with EU Policies and synergies

## Relevance to EU policies and initiatives

- HEU SET Plan; Green Deal; Next generation EU; FIT-for-55; Repower EU

## Synergy/complementarity with other EU programmes (examples)

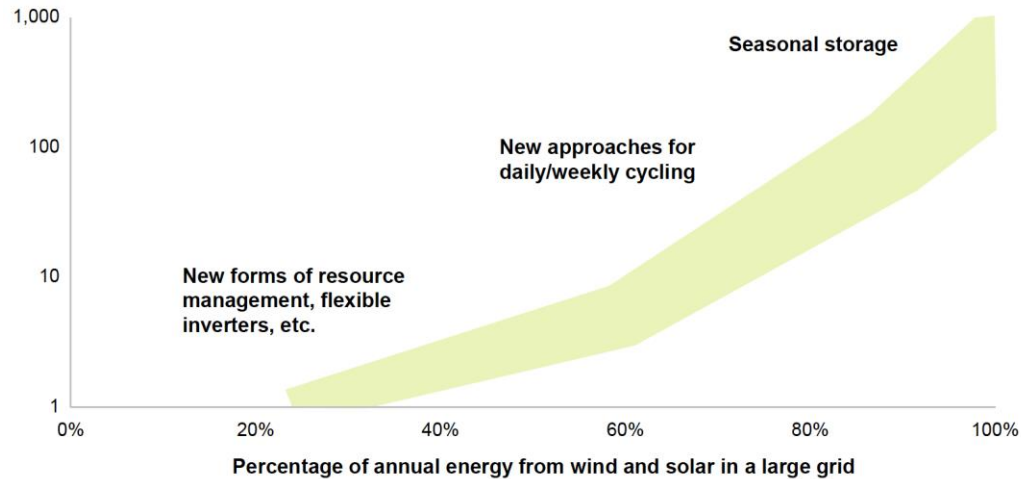
- CL5, Destination 2: Cross sectorial solutions for the climate transition, '*A competitive and sustainable EU battery value chain*', calls HORIZON-CL5-2023-D2-01-01 to HORIZON-CL5-2023-D2-01-05
- CL5, Destination 2: Cross sectorial solutions for the climate transition, '*A competitive and sustainable EU battery value chain*', calls HORIZON-CL5-2023-D2-02-01 to HORIZON-CL5-2023-D2-02-03
- CL5, Destination 2: Cross sectorial solutions for the climate transition, '*A competitive and sustainable EU battery value chain*', calls HORIZON-CL5-2024-D2-01-01 to HORIZON-CL5-2024-D2-01-03
- CL5, Destination 2: Cross sectorial solutions for the climate transition, '*A competitive and sustainable EU battery value chain*', calls HORIZON-CL5-2024-D2-02-01 to HORIZON-CL5-2024-D2-02-04
- CL5, Destination 3: Sustainable, secure and competitive energy supply, '*Energy systems, grid and storage*', call HORIZON-CL5-2024-D3-01-16
- CL5, Destination 5: Clean and competitive solutions for all transport modes, '*Zero emission road transport*', calls HORIZON-CL5-2023-D5-01-02 , HORIZON-CL5-2024-D5-01-03 to HORIZON-CL5-2024-D5-01-05

# Examples: long duration energy storage



## Adoption curve of longer flexibility durations accelerates at 60-70% RE penetration

Storage duration, hours at rated power



Storage need mainly driven by the intermittency of wind/PV (**temporal mismatch**)

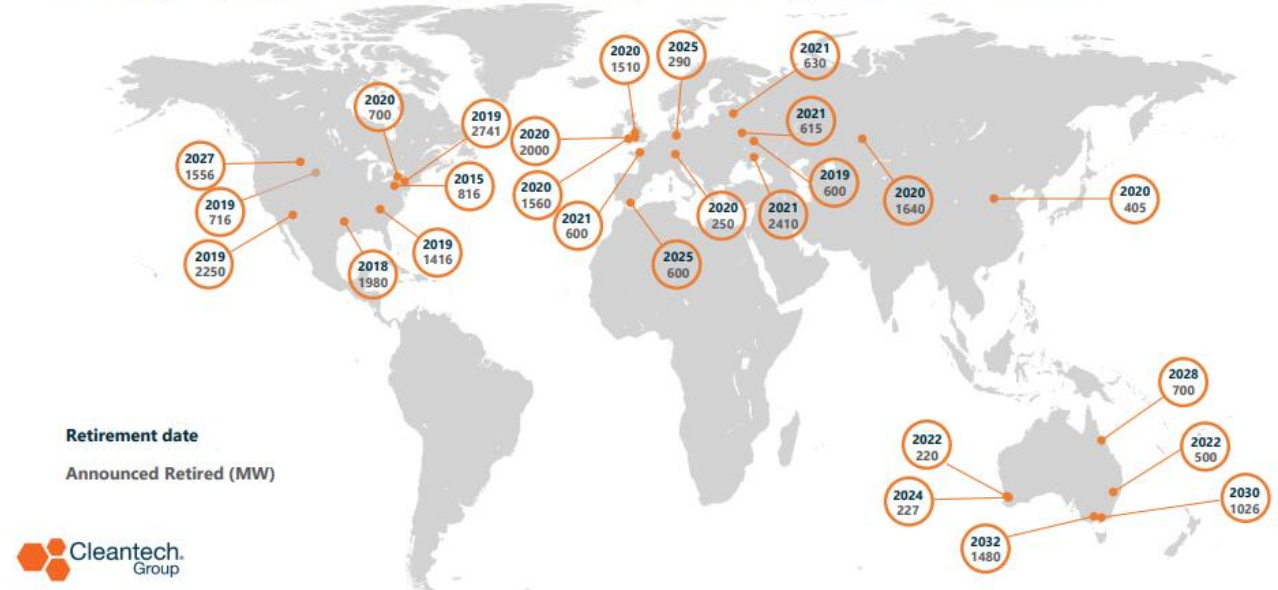
Grid constraints are major barriers towards net zero energy systems (**spatial mismatch**)

Need for sectors coupling+demand response combined to storage

## Fossil fuel power plants refurbishment opportunities to energy storage assets

### Upcoming markets: Opportunity to replace carbon power stations

- Despite 227GW of retirements across the EU and US and a shrinking pipeline, there's still a total of 1783GW, 236GW under construction and 336GW of planned capacity,
- Regardless of the 2020 1100GW cap, China has 147GW under construction, more than all plants in the EU and almost 50% higher than the 105GW of capacity planned globally.
- As plants are decommissioned, new thermal/mechanical storage can enable plants to have a second-life option carbon free. Solutions can combine with existing equipment minimizing negative impact of plant closure and keeping steam cycle systems in operation, while offering potential to buffer variable renewables



# Examples: System integration, heat decarbonization

## Chemical sector and storage

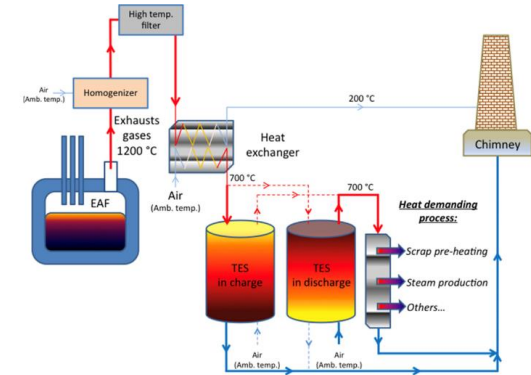
largest industrial energy consumer, third largest subsector for CO<sub>2</sub>.

50% of its energy input is consumed as feedstock (IEA, 2021)

Energy can be stored in materials/chemicals

## Industrial batch processes

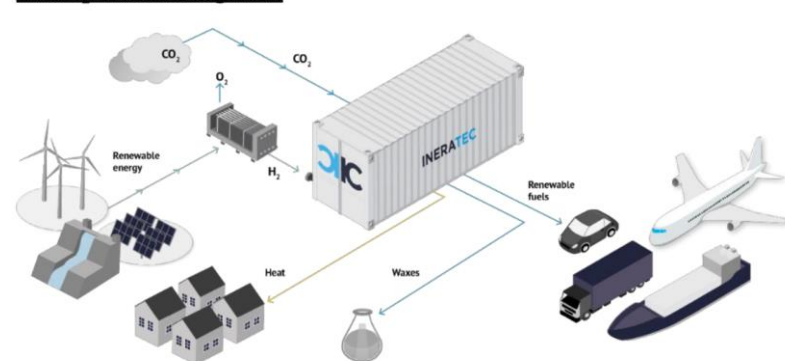
intermittent waste heat recovery and storage



## CO<sub>2</sub> capture and storage

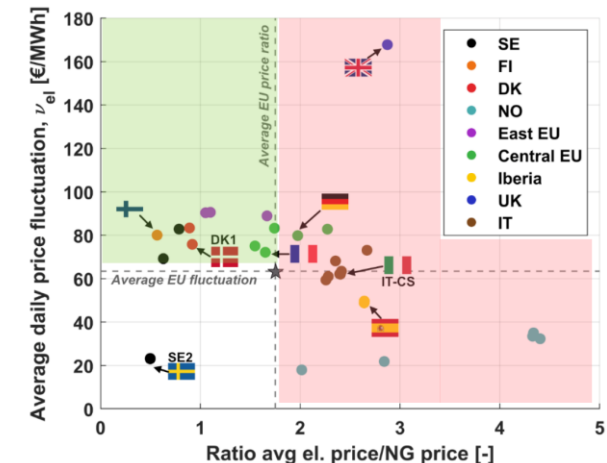
Combined CO<sub>2</sub> capture and energy storage

### Transportation segment



## Heat decarbonization and storage

Electricity prices volatility and cost of natural gas



# EIC Accelerator – The evaluation process

We will help **you** to prepare your **business plan** and draft a **proposal** with AI tool and coaching



You submit your full **proposal** which will be **assessed** by Remote evaluators



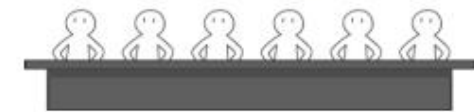
You have a disruptive / deep tech **idea** with a potential to **scale up** and you need **financial support**



Tell us your story in 5 pages



You will **pitch** your innovation in front of EIC Jury Members



If selected, you will sign the **contract**



A four-steps process

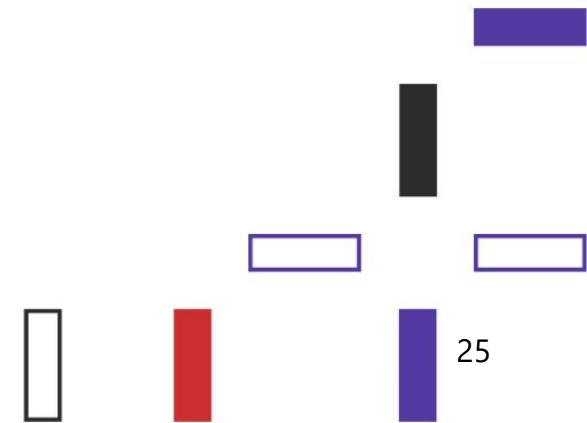




# Pro-active management after selection of proposals



- Projects implementation
- Matchmaking EIC funded project with VCs, (private) equity investors, corporates, trade-fair, EU Research infrastructure, OITBs...
- Stakeholder mapping and engagement strategy, business plans, promoting partnerships & fundraising opportunities
- Synergies with other funding instruments
- Policy, standards, regulatory bottlenecks to innovation





## Further information and questions

- **EIC 2023 WP:** [EIC 2023 work programme \(europa.eu\)](https://eic.europa.eu/eic/work-programme-2023)
- **Recording general info day:** [European Innovation Council online Info Day - Work Programme 2023 - 13 December 2022 \(europa.eu\)](https://eic.europa.eu/eic/info-day-2023)
- **Your National Contact Point**
- **Marco Pantaleo:** <https://www.linkedin.com/in/antonio-marco-pantaleo-1602622/>
- **Francesco Matteucci:** <https://www.linkedin.com/in/francesco-matteucci-9351076/>





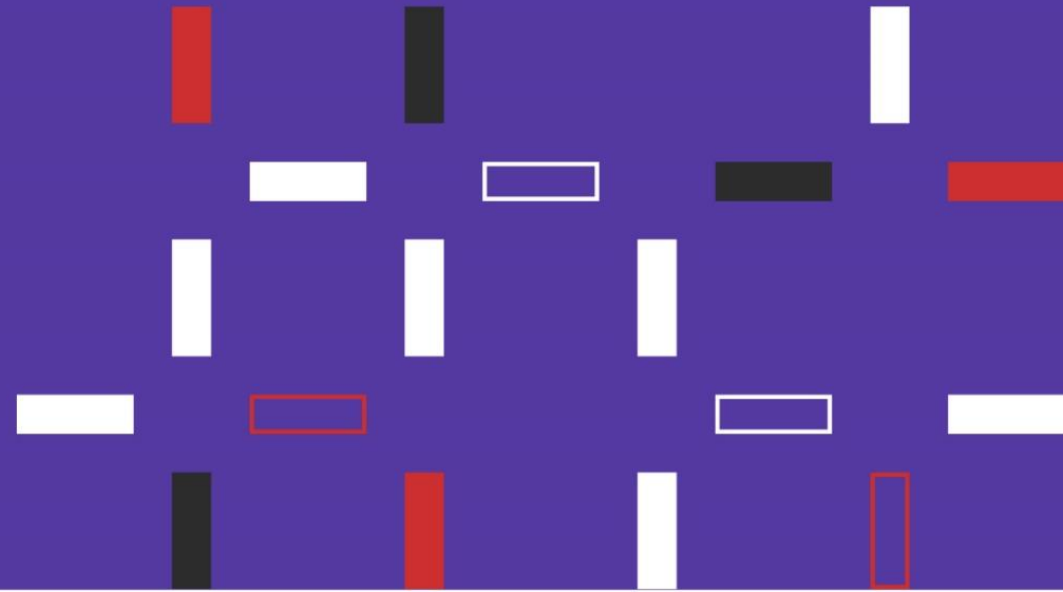
# Thank you!

## Q&A

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# Categories of investors in energy storage

## Investors

### Worldwide

In the energy storage sector there are 985 investors since 2018. They have a total of 1566 deals corresponding to 12708 portfolio companies.

The investors are divided in 20 categories as in the table below.

Corporate ventures dominate EIC Corporate days and other Business Accelerator Services



Public funding



INVESTOR TYPE	# OF DEALS	# OF PORTFOLIO COMPANIES
Accelerator / incubator	109	1640
Angel investor / individual	45	116
Angel network	14	39
Corporate venture	138	1171
Corporation	259	884
Crowdfunding	7	64
Debt funds	9	117
Family office / foundation	22	125
Investment advisory firm	28	122
Investment holding company	28	103
Investment/merchant banker	60	363
Not an investor	9	33
Other	45	150
Pension fund	11	43
Private equity	76	458
Public sector	151	2639
Quasi-governmental/public-private partnership	41	685
Specialty finance	2	5
University	6	27
Venture capital	506	3924
<b>GRAND TOTAL</b>	<b>1566</b>	<b>12708</b>