

Sustainability

IRA ripple effect: 10 areas of impact

01 August 2023

Key takeaways

- While the biggest impacts of the Inflation Reduction Act (IRA) will begin in 2024 and 2025, its ripple effects are already starting to take shape. To date, over 270 new clean energy projects have been announced, with investments totaling \$132 billion.
- From electric vehicles and batteries to renewable energy projects and health care, the IRA is expected to play a vital role in incentivizing investments and creating jobs. In fact, over 86,000 jobs could be created out of projects announced thus far.
- As the first anniversary of the IRA approaches, we break down the bill and discuss 10 things you need to know about where its impact may be most evident.

More investment, more jobs: The IRA is working

In the eleven months since passage of the Inflation Reduction Act (IRA), progress has been made to finalize guidance around implementation, issue funding and catalyze local climate action – and its impact is becoming more evident. The bill allocates ~\$400 billion in direct investment to ensure energy security, increase energy innovation and support environmental justice objectives. One of the key long-term goals of the IRA is its potential to achieve a 33%-40% reduction in economy-wide greenhouse gas emissions to below 2005 levels by 2030.

Thus far, this investment is not only working to strengthen supply chains but also to boost domestic manufacturing and create new jobs. In fact, since the passage of the IRA, newly announced projects in clean energy have resulted in over 86,000 reshoring and foreign direct investment (FDI) manufacturing jobs being announced (Exhibit 1). Jobs in the clean energy sector already grew by 3.9% from 2021 to 2022, and now account for more than 40% of all energy jobs in the US. Jobs related to battery electric vehicles experienced growth of 27%, surpassing the gasoline and diesel vehicle sector by more than 17x, as reported in the US Energy & Employment Report. And in a significant shift towards greater gender diversity, women accounted for over half of the 300,000 energy jobs added in 2022 (see [DEI in the face of inflation](#)).

Beyond boosting jobs, IRA incentives could also go a long way for corporates. As we discussed in our recent publication, [The path to a clean energy future](#), delivering an effective business plan for the net-zero transition has been challenging and many US corporates have extended their average goal dates to 2043, compared to the previous projection of 2041, made three years ago. The situation has been complicated by the conflict in Ukraine, which has intensified the need for energy security.

More broadly, re-shoring/near-shoring of supply chains driven by the IRA, could result in controlling carbon emissions of companies. In fact, BofA Global Research found that corporates within the majority of sectors are already employing re-shoring as a strategy to reach net zero (see [Corporate strategies for Net Zero](#)).

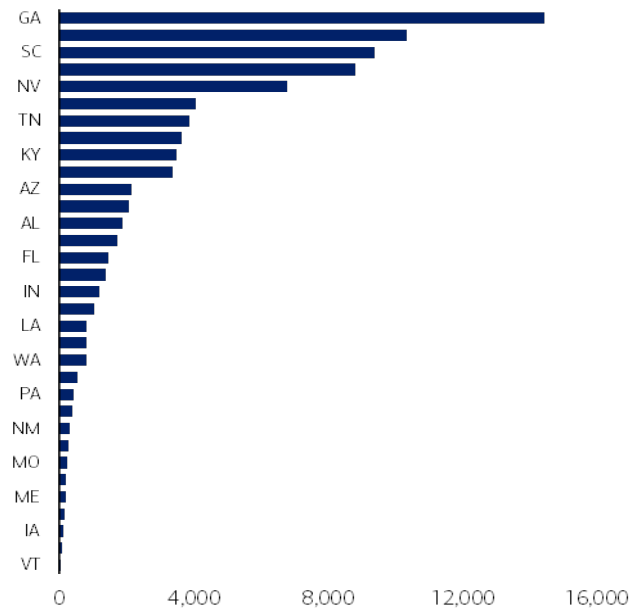
Now, as the first anniversary of the IRA approaches, we break down the bill and discuss what you need to know about its biggest areas of impact.

1. A surge in clean, renewable energy projects

Since the end of 2021, real manufacturing construction spending has doubled in the US, largely driven by stimulus packages like the Infrastructure Investment and Jobs Act (IIJA), Creating Helpful Incentives to Produce Semiconductors and Science Act (CHIPS Act) and IRA (Exhibit 2). According to the Brookings Institution, this fiscal impact has contributed to a 500 basis points (bps) boost in US GDP growth since Q2 last year, while manufacturing employment is also at its highest level since 2008.

Exhibit 1: Jobs generated by private clean economy projects announced post-IRA, 8/2022-6/2023

IRA driving job creation, particularly in GA, MI, SC, OH

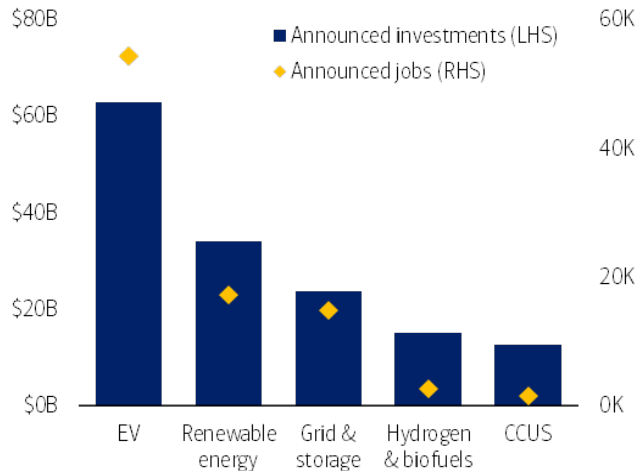


Source: BofA Global Research, E2 Clean Economy Works project tracker, The White House (invest.gov), IEA CCUS Projects Database. Not all projects disclosed the job amount.

According to BofA Global Research, while the biggest impacts of the Inflation Reduction Act (IRA) will begin in 2024 and 2025, thus far, more than 270 new clean energy projects have been announced, with investments totaling ~\$132 billion. Of total investment dollars, close to half went to EVs/ batteries, while the rest went to renewable energy (solar, wind, nuclear), grid and storage, carbon capture, utilization and storage (CCUS) and clean fuels (Exhibit 3). These investments are expected to be accompanied by over 86,000 jobs, including 50,000 jobs related to EVs.

Exhibit 3: Investments into and jobs generated by private clean economy projects post-IRA, 8/2022-6/2023

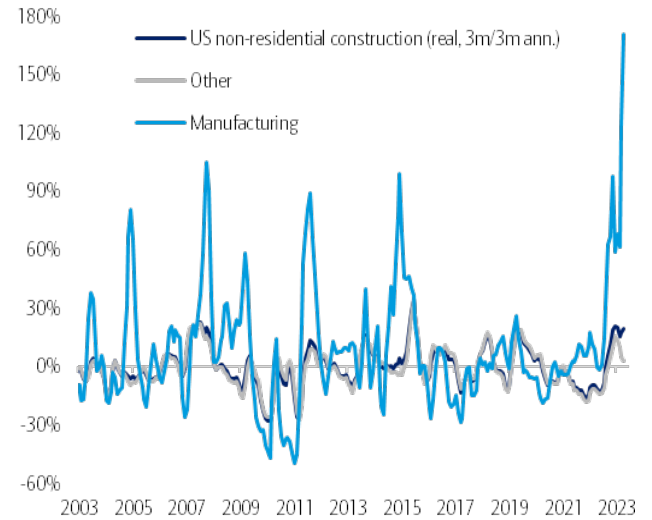
Clean economy projects have announced >\$132bn in investments, >86K jobs



Source: BofA Global Research, E2 Clean Economy Works project tracker, The White House (invest.gov), IEA CCUS Projects Database. Renewable energy includes solar, wind, and nuclear. Note that some projects are associated with more than 1 category. Not all projects disclosed the investment or job amount.

Exhibit 2: US non-residential construction growth

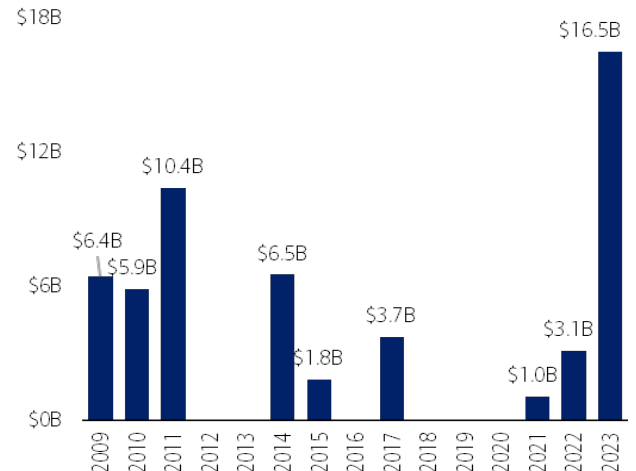
Strength within non-residential investment has come from manufacturing structures on the back of fiscal support



Source: BofA Global Research, Haver

Exhibit 4: Loans and loan guarantees issued to clean energy projects, 2009-6/2023

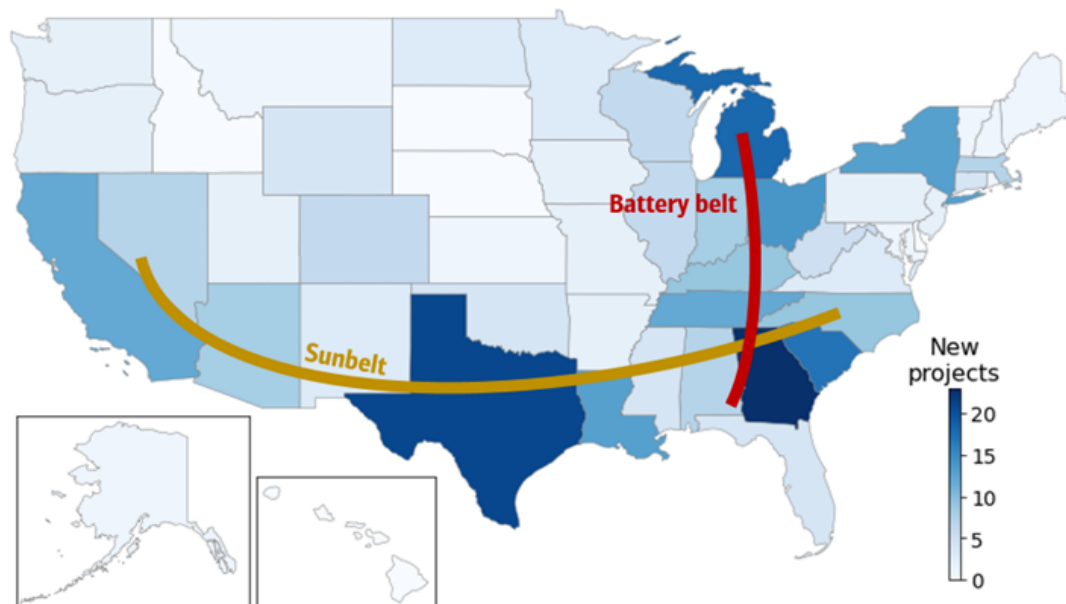
Post-IRA, the DOE has issued a record amount of loans to clean energy projects after years of near-dormancy



Source: US Department of Energy Loan Programs Office

Exhibit 5: Number of private clean energy projects announced since the passage of the IRA by state, 8/2022-6/2023

South and Midwest states have seen the highest number of new projects related to the clean economy



Source: BofA Global Research, E2 Clean Economy Works project tracker, The White House (invest.gov), IEA CCUS Projects Database

Clean energy tax credits have played a vital role in incentivizing wind and solar investments and newly announced renewable projects have a combined capacity of at least 25GW, enough to power 22 million homes.

The Production Tax Credit (PTC) and Investment Tax Credit (ITC) are federal incentives aimed at promoting renewable energy projects. The PTC provides an annual credit of \$26 per megawatt-hour adjusted for inflation, to owners of renewable energy facilities based on their electricity generation, helping to accelerate the production of solar panels, wind turbines, batteries, and process key minerals. On the other hand, the ITC offers a 30% reduction in eligible costs for facilities meeting specific labor requirements based on the capital investment made in renewable energy projects. The ITC is earned when the equipment is put into operation. There are further 10pp incremental adders for domestic content and energy community development that are stackable.

The IRA extends both PTCs and ITCs for clean energy projects placed in service from 2021 through 2024. Starting in 2025, the tax credits will transition from their current form to a new technology-neutral tax credit that is based on emissions. Renewable projects with zero emissions would qualify for the same PTC or ITC tax credit value as the 2021-2024 projects.

More importantly, for the first time, the bill has made two methods of monetization for commercial and utility-scale energy projects available – transferability and direct pay. Transferability allows project owners to sell tax credits to other taxpayers, providing cash flow / project financing. On the other hand, direct pay enables tax-exempt entities (local governments and nonprofits) to receive the equivalent value of tax credits as direct payments from the Internal Revenue Service (IRS). Under the previous tax code, tax credits were meant to directly benefit energy project developers, but many private/smaller developers lacked sufficient income tax liability to utilize these credits.

Solar

With solar capital expenditure being reduced by half in the last decade and photovoltaic (PV) systems becoming more efficient, the PTC offers significant advantages for many solar projects compared to the ITC, which still has relevance for projects with substantial upfront cash requirements. Customers stand to benefit primarily from higher tax credits, resulting in lower power purchase agreement (PPA) offtake prices. Projects with lower installed cost and higher capacity factors should elect protection tax credits rather than investment tax credits, all else equal.

Wind

The IRA provides ITC and PTC for wind projects that utilize domestic content. Initial guidance recently provided by the IRS and Department of the Treasury on domestic content bonus credits is expected to boost orders in the second half of 2023, as wind developers have been awaiting clarity before proceeding with orders. To qualify for domestic content bonus credits, a specific percentage of iron, steel, and manufactured products must be built in the US, starting at 20% for offshore wind and 40% for other projects, increasing to 55% for later projects.

Nuclear

Nuclear energy is also a big IRA beneficiary, receiving an estimated \$30 billion in production tax credits. Under an IRA provision, generators meeting certain criteria related to wages and revenues are set to receive a credit of up to \$15 per megawatt hour (MWh). Based upon current natural gas price forecasts, this supports ~\$42/MWh 2024 total compensation for unregulated nuclear plants as a support level. The average US nuclear plant cash cost is \$29/MWh in 2021 per the US Nuclear Energy Institute (NEI). This implies ~\$10/MWh cash margin in 2024 and compares with many nuclear plants being cash flow negative in the late 2020s. BofA Global Research Utilities fundamental analysts note that the IRA does a good job creating equivalency in carbon neutrality between nuclear and renewables in a way that they have yet to see historically.

Consumer accessibility

And consumers benefit, too. Several tax credits and other financial incentives are made available with the aim to making clean energy options more accessible for consumers, particularly lower- to middle-income consumers. From the beginning of this year, homeowners qualify for up to 30% in tax credits (up to \$3,200) for energy efficient improvements made (clean water heaters, heat pumps, biomass stoves etc.). In addition, the residential clean energy credit grants homeowners a 30% tax credit for renewable energy equipment purchases and installation. Since August 2022, over 24 million customers served by utilities were informed of \$4.8 billion in savings (source: American Clean Power).

Credits include:

- **179D Energy Efficient Commercial Buildings Deduction:** Overall, the IRA dedicates \$161 billion for clean electricity tax credits. 179D is a credit for commercial buildings, claimed by the owner or designers of the property (engineers, architects, etc.). The IRA modifies the 179D tax credit to provide higher maximum tax deduction. The IRA also lowers the threshold to qualify for the deduction: to qualify, the building must reduce energy and power by 25%, lower than the previous 50% requirement. The IRA also expands qualification of this credit to REITs (Real Estate Investment Trusts), which will be able to apply the deduction against earnings.
- **45L New Energy Efficient Home Credit:** This credit allows eligible developers to claim a tax credit for each dwelling unit that complies with the ENERGY STAR Residential New Construction Program or the Manufactured Homes Program. The IRA extends the 45L tax credit to 2032 and makes it more profitable by increasing the maximum credits. Single-family homebuilders and multi-family developers both can benefit from the credit.
- **HOMES Rebate:** The HOMES rebate is estimated to be ~\$4.3 billion in funding for achieving modeled energy efficiency increases for single- and multi-family homes.
- **High Efficiency Electric Homes Rebate:** This rebate provides reimbursement to consumers for electrification, based on income. It is funded by the federal government at ~4.5 billion for ten years, but the rebates will be delivered by the state.
- **25C Energy Efficient Home Improvement Credit:** This credit allows homeowners to make energy-efficiency upgrades and reduce their taxes by 30% of the total improvement cost. The IRA extends 25C to 2032.

2. Energy storage and expanded infrastructure

The IRA includes provisions to support energy storage technologies and expand transmission infrastructure. Previously, battery energy storage had to be directly connected to renewable generators for a significant portion of the year to qualify for tax credits. However, the IRA now allows standalone energy storage systems to qualify, regardless of their connection to renewables. Additionally, the IRA provides \$5 billion in loans for constructing and modifying generation and transmission facilities. These investments aim to accelerate the development of transmission infrastructure, improve grid reliability, and enable the sharing of surplus energy across regions.

Energy storage systems (ESS)

Under the IRA, energy storage systems (ESS) qualify for up to 50% ITC until 2032, followed by a phasedown post-2032. 30% of this comes from the base ITC, however, the IRA also introduces two additional incentives to support energy storage systems (ESS). Firstly, the “+10% energy community adder” encourages the development of ESS projects in designated energy communities, including retired coal plants and areas with significant fossil fuel employment. Additionally, the “+10% domestic content adder” promotes the use of US-sourced materials in ESS facilities, although the challenge lies in sourcing battery materials due to limited visibility in the US supply chain. That said, the IRA allows for exceptions to these requirements under specific circumstances, providing flexibility in meeting the domestic content criteria.

3. An aging US grid

The aging US grid is straining, with average outages between 2015-20 more than double those of 2009-14. The Federal government is investing \$29 billion in the US grid across the Infrastructure Investment and Jobs Act (IIJA) and the IRA. The IRA also makes ITC and PTC available for microgrid components.

The need for grid investment is accelerating thanks to the increasing number of net zero pledges as well as increasing EV adoption. More renewable energy and more EVs lead to increasing variability in demand for the grid. At the same time, building electrification, heat pumps and water heaters, which use electricity, will further put pressure on grid capacity. Looking across some of the larger grid operators and utilities shows US annual spending plans have increased by 5-10%. BofA Global Research Industrials analyst's capex estimates envisage 7% CAGR 2023-25E vs 6% CAGR over the last decade, whereby 50% of transmission & distribution capex is tied to electrical equipment and the other half going to structures (e.g., towers & wires) and installation costs.

4. Clean fuels and biofuels

The IRA also introduces various tax credits to support clean hydrogen fuel, biofuels, and sustainable aviation fuel. These include:

- **45V New Clean Hydrogen Production Tax Credit:** Creates a 10-year support for clean hydrogen production
- **45Z New Clean Fuel Production Credit:** Establishes a technology-neutral 2-year tax credit for low-carbon transportation fuel
- **40B New Sustainable Aviation Fuel (SAF) Credit:** Provides an incentive to reduce aviation transportation emissions
- **45Q Carbon Capture and Sequestration Tax Credit:** Enhanced for carbon capture and direct air capture
- **Extension of Second-Generation Biofuel Incentives through 2024**
- **Extension of Biodiesel and Renewable Diesel Credit through 2024**

Clean hydrogen

Hydrogen production can occur through hydrocarbons or electrolysis, with the latter requiring significant electricity but having no direct greenhouse gas emissions. Clean hydrogen can be produced using nuclear energy ("pink" hydrogen), renewable energy ("green" hydrogen), or by utilizing steam generated from carbon capture, utilization, and storage (CCUS) ("blue" hydrogen).

Two tax credits under the IRA incentivize clean hydrogen production: the 45V Hydrogen Production Tax Credit and the 45Q Carbon Sequestration Tax Credit. These credits apply to facilities commencing construction after December 31, 2022, and continue through the end of 2032, and help reduce the costs associated with clean hydrogen and carbon capture technologies, which are vital for heavy industries aiming to lower emissions.

The 45V Hydrogen Production Tax Credit provides up to \$3 per kilogram of hydrogen produced, but it has stringent rules for capturing the full credit, requiring emissions intensity below a certain threshold. While the new hydrogen credits in the IRA still result in higher prices for green hydrogen compared to grey alternatives, there are currently economic opportunities in bio-refining, particularly for renewable diesel (RD) and sustainable aviation fuel (SAF). These processes utilize a significant amount of hydrogen for hydrogenation processes and have an incentive to minimize carbon intensity, driven by California Low Carbon Fuel Standard (LCFS) credits.

However, many are eagerly awaiting the Internal Revenue Service (IRS) guidance on hydrogen tax credit eligibility primarily related to (1) additionality; and (2) seasonality. For additionality, the question is whether new generation resources will be required to be used for the production of zero carbon hydrogen or whether existing resources will qualify for the credit. If there is a tight concept of additionality in the guidelines, existing nuclear plants would not be eligible for the tax credits as an example.

Second, the matching of zero carbon electricity and hydrogen production remains uncertain. The strictest interpretation would require hourly/real-time matching of hydrogen production and electricity production. This would effectively limit the utilization of the electrolyzer and reduce the economics of the project. If there is a looser standard of monthly/seasonal/annual matching, the renewables can be oversized to generate more electricity during some periods to "match" the electrolyzer utilization over an extended period of time. Of course, there could be guidelines that blend the approaches and have increasing compliance standards over time, akin to some of the domestic content standards.

Biofuels

The IRA includes a 30% biogas ITC to assist project developers in offsetting the upfront costs of constructing biodigester systems, such as Renewable Natural Gas (RNG) systems. Projects that produce biogas containing at least 52% methane qualify for this credit. The IRA also proposes an extension of the biodiesel and renewable diesel tax credits for an additional two years, along with the extension of alternative fuel and alternative fuel mixture credits. The second-generation biofuel incentives, specifically sustainable aviation fuel credits, are also set to be extended.

Sustainable aviation fuel (SAF)

The IRA also provides two key incentives to promote sustainable aviation fuel production. Firstly, it extends the federal blenders tax credit (BTC) of \$1/gallon from YE22 to YE24. Secondly, it introduces a standalone blending credit for SAF, ranging from

\$1.25 to \$1.75 per gallon, surpassing the credit values for other renewable fuels like RD. The new SAF credit, starting in 2023 and expiring in 2024, applies to SAF that reduces lifetime emissions by at least 50% compared to standard jet fuel. The credit increases by 1 cent per gallon for each percentage point above 50%, with a maximum of \$1.75 per gallon.

5. Carbon Capture, Use & Storage (CCUS)

One of the key long-term goals of the IRA is its potential to achieve a 33%-40% reduction in economy-wide greenhouse gas emissions to below 2005 levels by 2030. The US industrial sector accounts for close to one-third of total emissions and is among the most difficult to decarbonize. Electrification, green hydrogen, and carbon capture are some of the decarbonization solutions incentivized by the IRA, that could reduce emissions from the hardest-to-abate industry subsectors, particularly steel, cement and chemicals, but widespread adoption is still in its early stages.

Carbon capture projects announced post-IRA have an announced removal capacity of ~1,800 metric tons of carbon dioxide (CO₂) per year (equivalent to the annual CO₂ emissions of approximately 390 cars). But the industry is still nascent and faces commercialization and cost challenges. To drive further innovative solutions in the sector, in March 2023, the IRA launched a \$6 billion Industrial Demonstrations Program. Funding of up to 50% of the cost of each project will be made available, representing a \$12 billion opportunity for first-of-a-kind or early-stage commercial-scale projects. Last month, the DOE announced \$135 million in grants for 40 projects prioritizing five emission-intensive sub-sectors.

BofA Global Research's fundamental analysts expect a sharp inflection in CCUS development activities as technology has improved to a point that numerous opportunities are now 'economic' under the new tax credit regime (baseline \$60-85/tonne credit). Rhodium Group has projected that the IRA could boost installed US carbon capture and direct air capture (DAC) capacity by 35-40% by 2030 (100-103 million metric tons (MT) capacity vs 74 MT without IRA). Given that the IRA continues to incentivize further carbon capture and DAC deployment until 2033, they estimate that, by 2035, the provision can help to more than double installed carbon capture and DAC capacity from 2030 levels, to 266-313 million metric tons of installed capacity.

The IRA contains a number of supportive adjustments to the 45Q tax credit, a crucial incentive for CCUS projects:

- Tax incentives for point-source capture and dedicated storage (previously \$42/tonne in 2023 going to \$50/tonne in 2026) are raised to \$85/tonne starting in 2023 (and inflation-linked after 2026)
- Direct air capture (DAC) tax credits are raised from \$50 (in 2026) to \$180/tonne for CO₂ heading to storage (\$35 to \$130/tonne heading to enhanced oil recovery (EOR)/Utilization)
- Direct Payment becomes an option for the first five years of a project allowing companies to claim cash payments, rather than build up tax credits to be used to offset income under the current 45Q
- Minimum project volumes required to qualify for the 45Q tax credit are extremely low (96%/99% reduction in annual threshold for electric generating facilities and DAC projects respectively)
- Construction start date requirements are extended until January 1, 2033

6. Electrifying the auto industry

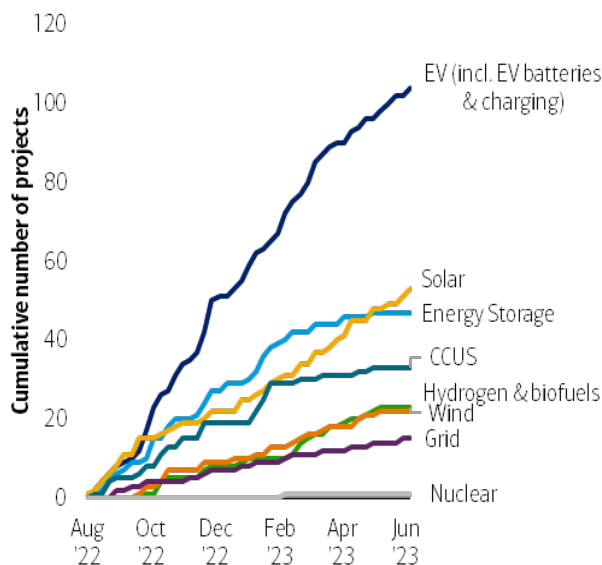
Automakers and their suppliers have announced more than \$62 billion in investments in electric vehicles (EVs) – more than double the amount of domestic EV investments announced in 2020 (Exhibit 6). Newly announced projects would expand annual battery production capacity by over a million EV batteries, while also increasing production capacity for EV chargers and EVs. The ramp up can be attributed to the passage of the Bipartisan Infrastructure Act in 2021 and the subsequent implementation of the IRA. However, it's important to note that most of these projects are planned for construction between 2023-25, with completion scheduled for 2025-26.

The Department of Energy (DOE) has played a significant role in this growth by announcing \$19 billion in loans specifically targeting clean energy projects. Of this amount, \$16 billion has been directed towards projects related to EV-related projects, while \$3 billion has been allocated for solar initiatives.

From a consumer perspective, the clean vehicle tax credits from the IRA should improve the affordability of EVs, which as discussed in [EVs: When electric dreams become reality](#), may drive greater demand in the short term and help in pushing penetration rates for alternative powertrain vehicles higher over the long term (Exhibit 7). However, elevated raw material prices for batteries, coupled with burgeoning demand for alternative powertrains, could actually push EVs prices higher in the near term.

Exhibit 6: Cumulative number of projects announced since passage of IRA, 8/2022-6/2023

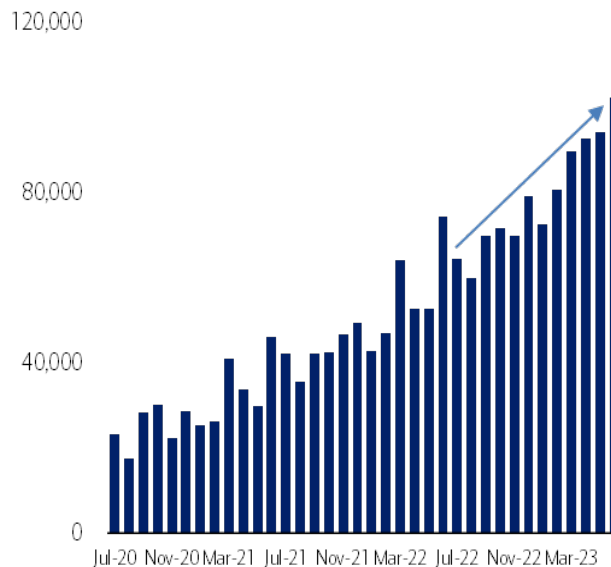
Over 270 projects related to the clean economy have been announced



Source: BofA Global Research, E2 Clean Economy Works project tracker, The White House (invest.gov), IEA CCUS Projects Database. Note that some projects are associated with more than 1 category.

Exhibit 7: New EV sales in the U.S. (absolute number)

EV sales grew by +70% since the passage of IRA



Source: Wards Auto, BofA Global Research

The IRA offers the following tax credits on clean vehicles as well as incentives for new battery production:

- **New cars:** Up to \$7,500 tax credit available. Estimates provided by the Congressional Budget Office (CBO) seem to imply that through 2030 just over 800,000 vehicles sold will qualify for the tax credit (with a run-rate of only 170,000 in 2030). This would equate to only 0.5-1% of total US vehicle sales over that time.
- **Used cars:** Up to \$4,000 tax credit available, or 30% of sales price. Based on CBO estimates, BofA Global Research estimates that this tax credit could apply to around 50,000 vehicles by 2030. As a point of reference, roughly 40 million used cars are sold annually in the United States.
- **Commercial vehicles:** Up to \$40,000 tax credit available. A rough analysis by BofA Global Research based on the CBO data suggests that tax credits from the IRA could apply to around 2% of annual commercial vehicle sales.
- **Incentives for new battery production:** The CBO estimates that \$31 billion in advanced manufacturing production tax credits will be granted over the next 10 years, though this includes credits for photovoltaic cells/wafers, solar modules, and wind energy components, among others.

Qualification for the electric vehicle (EV) tax credit

Eligibility for the EV tax credit is dependent on the inputs to make and model and controlled by the OEMs' (original equipment manufacturers') relative supply-chains setup. In principle, the qualification test is still broken into a two-part test to obtain the full \$7,500 eligible value:

- **Critical Minerals:** Per the Treasury, to meet the critical mineral requirement and be eligible for a \$3,750 credit, the applicable percentage of the value of the critical minerals contained in the battery must be extracted or processed in the US or a country with which the US has a free trade agreement or be recycled in North America – as mandated by the IRA. Applicable percentages start at 40% in 2023 and scale by 10% annually through 2027 (to a cap of 80%).
- **Component Assembly:** Per the Treasury, to meet the battery component requirement and be eligible for a \$3,750 credit, the applicable percentage of the value of the battery components must be manufactured or assembled in North America – as mandated by the IRA. Applicable percentages start at 50% in 2023, scaling to 60% in 2024/25 and 10% annually from there until components must be 100% US sourced in 2029.

A boost for metals & mining

Did you know that a typical EV needs six times the minerals of a conventional automobile and building an onshore wind plant requires nine times the minerals that would go into a gas-powered installation? According to BofA Global Commodity Research

analysts and Metals & Mining analysts, the IRA’s energy transition incentives are set to boost demand for the critical minerals used in batteries as well as for steel, which is needed for onshore and offshore wind and solar.

EVs, for example, require at least 13 different critical metals. As discussed above, half of the EV tax credit is linked to the origin of the batteries and half is linked to that of the raw materials used in the electric cars. Given where supply is coming from, our BofA Global Research analysts note that these thresholds may be easiest to achieve for lithium and more difficult for nickel. Under the status quo, cobalt is unlikely to make a meaningful contribution toward qualifying for the tax credit, because it is mostly mined in the Democratic Republic of the Congo (DRC) and processed in China. As such, there is a stronger case to increase market penetration rates of lithium iron phosphate (LFP) batteries, which do not contain nickel or cobalt and which are used predominantly in China for now.

7. Impact on international investment

The potential consequences of the IRA and its impact on international investment are raising concerns as the IRA involves significant relocation of production capacities to the US – which would have positive effects on Mexico and Canada but could result in production losses for the European Union (EU) and China.

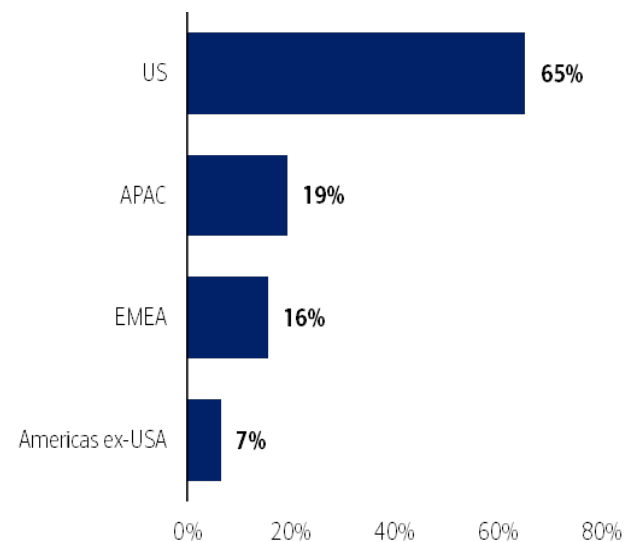
While two-thirds of newly announced projects have come from US companies, foreign companies on average have promised larger investments with the majority being allocated to EV-related projects (Exhibit 8 and Exhibit 9). The bill has lured major foreign auto and battery manufacturers through its strict battery sourcing and assembly requirements.

South Korean companies account for nearly as many of the promised investment dollars as US companies (\$75 billion), with major EV battery and components players announcing new investments. Additionally, prominent OEMs (original equipment manufacturers) are actively expanding their EV supply chains to ensure sufficient sourcing for future demand and increase the number of vehicles eligible for IRA tax credits.

With newly added capacity, BofA Global Research Industrial analysts expect the center of gravity for EV-related investments to shift away from China and more towards North America and Europe. In fact, North American BEV market growth between 2022-35 is expected to be roughly 20%, which is the highest growth among regions and 2x that of Greater China.

Exhibit 8: Percent of private clean economy projects announced post-IRA, by investor’s region (some projects had investors across multiple regions)

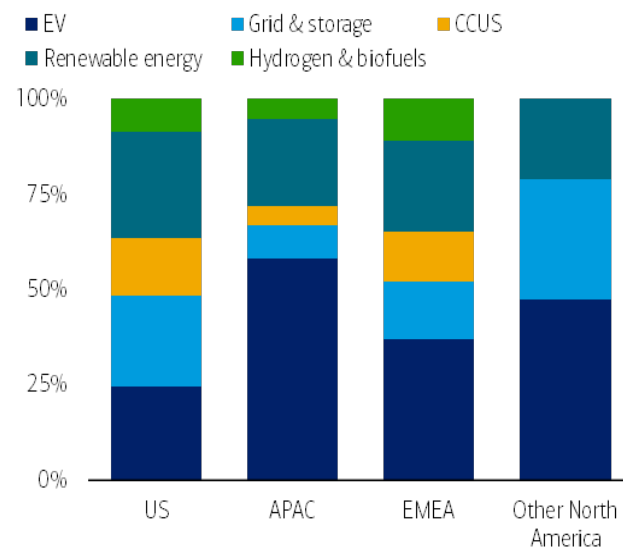
40% of projects included a foreign investor



Source: BofA Global Research, E2 Clean Economy Works project tracker, The White House (invest.gov), IEA CCUS Projects Database.

Exhibit 9: Percent of private clean economy projects announced post-IRA by region and technology, 8/2022-6/2023

Foreign projects in the US focused on EV/supply chain



Source: BofA Global Research, E2 Clean Economy Works project tracker, The White House (invest.gov), IEA CCUS Projects Database. Renewable energy includes solar, wind, and nuclear.

More broadly, the IRA has reportedly sparked concerns in Europe that “green industries” might choose to relocate their production to the US, creating potential disadvantages for EU-based companies and the EU’s clean tech sector. In response, the EU took action by unveiling a green industrial plan in February 2023, followed by the introduction of the Net-Zero Industry Act (NZIA). These initiatives aim to foster the development of a clean European technology industry, enabling the region to achieve its 2030 and 2050 net zero targets while building self-dependency.

Under the NZIA, eight key net zero technologies have been identified, namely solar photovoltaic, wind, battery/storage, heat pumps, electrolyzers, sustainable biogas/biomethane, carbon capture and storage (CCS), and grid technologies. The commission estimates that at least €92 billion of investment will be required in its core scenario to achieve approximately 85% net zero technology independence by 2030. Battery cells are expected to account for the majority of this investment (66-79% according to EU estimates), presenting a significant opportunity for the chemical industry. Notably, Europe currently holds a relative leadership position in the wind turbine sector.

8. Agriculture and forestry

The IRA includes provisions for agricultural conservation, agricultural credit, renewable energy, and forestry. It provides \$19.5 billion for agricultural conservation programs, supporting climate goals and prioritizing mitigation efforts. The act offers debt relief for distressed farm borrowers and assistance for underserved farmers. It allocates funds for renewable energy initiatives, including electric loans, grants for renewable energy projects, and infrastructure improvements for biofuels. In forestry, \$5 billion is provided for forest management and restoration activities. Grant programs aim to support climate mitigation and innovative wood products, with a focus on underserved forest landowners.

9. Health care affordability

An important social initiative included in the IRA aims to tackle the issue of medicine affordability and accessibility. In the US, prescription drug prices are 2-3x more expensive than those in 32 OECD (Organization for Economic Cooperation and Development) countries (source: RAND Corporation). The bill includes measures such as capping Medicare Part D (prescription drugs) patients' out-of-pocket costs at \$2,000 per year and implementing penalties on drug companies that inflate prices in Medicare beyond the rate of inflation.

While Medicare drug price negotiation provisions will not take effect until 2026, other smaller reforms have started to come through. In June 2023, a list of 43 prescription drugs (whose prices rose faster than the rate of inflation) was announced, potentially leading to lower Part B beneficiary coinsurances between July 1 and September 30, 2023, which means that some individuals taking these drugs while on Medicare may save between \$1 and \$149 per average dose starting from July 1.

Key health care-related provisions in the IRA, include: 1) Medicare drug pricing reforms and negotiation authority; 2) inflationary rebates for Medicare Part B and Part D drugs; 3) Medicare Part D benefit redesign; 4) delaying the Pharmacy Benefits Manager (PBM) Rebate Rule until 2032; 5) extending Affordable Care Act (ACA) premium subsidies for three years until 2025; and 6) capping insulin out-of-pocket costs for Medicare beneficiaries at \$35 per month. Note that the Medicare drug price negotiation provision will not take effect until 2026, and will only apply to 10 drugs to start, ramping up over the following years.

10. Reducing emissions while empowering communities

Outside environmental goals, the IRA also supports various social policies. Over 10% of total IRA spending is dedicated to environmental justice commitments, which is supportive of marginalized communities that tend to be disproportionately affected by pollution and negative health impacts. Other than basic provisions that link tax credits to prevailing wage and/or apprenticeship requirements, the IRA provides a 10-20% boost on top of the existing 30% investment tax credit for qualified wind or solar energy property in low-income communities.

Importantly, the bill also promotes a just transition by going beyond tax credits. One such example is the Greenhouse Gas Reduction Fund (GGRF), which provides competitive grants. In July 2023, under the \$27 billion GGRF, the US Environmental Protection Agency (EPA) launched a \$7 billion competition to allow low-income and disadvantaged communities to take advantage of residential solar. In the coming weeks, the EPA will also launch a \$14 billion National Clean Investment Fund (NCIF) grant competition to support the deployment of clean technologies across the country and a \$6 billion Clean Communities Investment Accelerator (CCIA) grant competition to ensure that members of minority communities have access to capital for green finance.

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Disclosures

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