





















16 July 2025

# Climate Impact of One Big Beautiful Bill Act (OBBBA)

**Mariana Castaño, Ariela Farchi, Nicolas Herrera Isaza,  
Isabel Hoyos, Hyae Ryung Kim, and Gernot Wagner**

# One Big Beautiful Bill Act phases out incentives for solar & wind, biggest impacts on EV adoption and US manufacturing

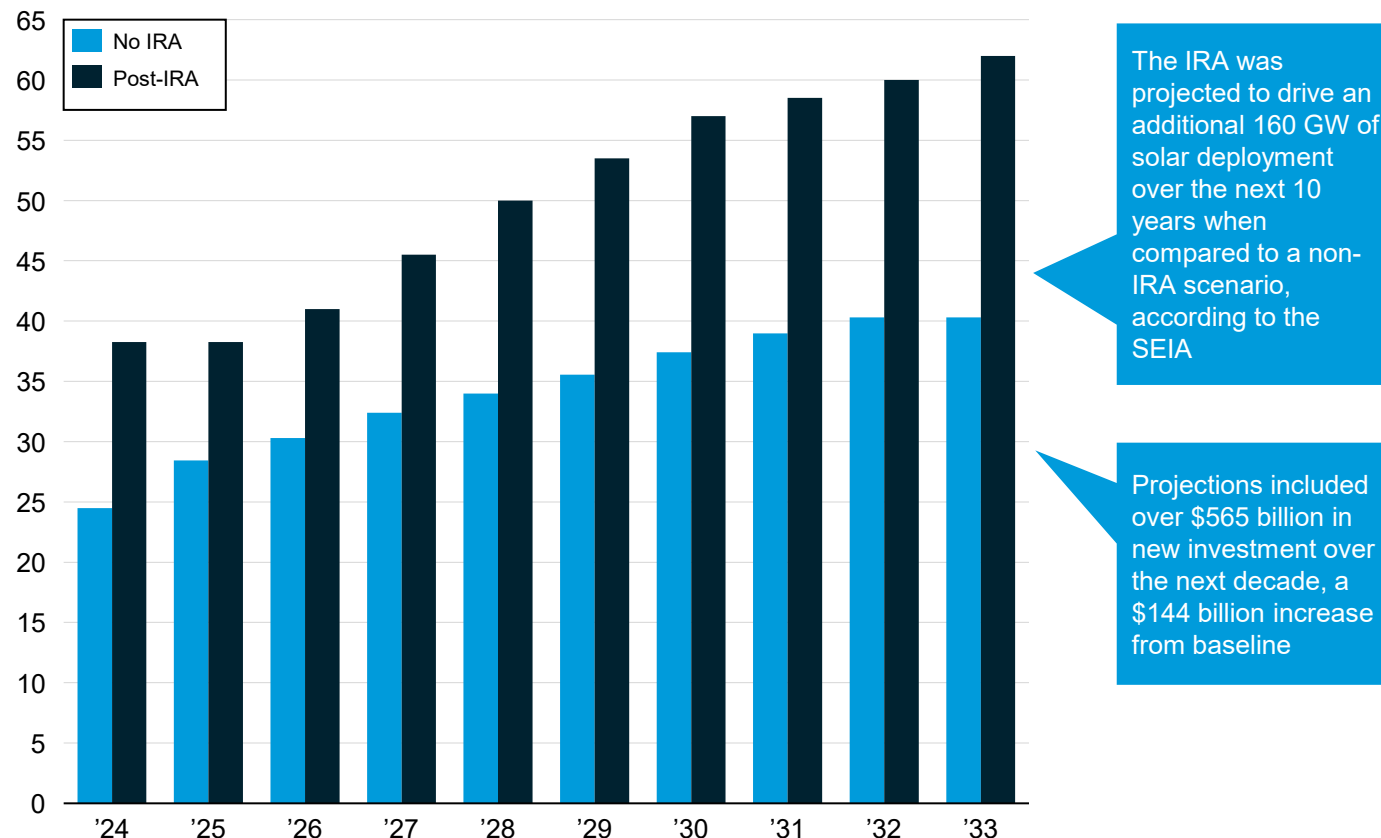
Technology	IRA Incentives (2022-2025) vs OBBBA Policy Changes (2025 onward)		Industry Outlook <sup>2</sup> in the U.S. with OBBBA	
Solar & Wind		<ul style="list-style-type: none"> <li>48E and 45Y credits available until 2033</li> <li>Phased out after 2027<sup>1</sup>; sourcing rules tightened (FEOC)</li> </ul>		<ul style="list-style-type: none"> <li>Continued growth trend through 2030, significant slow-down by 2035<sup>3</sup></li> <li>Overall higher electricity end-user prices</li> </ul>
Green Hydrogen		<ul style="list-style-type: none"> <li>45V credit available until 2033</li> <li>Phased out by 2028</li> </ul>		<ul style="list-style-type: none"> <li>Deployment undermined by weak demand, loss of incentives, and sourcing restrictions</li> </ul>
Electric Vehicles		<ul style="list-style-type: none"> <li>30D, 25E, and 45W credits for EVs; 30C for charging infrastructure</li> <li>Phased out by 2026 (30D/25E/45W by Oct 2025, 30C by Jul 2026)</li> </ul>		<ul style="list-style-type: none"> <li>Consumer adoption hit by loss of credits and policy uncertainty</li> </ul>
Manufacturing		<ul style="list-style-type: none"> <li>45X and 28C credits support clean tech supply chain</li> <li>45X phased out after 2027 (wind) and 2028 (solar/storage); 48C compromised by sourcing rules</li> </ul>		<ul style="list-style-type: none"> <li>Clean energy manufacturing hit by loss of credits and supply chain constraints</li> <li>Subsidy loss threatens existing investments</li> </ul>
Carbon Capture		<ul style="list-style-type: none"> <li>45Q credit available until 2033</li> <li>Preserved; EOR provisions enhanced</li> </ul>		<ul style="list-style-type: none"> <li>Growth in oil and gas CCS, challenged by foreign entity restrictions</li> </ul>
Energy Storage		<ul style="list-style-type: none"> <li>48E credit available until 2033</li> <li>Preserved in full</li> </ul>		<ul style="list-style-type: none"> <li>Preserved credits support growth, challenged by foreign entity restrictions</li> </ul>
Biofuels		<ul style="list-style-type: none"> <li>45Z credit available until 2027</li> <li>Extended to 2029; feedstock sourcing rules tightened; capped SAF</li> </ul>		<ul style="list-style-type: none"> <li>Slow adoption, challenged by foreign entity restrictions</li> </ul>
Geothermal		<ul style="list-style-type: none"> <li>48E and 45Y credits available until 2033</li> <li>Preserved in full</li> </ul>		<ul style="list-style-type: none"> <li>Moderate growth from low baseline</li> <li>R&amp;D support for superhot geothermal</li> </ul>
Nuclear		<ul style="list-style-type: none"> <li>ITC/PTC for new, 45U for existing plants available until 2033</li> <li>Preserved in full; fuel sourcing rules apply after 2028</li> </ul>		<ul style="list-style-type: none"> <li>Challenges remain for large ~1GW reactors</li> <li>More optimistic outlook for SMRs, XMRs</li> </ul>
Oil, Gas		<ul style="list-style-type: none"> <li>No support</li> <li>Gains tax breaks, public land access, and regulatory rollbacks</li> </ul>		<ul style="list-style-type: none"> <li>Stable or rising share, as renewables face disadvantage</li> </ul>

(1) Construction by 4 July 2026 = 4 years to completion, after = in service before 2028. (2) EV, Carbon Capture, Energy Storage, Biofuels, Hydrogen and Oil, Gas & Coal's Outlook use EIA's reference case and alternative transportation case. (3) Outlook expectations for solar and wind based on EIA's 2025 AEO, using "Reference" Case and "High Zero-Carbon Technology Cost" Case. Sources: Congress, [One Big Beautiful Bill Act](#) (2025); DOE, [Inflation Reduction Act](#) (2022); Norton Rose Fulbright, [Effects of "One Big Beautiful Bill" On Projects](#) (2025); CKI Analysis (2025). Credit: Mariana Castaño, Ariela Farchi, Nicolas Herrera Isaza, Isabel Hoyos, Hyae Ryung Kim, and [Gernot Wagner](#). Share with attribution: Castaño et al, "Climate Impact of One Big Beautiful Bill Act" (15 July 2025).

# IRA mobilized \$42B from 2022 to 2024; projected to add ~50% (~160 GW) of solar capacity by 2033, before Trump repeal

## Post-Inflation Reduction Act (IRA) solar projections

Annual US solar installations (GW)



Note: With the enactment of the 2025 “One Big Beautiful Bill” Act, clean electricity investment and production tax credits (48E and 47Y) will be phased out by 2027.

Sources: Wood Mackenzie, [US Solar Market Insight](#) (2025); IRENA, [Stats Tool](#) (2025); Wood & Mackenzie, [The Inflation Reduction Act and Its Impact So Far](#) (2023); US Department of Treasury, [The Inflation Reduction Act](#) (2024) [The Inflation Reduction Act](#) (2023); HEATMAP, [The First IRA Tax Credit Data Is In](#) (2024); SEIA, [Impact of the Inflation Reduction Act](#) (2022); Rhodium Group, [Clean Investment in 2023](#) (2024); American Clean Power, [Investing in America 2024](#) (2024).

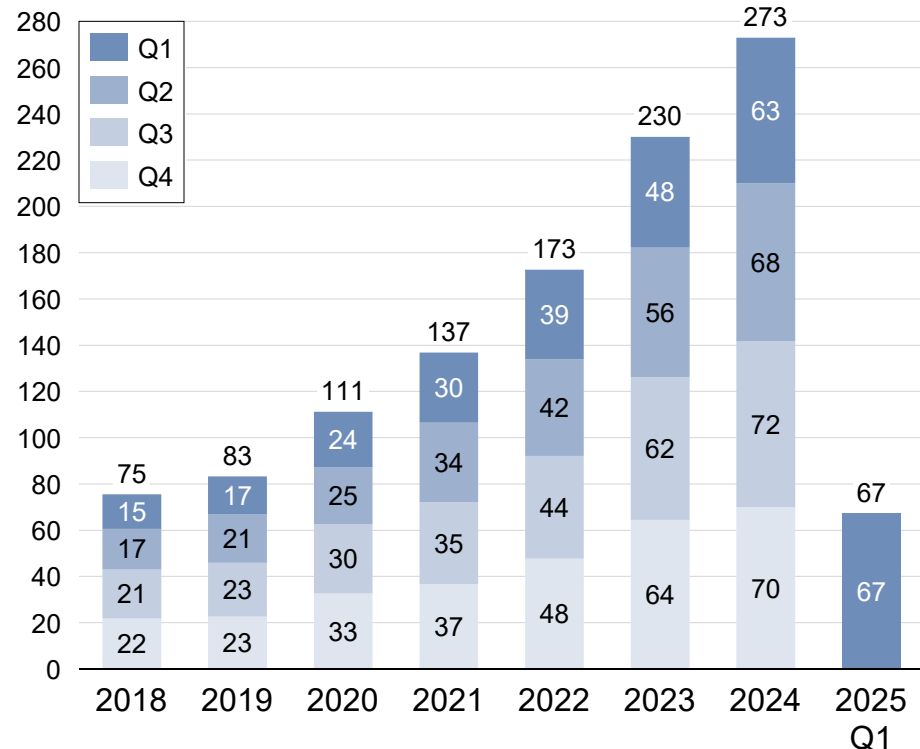
Credit: Taicheng Jin, Isabel Hoyos, Heonjae Lee, Hyae Ryung Kim, and Gernot Wagner. Share with attribution: Kim et al., “Scaling Solar” (7 July 2025).

## Actual Post-IRA Solar Growth

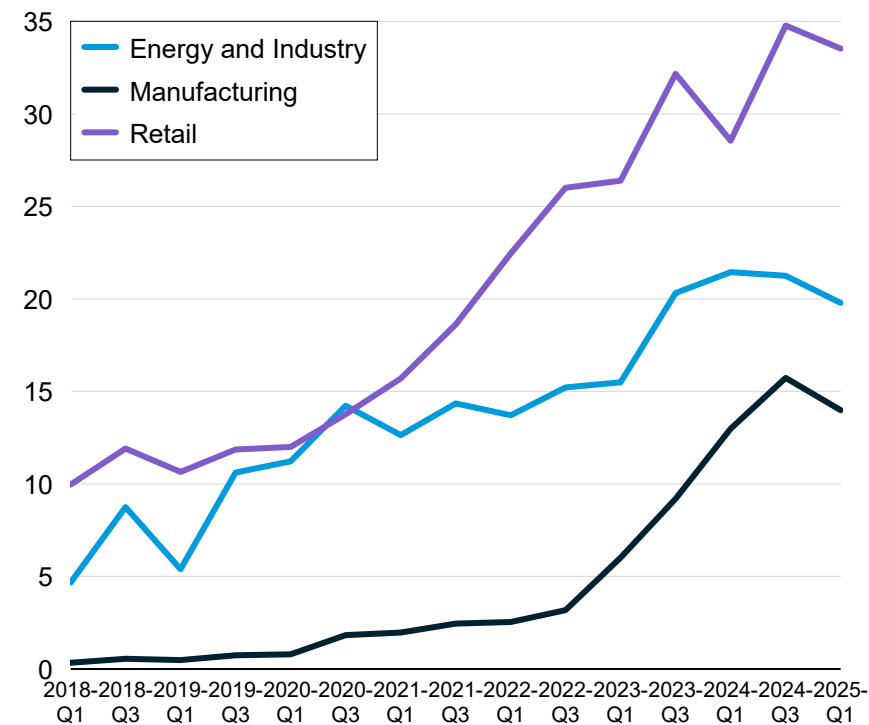
- From August 2022 to August 2024, \$42 billion in investment was realized, 33 GW of solar capacity was added, and 95 new solar manufacturing facilities were announced.
- Residential clean energy credit** adoption has surpassed expectations, boosting deployment of residential solar.
  - Over 1.2 million Americans used residential clean energy tax credits
  - The government budgeted \$2 billion in 2023, but actual spending was more than triple
  - 30% more people filed for energy efficiency and/or rooftop solar tax credits in 2022 tax returns compared with 2021
- Utility-scale** solar expansion is leading clean electricity expansion post-IRA, generating the majority of renewable energy capacity additions. However, clean electricity is at risk of falling short of post-IRA growth projections.
  - The IRA has made **renewable electricity cost competitive with coal and natural gas**. With reduced cost barriers, tackling remaining non-cost barriers like permitting, intermittency, and supply chain is critical to achieving climate change mitigation goals.
- Clean energy investment is growing fastest in so-called energy communities** — areas with coal mine or plant closures, brownfield sites, or previously high fossil fuel employment and high unemployment.

# US clean investment totaled ~\$67 billion in Q1 2025 with retail accounting for ~50% of total

Clean investment by quarter (Billion USD)



Clean investment by segment (Billion USD)



## Observations

- In Q1 2025, clean energy and transportation investment in the U.S. totaled **\$67 billion**.
- Investment activity primarily driven by retail consumer purchases and installations of clean technology, which accounted for half of the total at **\$33.5 billion**.
  - Energy & industry invested 20 billion USD and manufacturing invested 14 billion USD respectively.

Note: Energy and Industry: Investment in the deployment of that technology both to produce clean energy or decarbonize industrial production

Manufacturing: Investment in the manufacture of GHG emission-reducing technology

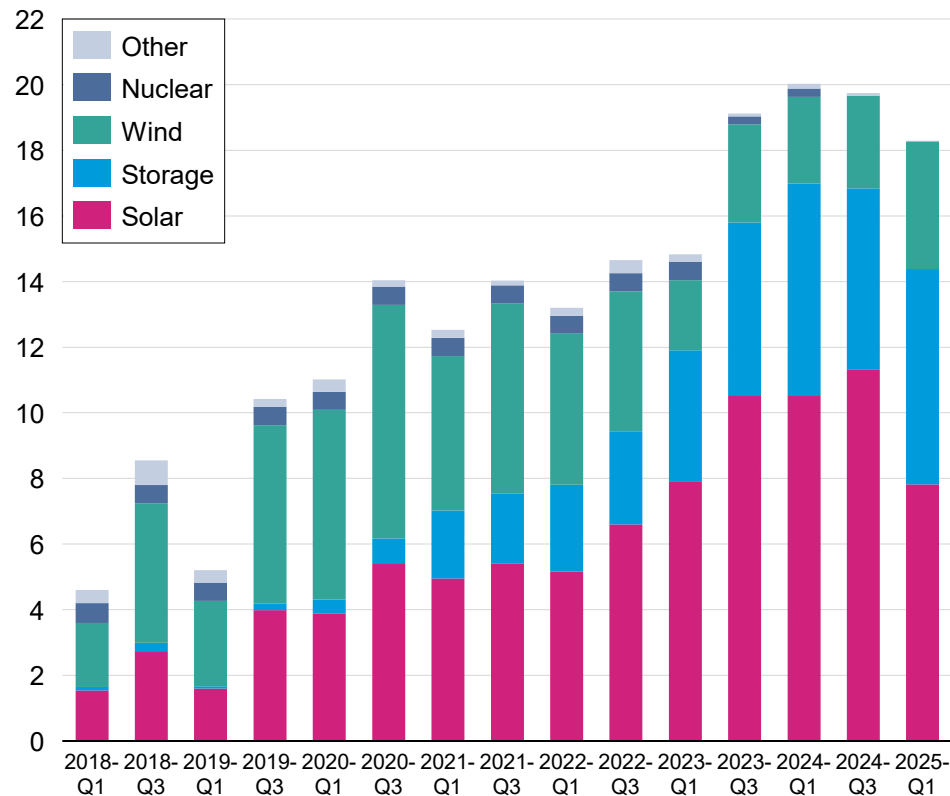
Retail: investment through the purchase and installation of that technology by individual households and businesses

Source: Rhodium Climate Deck, [Clean Investment Monitor](#) (2025); CKI Analysis (2025).

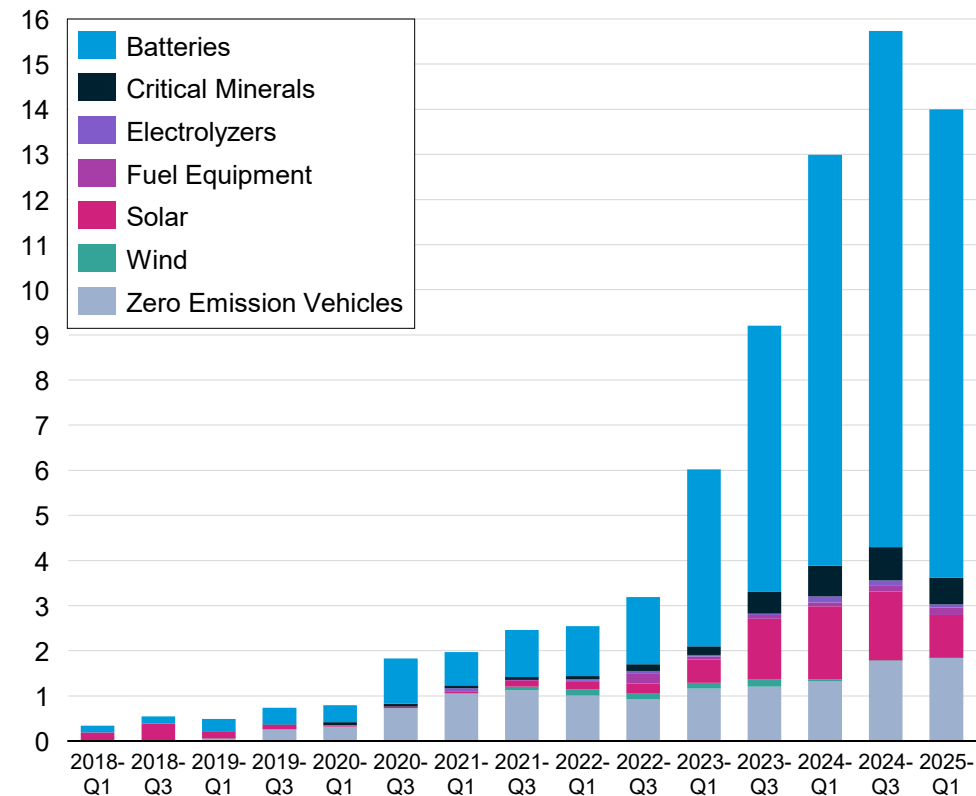
Credit: Hyae Ryung Kim and [Gernot Wagner](#), [Share with attribution](#); Castaño *et al*, "Climate Impact of One Big Beautiful Bill Act" (15 July 2025).

# Solar and storage dominate total clean energy investment; batteries account for 93% of clean manufacturing investment

Clean energy investment by technology (Billion USD)



Manufacturing investment by technology (Billion USD)

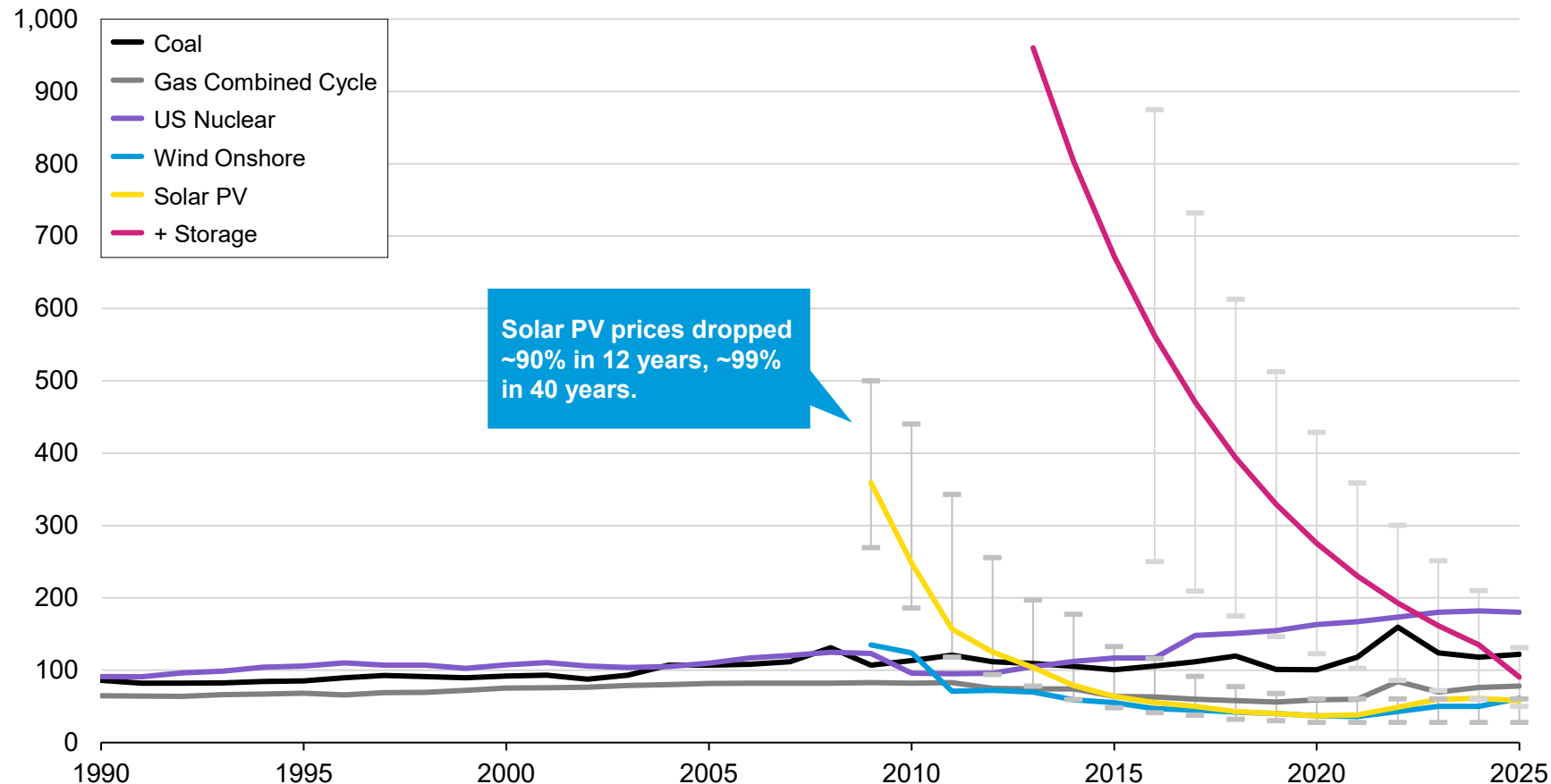


## Observations

- **~\$20 billion** were invested in clean energy production and industrial decarbonization in Q1 2025 in the U.S.
  - Utility-scale solar and storage investment accounted for \$14.4 billion.
- **Batteries for electric vehicles (EV)** continue to drive most investment into clean manufacturing, accounting for \$13 billion (93%) of the total \$14 billion in actual investment.

# Utility-scale solar and wind now cheaper than fossil fuels, battery storage costs not far behind and falling fast

## Levelized cost of electricity (LCOE) & storage (LCOS) (\$USD/MWh)



### Observations

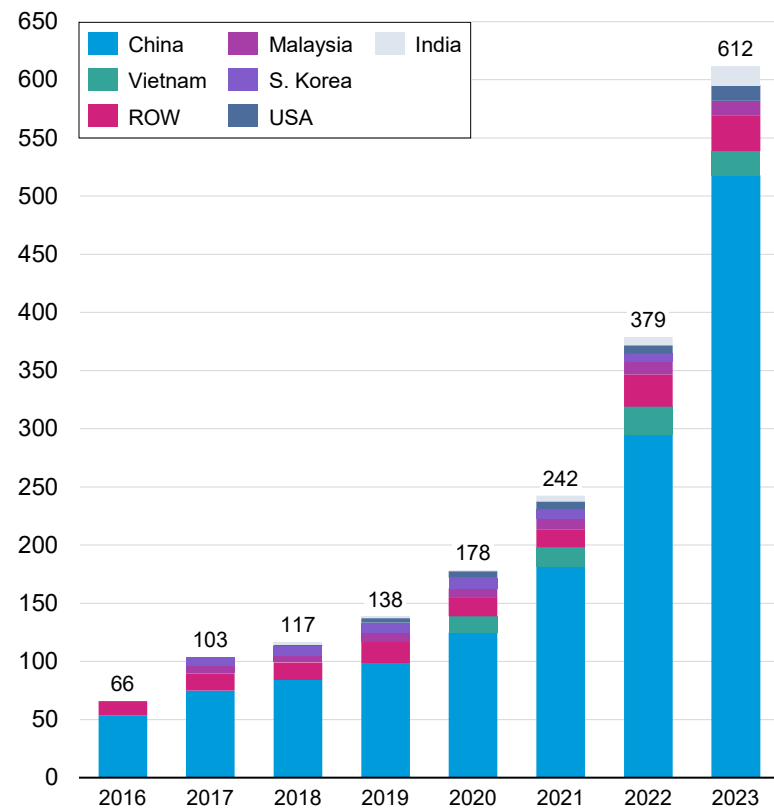
- **Solar photovoltaic (PV) prices dropped by ~80% in the past decade**, wind by ~70%, and lithium-ion battery costs by ~90%.
  - PV price drop primarily driven by **improvements in module efficiency** and **economies of scale**.
  - **Onshore wind** remained the cheapest for the longest, **now beaten by PV**.
  - Lithium-ion **battery costs fell 20% in 2023 alone**.
- **Gas combined cycle power plants cheaper than coal**, more expensive than both solar and wind.
  - Rapid scale-up of utility-scale batteries “killer app” to replace gas on grid.
  - **Battery prices expected to continue falling** due to cell manufacturing overcapacity, economies of scale, and switch to lower-cost lithium-iron-phosphate (LFP) batteries.

Sources: Lazard, [LCOE+](#) (2025); Our World in Data, [Our World in Data](#) (2024); Energy Institute, [Statistical Review of World Energy](#) (2024); BNEF, [Battery Price Survey](#) (2024); Kavlak *et al.*, [Evaluating the Causes of Cost Reduction in Photovoltaic Modules](#) (2018).

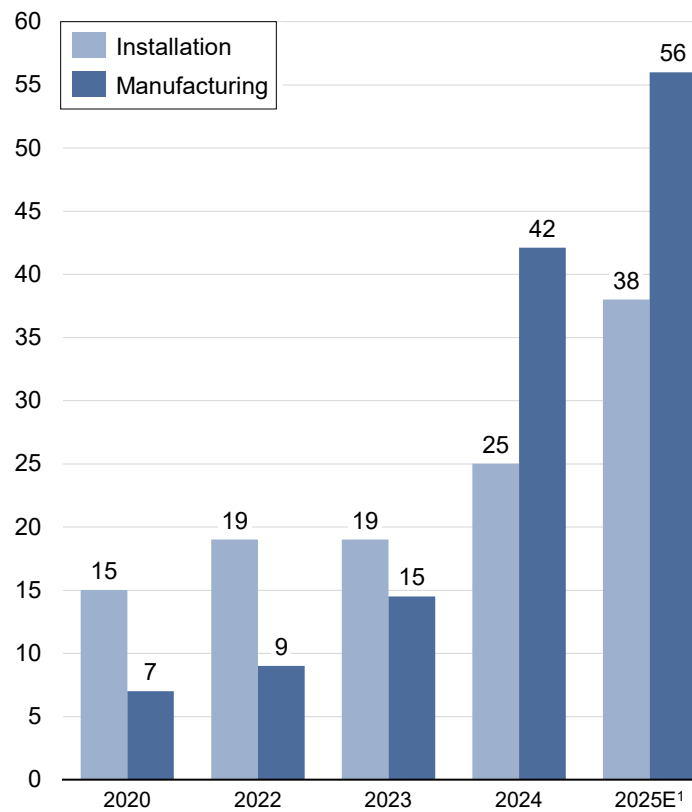
Credit: Hyae Ryung Kim, Xiaodan Zhu, and Gernot Wagner. [Share with attribution](#): Kim *et al.*, “Scaling Solar” (10 July 2025).

# Bolstered by the IRA, US solar PV manufacturing capacity grew ~50% annually from 2020 to 2024, before repeal

Global solar PV panel production (GW)



US PV manufacturing & installation capacity (GW)



## Observations

- **China still dominates the global market:**
  - As of 2025, China's manufacturing capacity exceeds 1,200 GW/year which accounts for **80-90% of the global supply** across key stages (polysilicon, wafers, cells, modules).
  - China has aggressively increased **solar module production** along with producing in countries in APAC region such as Vietnam, Malaysia, and S. Korea.
  - China benefits from **economies of scale, vertically integrated supply chains and low productions costs**.
- **US manufacturing capacity is growing rapidly:**
  - US module manufacturing capacity grew from ~7 GW in 2020 to over 56 GW as of May 2025.
  - The **IRA was a game changer** unlocking billions in public and private investment.
- **China's market faces headwinds** as overcapacity and price crashes in 2024/2025 are pressuring Chinese manufacturers.
- While the **US cannot match China's scale**, the country strategically built high-quality, incentivized and politically supported capacity from 2022 to 2025, starting to **position itself as a strategic alternative supplier in the West to mitigate geopolitical and supply chain risks**.

**Note:** With the enactment of the 2025 "One Big Beautiful Bill" Act, clean electricity investment and production tax credits (48E and 47Y) will be phased out by 2027.

(1) US solar PV manufacturing & installation capacity as of May 2025 (SEIA, 2025)

Source: SEIA, [Solar Industry Research Data](#) (2025); IEA PVPS, [Trends in Photovoltaic Applications 2024](#) (2024); IRENA, [Stats Tool](#) (2025).

Credit: Yosafat Partogi, Heonjae Lee, Isabel Hoyos, Hyae Ryung Kim, and Gernot Wagner. [Share with attribution: Kim et al., "Scaling Solar" \(7 July 2025\).](#)