



# Ensuring resilience in Europe's energy transition

The role of EU clean-tech  
manufacturing

*Webinar presentation*

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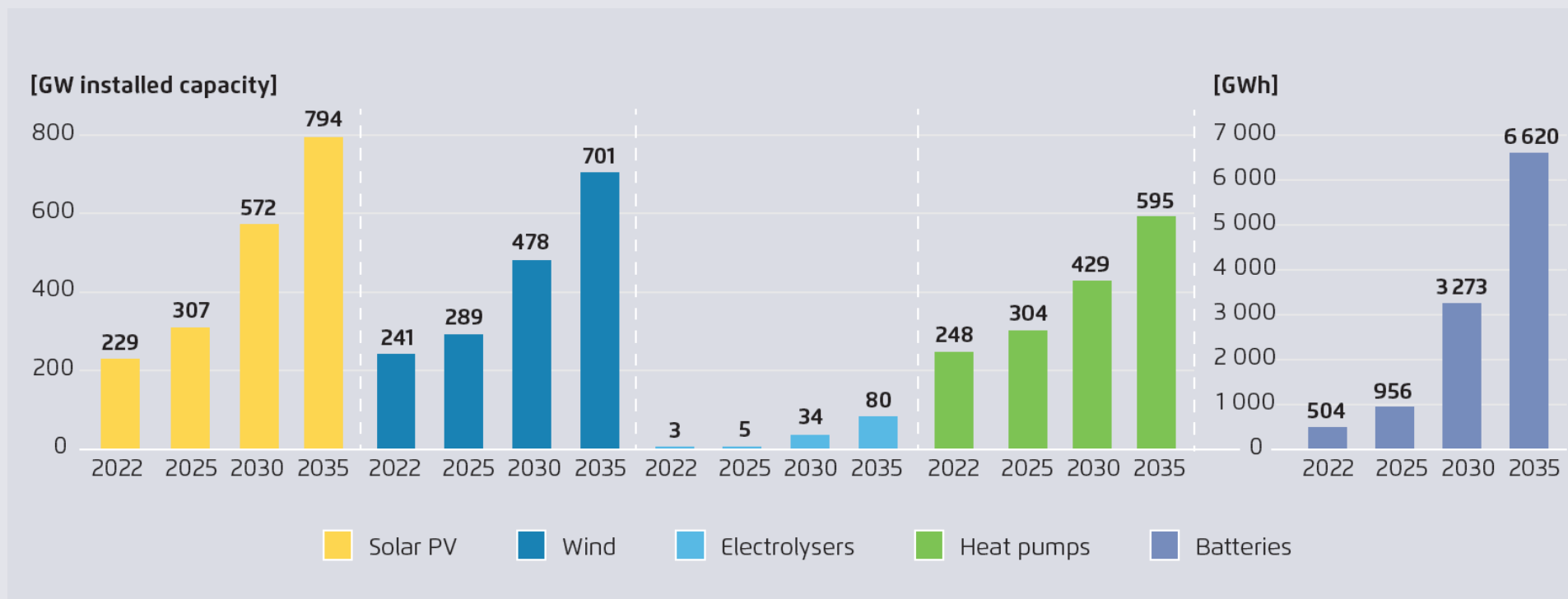
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# Europe's transition to climate neutrality requires a fast increase in the year-on-year deployment of clean technologies



Ramp-up of installed capacity of select clean technologies in EU-27 for transition to climate neutrality



Figures for Solar PV, Wind, Electrolysers, Heat Pumps based on Agora's EU Gas Exit Scenario; for batteries based on data by Roland Berger

## The political and economic context for climate and energy policy in Europe is more challenging today than it was in 2019



- The Covid pandemic, Russia's war of aggression against Ukraine and rising trade tensions between the US and China show that Europe cannot take the **smooth functioning of international clean-tech value chains** for granted.
  - China's green industrial policy and the **US Inflation Reduction Act** put high competitive pressure on clean-tech companies in Europe.
  - The Net Zero Industry Act and the Critical Raw Materials Act are part of the EU's response to make its transition to climate neutrality more resilient. The proposals include **indicative targets** to increase mining in Europe and for the scaling and re-shoring of clean-tech manufacturing in Europe.
- **Due to the rushed nature of these initiatives, only little research exists to support informed decisions on priority-setting and potential trade-offs.**

## Focus of the study

*Agora Energiewende and Agora Industry commissioned Roland Berger to:*

- analyse for select clean technologies (solar PV, onshore and offshore wind, heat pumps, electrolysers, batteries) relevant **value chain dependencies** from raw materials, to refining, components and final products;
- establish for each value chain **minimum shares of EU domestic manufacturing** that could serve as insurance against value chain risks; and
- quantify – for different scenarios – the relevant **additional costs** (private or public).

*Agora Energiewende and Agora Industry expanded on Roland Berger's analysis to*

- calculate **public funding needs** for scaling EU manufacturing to minimum insurance levels;
- show implications for the current and future EU budget;
- **develop a policy package to ensure that public support for scaling of clean-tech manufacturing will ensure the sector's long-term competitiveness without support.**

# Roland Berger presentation







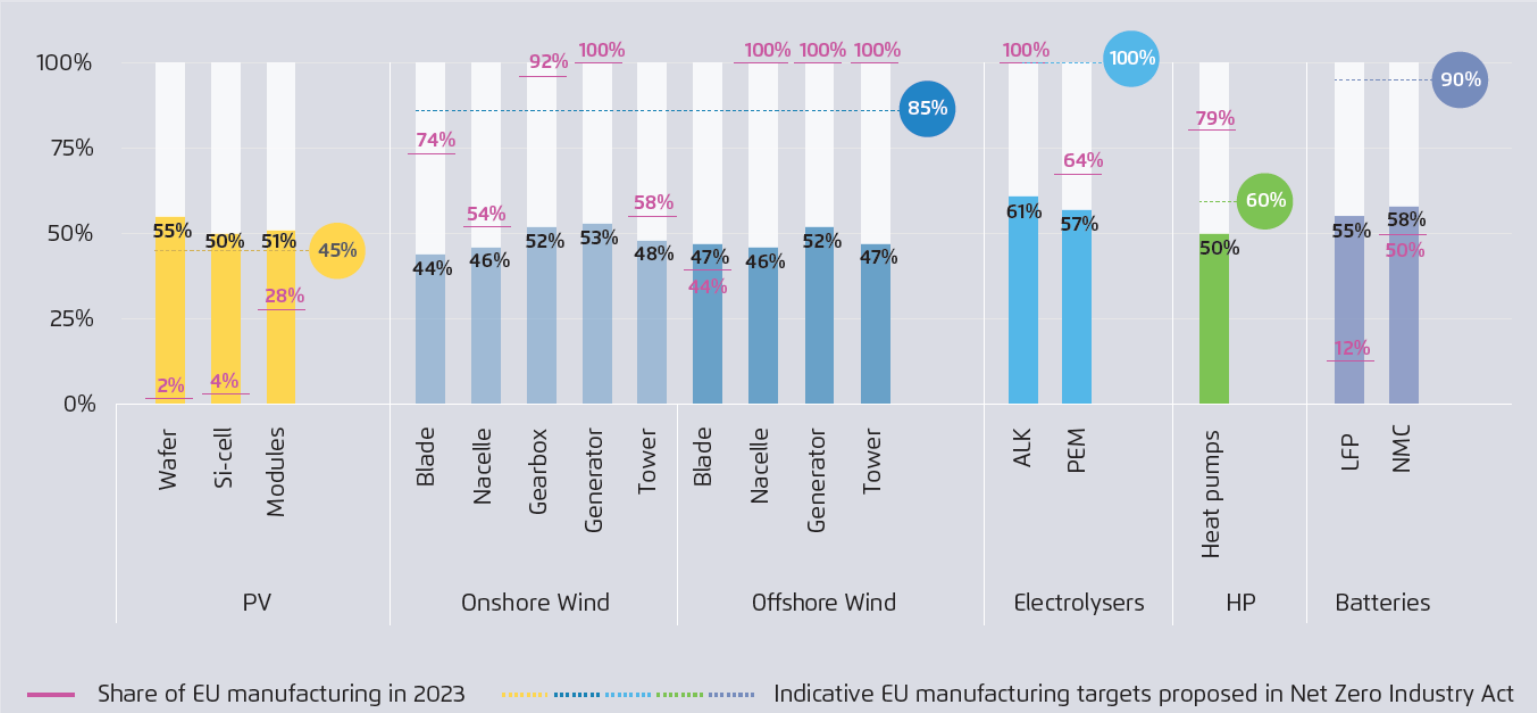
**Scaling EU clean-tech  
manufacturing to  
minimum insurance  
levels.**

**Focus on public  
funding needs**



# Recommended minimum shares of EU demand met by domestic clean-tech manufacturing

Recommended minimum shares of EU demand met by domestic manufacturing

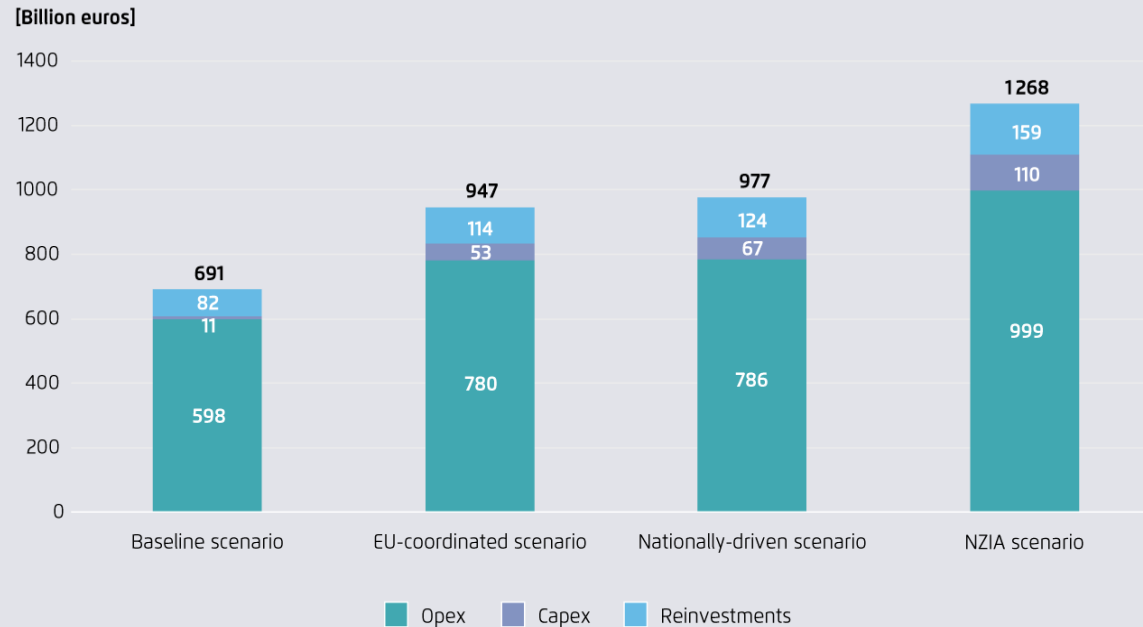


Minimum manufacturing shares and 2023 EU manufacturing shares taken from Roland Berger (2023); Indicative targets taken from Commission proposal for a Net Zero Industry Act

# Which level of public funding can enable the needed investment in EU manufacturing? First step is to know the total opex and capex needs.



Total cumulative costs, 2023-2035 – Discounted cash flow



Agora Energiewende (2023) based on Roland Berger data

Roland Berger has calculated the annual capex and opex needs to meet the minimum EU manufacturing shares in each scenario and for each technology. Opex includes the production costs like energy, labour and materials.

Total costs, including both capital and operating manufacturing expenditures, are increasing with the level of ambition in reshoring clean-tech supply chains.

**Opex** makes the **majority** of total costs.

The annual (not discounted) values are the base of our calculation of the public funding requirements.



# How do we split the total costs between public/private and between EU / Member States?



Support rates and cost distribution applied in calculation of public funding needs, as percentage of total

	Capex			Opex		
	Support rate	Share of support costs		Support rate	Share of support costs	
		EU	National budgets		EU	National budgets
Battery	25	80 / 20	20 / 80	33 / 35	75 / 25	25 / 75
Solar PV	30	75 / 25	25 / 75	30 / 33	75 / 25	25 / 75
Wind	20	75 / 25	25 / 75	8	75 / 25	25 / 75
Electrolysers	40	75 / 25	25 / 75	25	75 / 25	25 / 75
Heat pumps	20	75 / 25	25 / 75	18	75 / 25	25 / 75

The Roland Berger analysis shows that capex and opex support will be required in most cases, to different degrees depending on the sector.

Public funding requirements are calculated differently for capex and for opex:

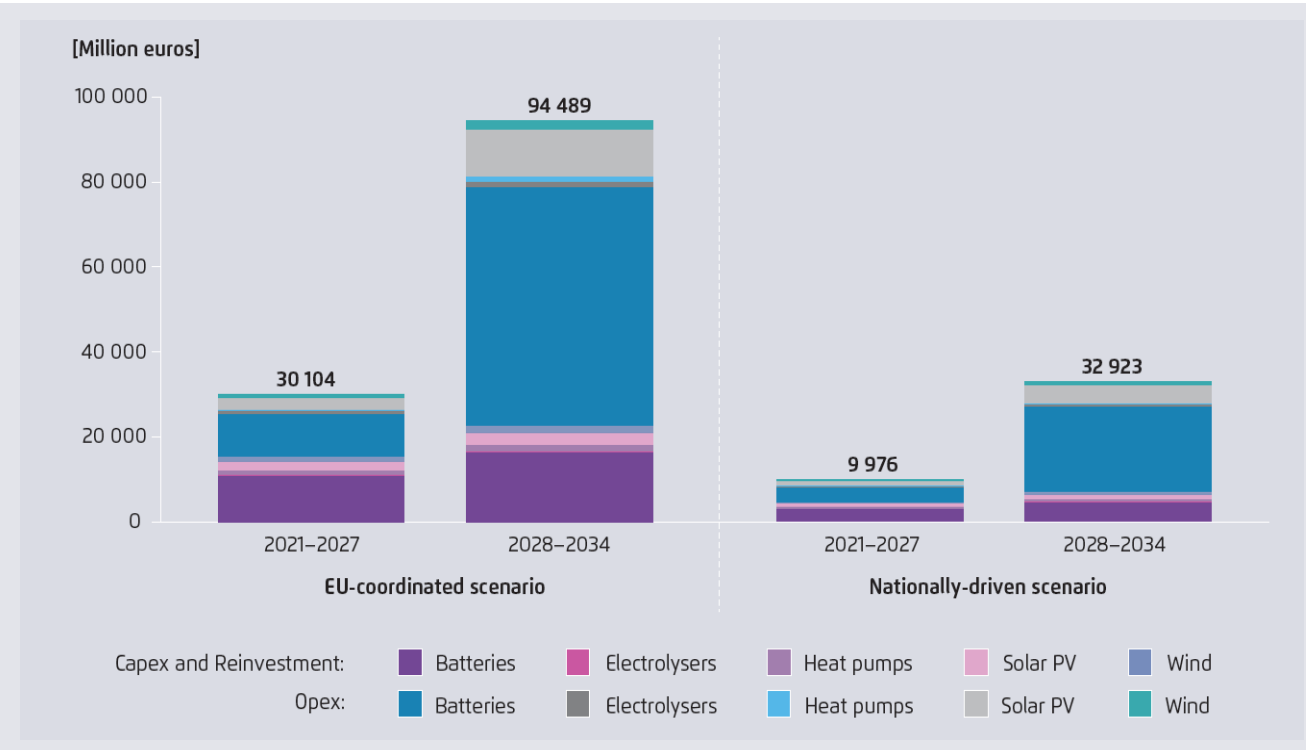
- capex: grants cover a fraction of the total investment costs with differences for different technologies.
- opex: calculation based on fraction of unit manufacturing costs defined as sum of material, energy and labour costs and SG&A costs.
- The EU share and national share of support costs vary for the different scenarios.

Agora Energiewende (2023). Note: when two values are reported, the first refers to the „EU-coordinated“ scenario and the second to the „Nationally driven“ scenario

# Achieving minimum shares of EU manufacturing requires EU funding of 10-30 bn euros until 2027 and 33-94 bn euros from 2028-2034, depending on the scenario



Distribution of EU funding needs for clean-tech manufacturing by scenario and EU budget period, Cumulative amounts, 2023 prices



- EU-coordinated scenario: broad and centralized policy support by the EU to plants in all Member States.
- Nationally-driven scenario: limited EU role, with the EU funding only used for targeted support to selected Member States or regions (like JTF).

Numbers include only non-repayable support (i.e. not loans).

The funding needs triple in the next EU budget period, as the battery market scales up and the EU solar PV industry catches up.

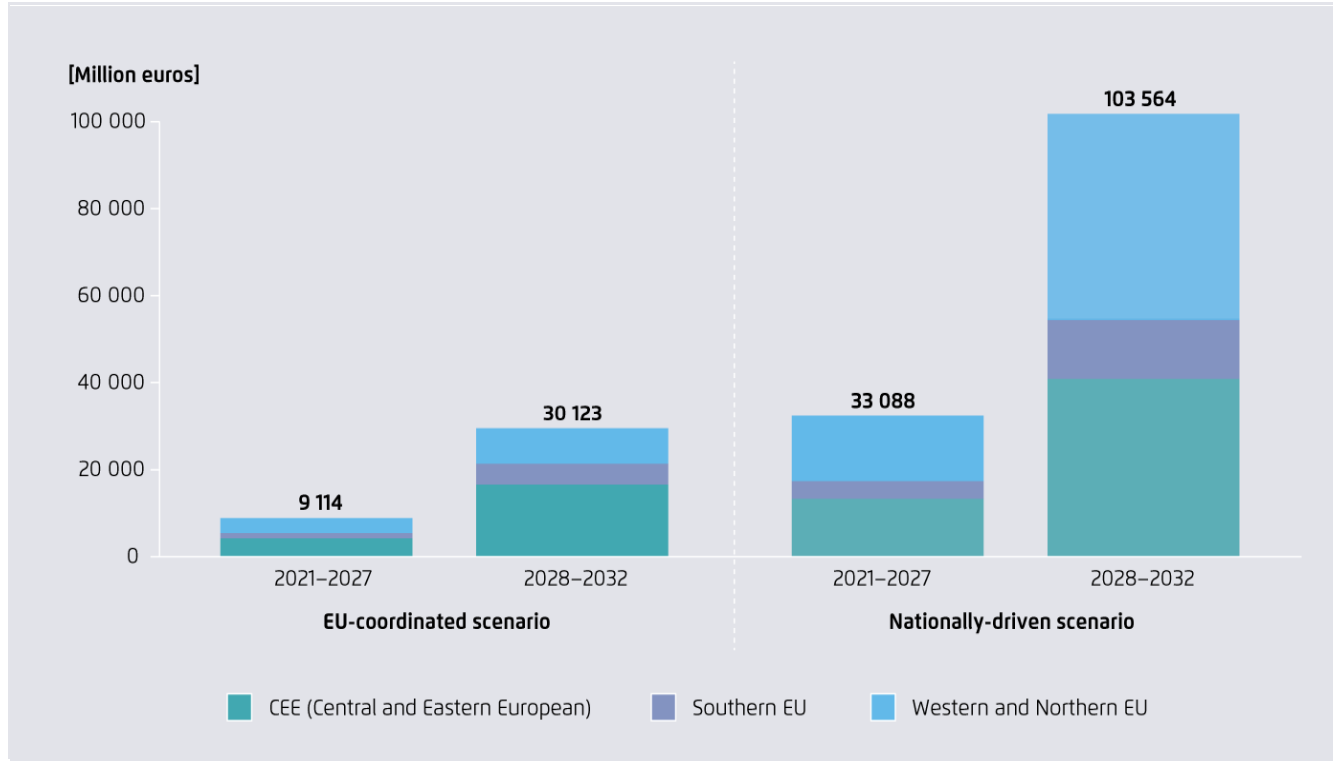
→ Challenge for the next EU budget period.

Agora Energiewende (2023) based on Roland Berger data

# The national public funding needs are as large in the CEE countries as in the West/North EU



Distribution of national public funding needs for clean-tech manufacturing by scenario and EU budget period – Cumulative amounts, constant 2023 prices



Agora Energiewende (2023) based on Roland Berger data

The geographical distribution is based on Roland Berger's analysis.

The estimated EU-wide total fiscal costs of both scenarios are in line with existing estimates for the public spending needs of the US's IRA.

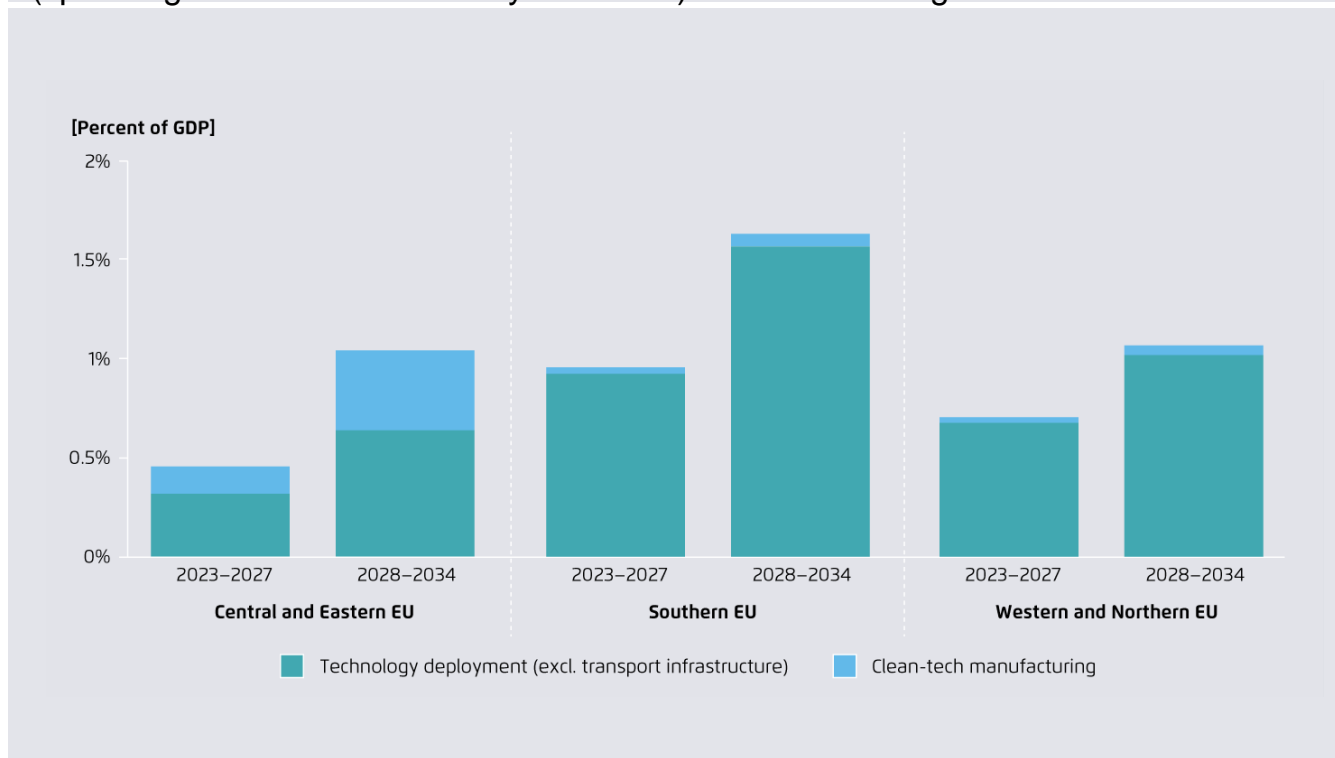
**The sum of the EU and national spending needs is between 164 and 180 billion euros in the two scenarios for 2022–2034, around 1 percent of GDP in cumulative terms.**

As a percent of GDP, this is similar to what Credit Suisse estimates will be the possible federal US spending for manufacturing subsidies due to the IRA by 2032.

# Public funding to increase EU clean-tech manufacturing comes on top of (much larger) public funding needs to accelerate clean-tech deployment



National public funding needs for clean-technology deployment and manufacturing (spending needs not covered by EU funds) – Annual averages



Agora Energiewende (2023) based on Roland Berger data. Note: the chart shows the public funding needs net of the EU grants available to Member States

The chart compares the national public funding needs for manufacturing and deployment, net of EU funding available to each region.

→ For EU funding data, see the *EU Climate Funding Tracker* available on the Agora Energiewende's website.

For clean tech manufacturing, the chart shows a scenario with most support provided by national funding to the best EU locations (higher weight to CEE).

→ EU co-financing in the next EU budget is key to ensure **both types** of public investments will be carried out.

# A policy package

## EU manufacturing is only one element adding to the resilience of clean-tech industrial value chains.

Elements adding to the resilience of clean-tech industrial value chains



Agora Energiewende (2023)



## Public funding to scale clean-tech manufacturing should be part of a broader policy package to ensure long-term competitiveness without support

1. **A Clean-Tech Manufacturing Fund** for closing the opex and capex cost gaps;
2. **A clean-technology manufacturing contribution** to provide revenues for the fund;
3. **Privileged access to favourable investment and finance costs**; to shorten the payback period on investments in new manufacturing sites and facilitate larger scale investments;
4. **Market-differentiation of EU-manufactured clean-tech products** through mandatory reporting on the sustainability of clean technologies and critical raw materials sold in Europe;
5. **Long-term demand creation for EU-manufactured clean-tech products**, by systematically linking public procurement decisions and public support for private investment to high sustainability performance, not only the cheapest price;
6. **Attracting leading clean-tech suppliers to establish manufacturing in Europe**, while using safeguards to achieve a gradual de-risking of value-chain dependencies; and
7. **Investment into strategic innovation projects** building on the innovative potential of EU companies, to ensure long-term competitiveness of clean-tech manufacturing in Europe.

## Conclusion

- Europe can make critical value chains in the transition to climate neutrality more resilient by ensuring **minimum levels of clean-tech manufacturing** take place domestically.
- Domestic manufacturing is just one element for resilience; also **enhanced recycling and supply chain diversification** are needed.
- **Public funding commitments** in support of the Net Zero Industry Act fall far short of what is needed, particularly after the end of the current EU budget period in 2027.
- A **broad policy package** should ensure high sustainability performance of EU clean-tech manufacturers to compete on quality, not only on cost and safeguard the **clean-tech sector's long-term competitiveness without support**.
- **Cooperation with international technology and value chain leaders** is necessary to scale EU clean-tech manufacturing.

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# Thank you for your attention!

Questions or comments? Feel free to contact me:

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