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MEETING DOCUMENT

From:	General Secretariat of the Council
To:	Working Party on Competitiveness and Growth (Industry)
Subject:	Investment needs assessment and funding availabilities to strengthen EU's Net Zero technology manufacturing capacity - PowerPoint presentation (Compro WP 17.04.2023)



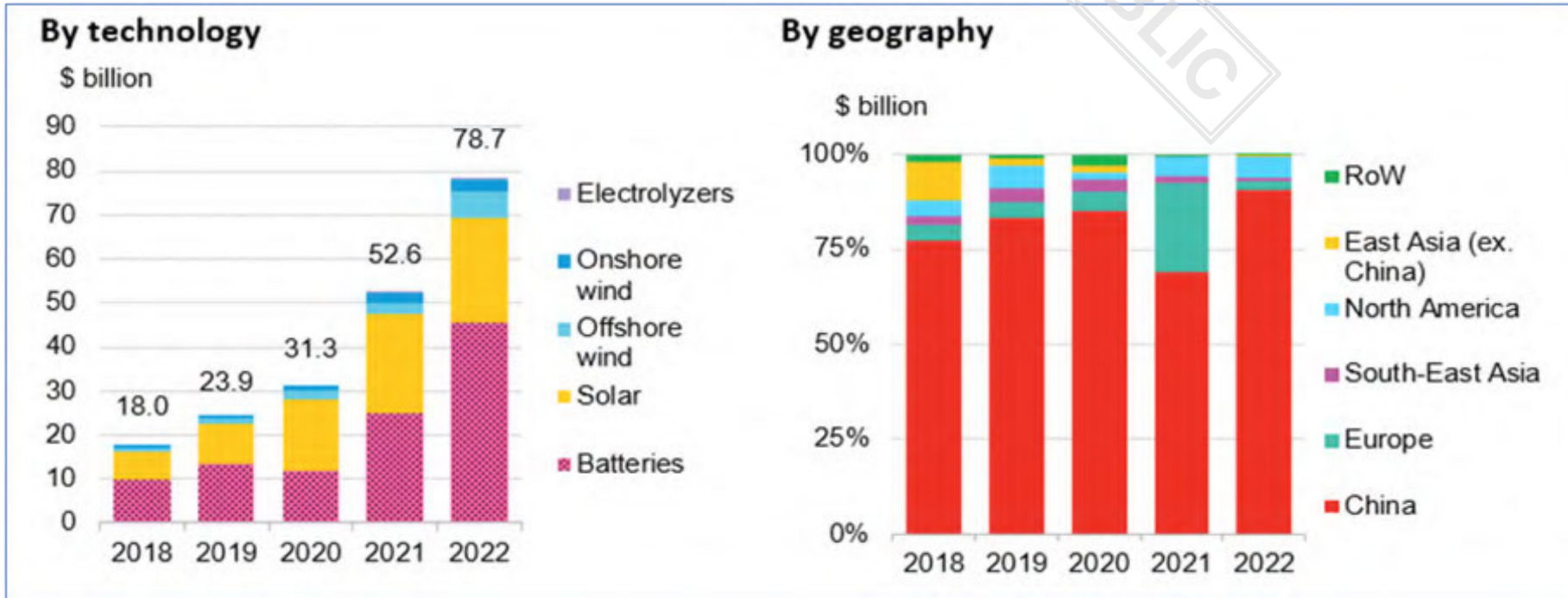
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*Investment needs assessment and funding availabilities
to strengthen EU's Net-Zero technology
manufacturing capacity*

Presentation of the Commission SWD(2023) 68 final at the
COMPET CWP – 17 April 2023

DG ENER A4
& DG GROW I3

The global market for net-zero technologies



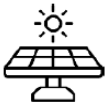
Global investments in manufacturing of key net-zero technologies

Source: Bloomberg NEF; Notes: Sectors include upstream inputs and components, such as polysilicon for PV and anodes for batteries, although there were no electrolyser investments recorded before 2022. The right-hand chart does not include wind.

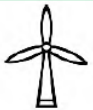
- Global investments in the manufacturing of net-zero technologies has been increasingly significantly (more than quadrupled during 2018-2022)
- Investments in producing batteries (and its components) represent the largest share
- China clearly dominates the global market for key net-zero technologies

State of play for key EU net-zero industries

Competitiveness & security of supply risks vary across EU manufacturing of key net-zero technologies



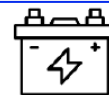
- EU **solar PV manufacturing** is weak across its value chain with the exception of polysilicon production.
- Solar cells and modules are examples of 'common dependencies' for the EU.



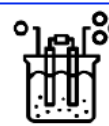
- EU **heat pump** and **wind** markets led by EU manufacturers but increasingly challenged by Asian competitors.



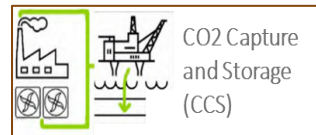
- Several factors also increase security of supply risks for EU production of these techs.



- EU has a growing **battery** ecosystem but needs fostering to meet the rapidly growing demand, avoid bottlenecks, and ward off high import dependency rates.



- EU has a technological lead in the manufacturing of **electrolysers** but is slowly eroding as Asian and American competitors are catching up.



- EU industries investing in **CO2 capture** face a significant risk of not being able to access a storage site, while **CO2 storage** operators face upfront costs to identify, develop and appraise storage sites.

These six net-zero technologies are also covered in our assessment of manufacturing investment needs, though biomethane, grid, and other renewable technologies are also qualitatively covered in our market analysis

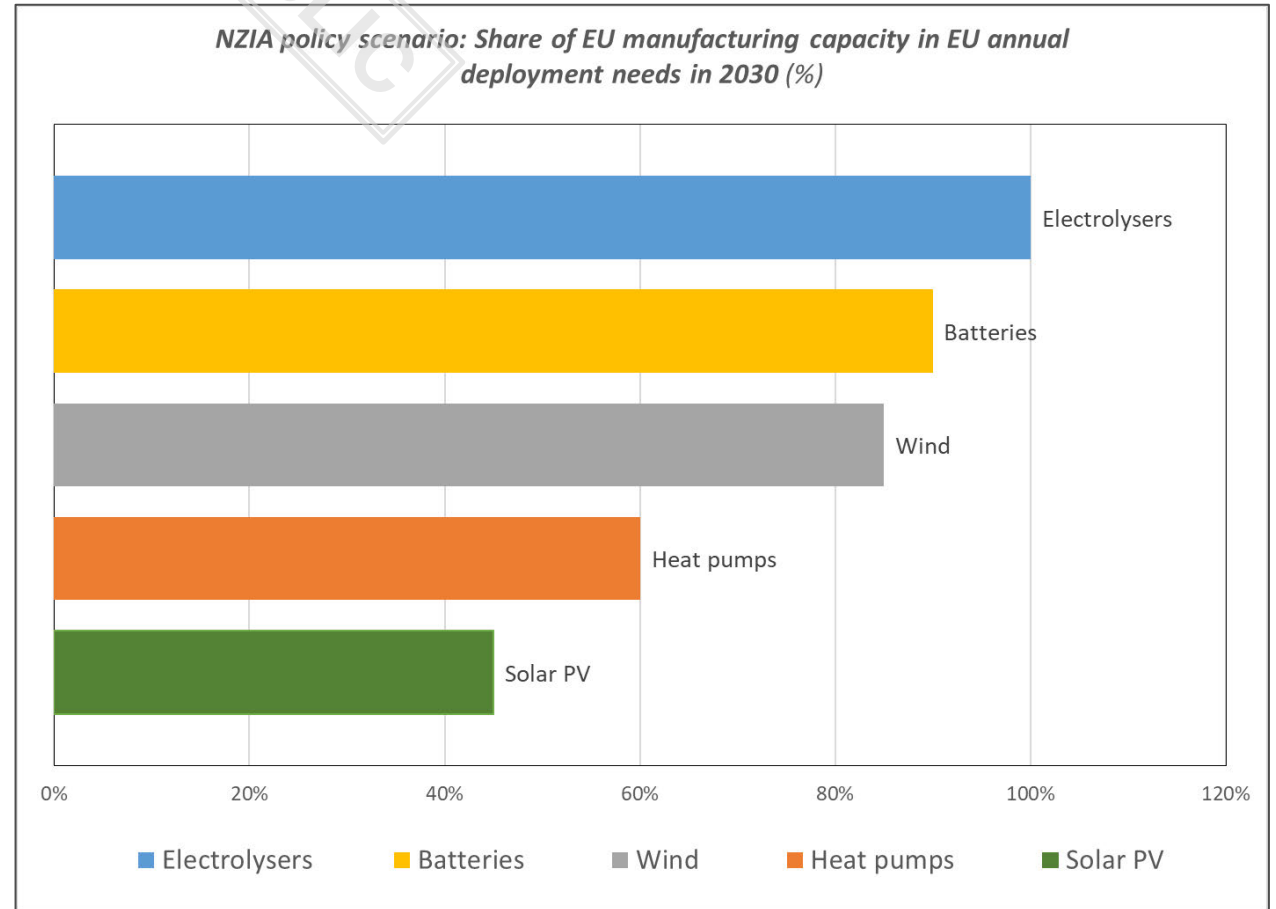
What are manufacturing investment needs?

How do the manufacturing investments compare to the other types of investments?

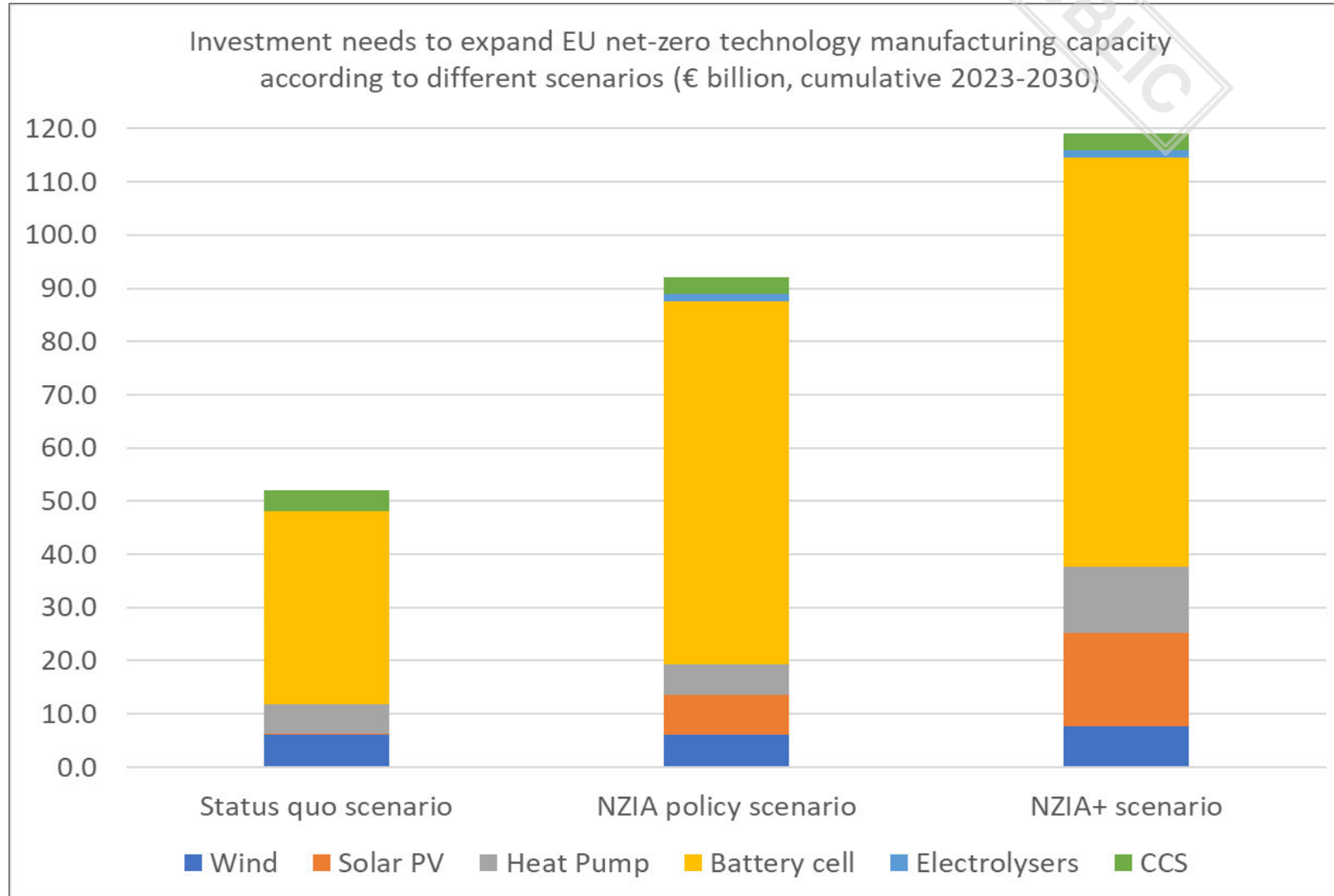
- Investment needs include only **capital expenditures** (Capex)
- Investment to **expand existing or build new manufacturing facilities** for main components and technology assemblies for **solar PV, wind, heat pumps, electrolysers and batteries**
- Investment needs for creating CO2 storage sites are also included
- Further costs that are **not included** in investment needs estimations:
 - Deployment investment to install necessary technologies
 - Further upstream investments (e.g. raw and processed materials)
 - Investments in R&I and reskilling/upskilling etc.
 - Operating expenses

NZIA Policy Scenario setup

- EU manufacturers of **solar photovoltaic (PV)** technologies need to increase their competitive edge and improve security of supply perspectives (*NZIA recital 17*)
- EU manufacturers of **wind and heat pump technologies** need to consolidate their competitive edge and maintain or expand their current market shares throughout this decade (*NZIA recital 17*)
- EU manufacturers of **batteries and electrolyzers** need to consolidate their technology leadership and actively contribute to shaping these markets (*NZIA recital 17*)
- Plus, an EU-level annual **injection capacity** of at least 50 million tonnes of **CO₂** to be achieved by 2030 (*NZIA art. 16*)



Manufacturing investment needs

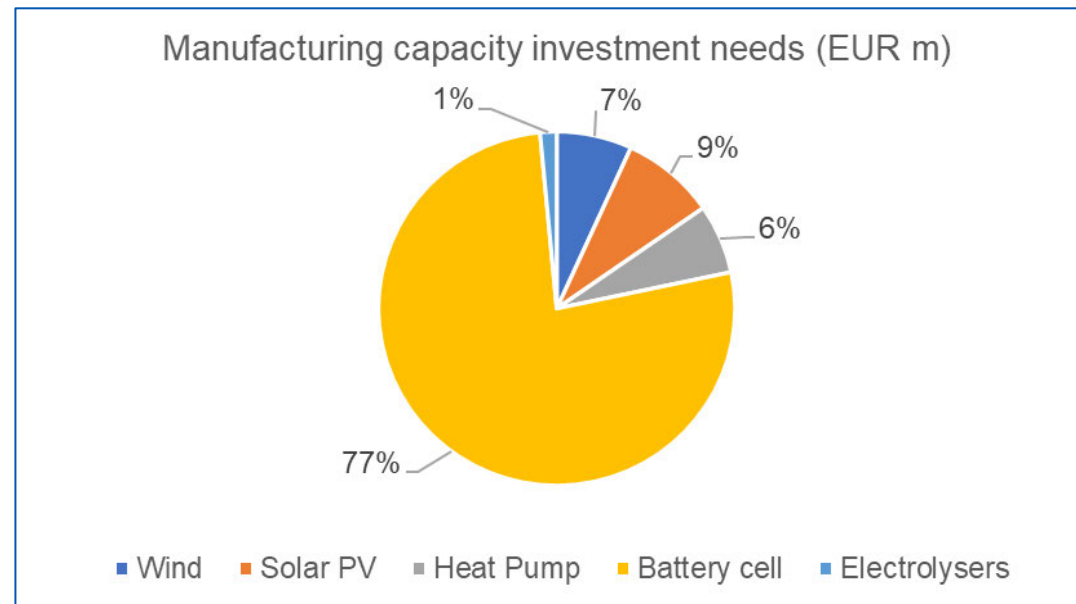


Public vs private investment needs:

- If a ratio of 17-20% of required public investments is applied to the NZIA policy scenario, which identifies EUR 92 billion in investment needs, it would result in **public funding requirements of EUR 16 - 18 billion**

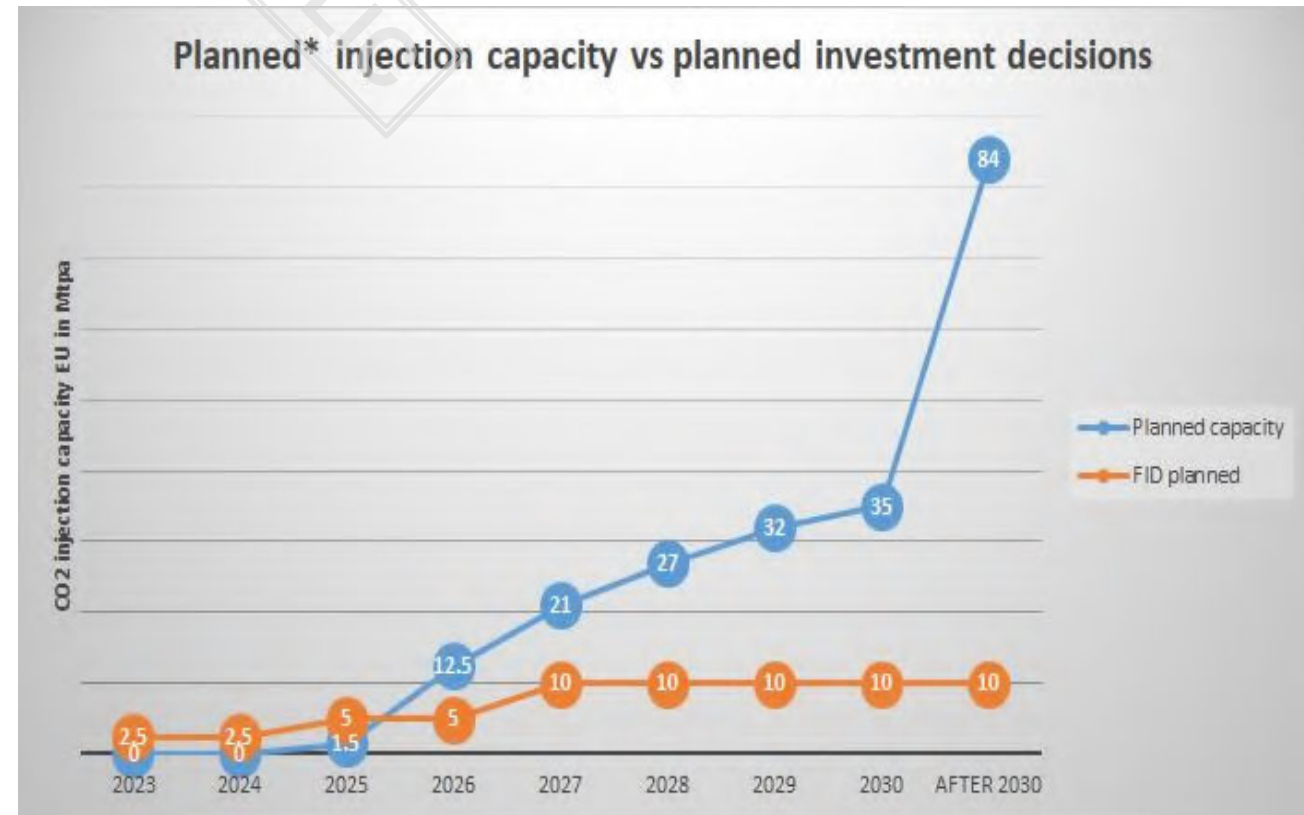
NZIA Policy Scenario results

Technology	Units to express capacity	Annual technology deployment in 2030	Current installed EU manufacturing capacity*	Market share of EU production	EU manufacturing capacity in 2030	New manufacturing capacity needed	Factory CAPEX (M€/unit/year)	Manufacturing capacity investment needs (M EUR)
Wind	GW/y	42	13	85%	36	23	260	6 073
Solar PV	GW/y	53	1	45%	24	22	340	7 579
Heat Pump	GW/y	51	14	60%	31	17	333	5 624
Battery cell	GWh/y	610	75	90%	549	474	144	68 244
Electrolysers	GW/y	25	2	100%	25	22	60	1 332
Total								88 852



CO₂ storage site investment needs

- **Capex investments vary strongly** based on:
 - **location** (onshore vs. off-shore);
 - **existing infrastructure** (depleted oil/gas field vs. new geologies);
 - **injection and storage capacities** (economies of scale).
- 50 Mtpa by 2030 could require between EUR 300 m and EUR 10.5 bn, for operations lasting 40 years. **Target estimation ca. EUR 3.5 bn.**
- **New market:** operators already compete and demand long-term commitments from emitters before taking investment decision.
- **Scale and cooperation is needed from day 1**



* CO₂ storage capacity and FIDs planned in Mtpa, based on operator announcements in EU workshop on 30.3.23

Caveats on the investment needs estimates

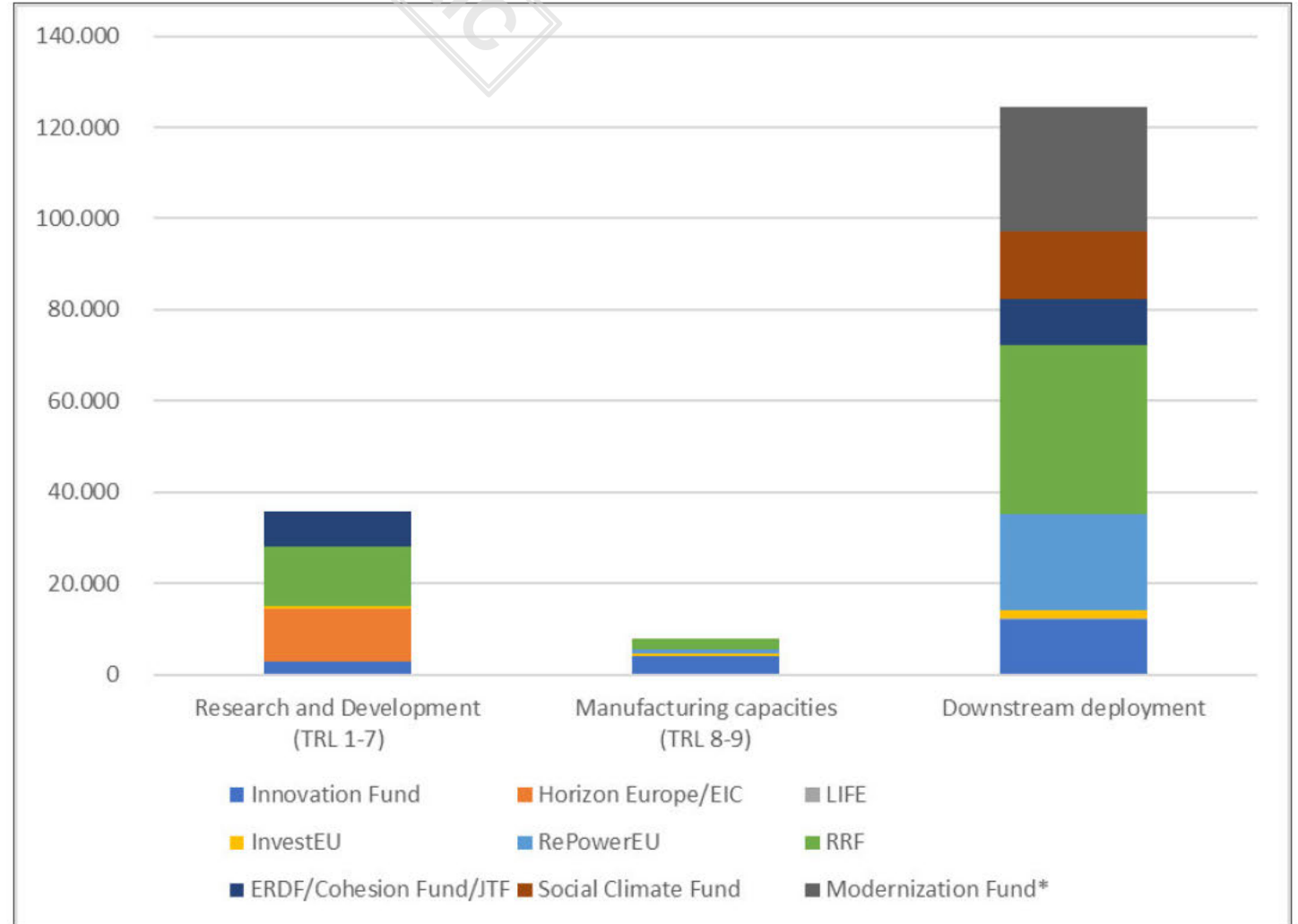
- They represent investment needs only for a part of the net-zero technologies listed in the annex of the Net-Zero Industry Act
- They are subject to several uncertainties, such as the 2030 deployment figures applicable to the respective 5 technologies. For example, for the projected deployment of batteries in 2030, industry projects much higher figures than the models and literature on which this assessment is based.
- Up- and down-stream supply chains (e.g. raw and processed inputs) are beyond the scope of NZIA and are not covered in the investment needs for EU manufacturing capacity expansion.
- The calculations include the investment needs for additional manufacturing capacity. They should not be confused with the deployment costs and investment of the Green Deal transitions

The core estimate of EUR 92 billion investment needs until 2030 is therefore likely to be at the lower end of the range.

EU funding availabilities for net-zero manufacturing

- The support from EU funds is concentrated on the development-phase, such as research and innovation, and to a larger extent on the deployment of net-zero technologies.
- Overall, it is estimated that a total of **up to EUR 8 billion** could be activated to support net-zero manufacturing capacities
- Main EU instruments supporting manufacturing capacities: **Innovation Fund, InvestEU, Recovery and Resilience Facility.**
- **The current EU budget has insufficient possibilities for supporting the objectives of the Net-Zero Industry Act** and for ensuring a level-playing field between Member States, relative to the identified public investment needs, which have been estimated to be at least in the range of EUR 16-18 billion

Estimated potential maximum support to different stages of net zero technologies by EU instruments between 2021 to 2027 (EUR million)



Conclusions

- In the **NZIA policy scenario**, accumulated investment needs for manufacturing solar PV, wind, heat pump, battery cell, electrolyser and CCS technologies amount to around **EUR 92 bn** over the period 2023-2030
- The range of investment needs is between **EUR 52 bn** (current market shares) and **EUR 119 bn** (no dependence on imports)
- Considering the **caveats**, the estimates are likely to be at the lower end of the range
- Around **17-20% or EUR 16-18 bn** of investment needs would need be covered by **public funding**
- Investment needs are **highly dependent on scope** horizontally across technologies and vertically across the supply chain (type of costs, further clean technologies etc.)
- CO2 storage is a key infrastructure **bottleneck** for emerging **CCS value chains in hard-to-abate sectors**

Thank you

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For further clarifications or questions please contact:

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