

BlackRock

Investment implications of U.S. transition policy

Assessing the impact of the Inflation Reduction Act and other recent legislation on the transition to a lower-carbon world.

BlackRock
Investment
Institute

January 2023



Summary

- **The transition to a lower-carbon economy is a driver of investment risk and return for our clients' portfolios – so we track it just as we do other drivers, like monetary policy.** The U.S. Inflation Reduction Act, passed in August 2022, contains a range of measures to spur the transition. It's unlikely to be enough, on its own, for the U.S. to meet its climate objectives, but we see it as consistent with our view that the transition is likely to accelerate over time – with bumps along the way.
- We focus here on the economic and investment implications of the Act and other recent infrastructure and science legislation in the U.S. We think the new Act will do little to lower current inflation but its nearly US\$400 billion in tax incentives, rebates, grants and loans is likely to trigger greater investment in, and demand for, low-carbon energy infrastructure and technology. **We see it cutting low-carbon technology costs, creating incentives for private investment and spurring domestic manufacturing.**
- **The Act's investment and demand push could also help spur innovation in certain nascent transition technologies**, like carbon capture, utilization and storage (CCUS), next-generation nuclear and clean hydrogen. We think this innovation spending could reduce the "green premium" in currently hard-to-abate sectors like heavy industry and transport.
- The policy shift will likely diversify the geographic footprint of low-carbon technology manufacturing, which is now dominated by China. **We see it reducing U.S. reliance on China for minerals and metals needed for renewable energy.**
- **The legislation could influence other countries to adopt similar policies.** Trading partners left disadvantaged may be spurred to compete to fund deployment and innovation of transition technologies.
- **The larger incentives in the Act are prompting competition concerns in the European Union (EU).** The European Commission has called for similar state subsidies and has just passed the world's first carbon border tax to help protect domestic industry. We don't see much impetus for similar policies in emerging markets (EMs) that lack the same capacity for public spending. Plus, it has typically been more difficult for EMs to attract private capital at scale.
- The Act risks some economic inefficiencies if the technologies and sectors at which the subsidies are directed do not ultimately prove to be the lowest cost. And we see potential barriers to implementation. The transition will likely drive sharp demand shifts in the economy, reinforcing supply constraints and bouts of higher inflation. The transition is one driver of the new regime of greater macro and market volatility. **We believe this new regime means inflation will be more persistent longer term and supports our preference for inflation-linked bonds and infrastructure debt.**
- **The Act's investment implications depend on the extent to which its effects are already in market prices.** Our current assessment is that the broad sector and macro effects are not yet fully priced. We believe portfolios that include transition-linked investments are likely to add returns over time as an accelerating transition gets more fully priced. This means looking at sectors and companies that could benefit from coming investment. Yet it bears constant monitoring at a very granular level. If some assets seen benefitting become overpriced, we would tilt portfolios away from them, even as we see the transition accelerating.
- We believe investing in companies that are carbon-intensive today is not necessarily at odds with the transition. With global energy demand still increasing, we believe **demand for traditional energy is likely to be sustained in the medium term in most transition paths**, even as renewable energy supply is built out.

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Breakdown of public spending

The Inflation Reduction Act, signed into law in August 2022, earmarks nearly \$400 billion of public spending in the form of tax incentives, rebates, grants and loans, according to the [Congressional Budget Office \(CBO\) estimate](#). Yet given that more than half of the incentives are uncapped – meaning the credits are available to as many as wish to take advantage – some [analyses suggest](#) the true fiscal cost could be more than double that. Below we detail some of the specific measures in this and other recent legislation.

Clean electricity: Tax credits for electricity make up the largest component of the total public investment under the Inflation Reduction Act. See the chart below left. That’s partly by extending and expanding clean electricity tax credits for the next 10 years, with extra credits for projects that meet labor and domestic production rules.

Low-carbon tech R&D: Across three recent pieces of legislation, over \$100 billion of funding is directed to early-stage support for new low-carbon technology, including CCUS, nuclear fusion and hydrogen. See the pie chart below right. Investments range from basic energy science, national lab infrastructure and critical materials research to demonstration and regional “hub” funding for scaling hydrogen and CCUS.

Transportation: Investments and incentives are available for EVs, related infrastructure and workforce development – as is support for communities with heavy air pollution.

The new Act includes \$2 billion of grants to support domestic production of hybrid, plug-in EV and hydrogen fuel cell vehicles. Purchasers of an EV receive tax credit of up to \$7,500 if the vehicle is new and up to \$4,000 if it is used. The cap on the number of EVs per manufacturer eligible for tax credits has been removed. Tax credits also apply to sustainable aviation fuels and biodiesel.

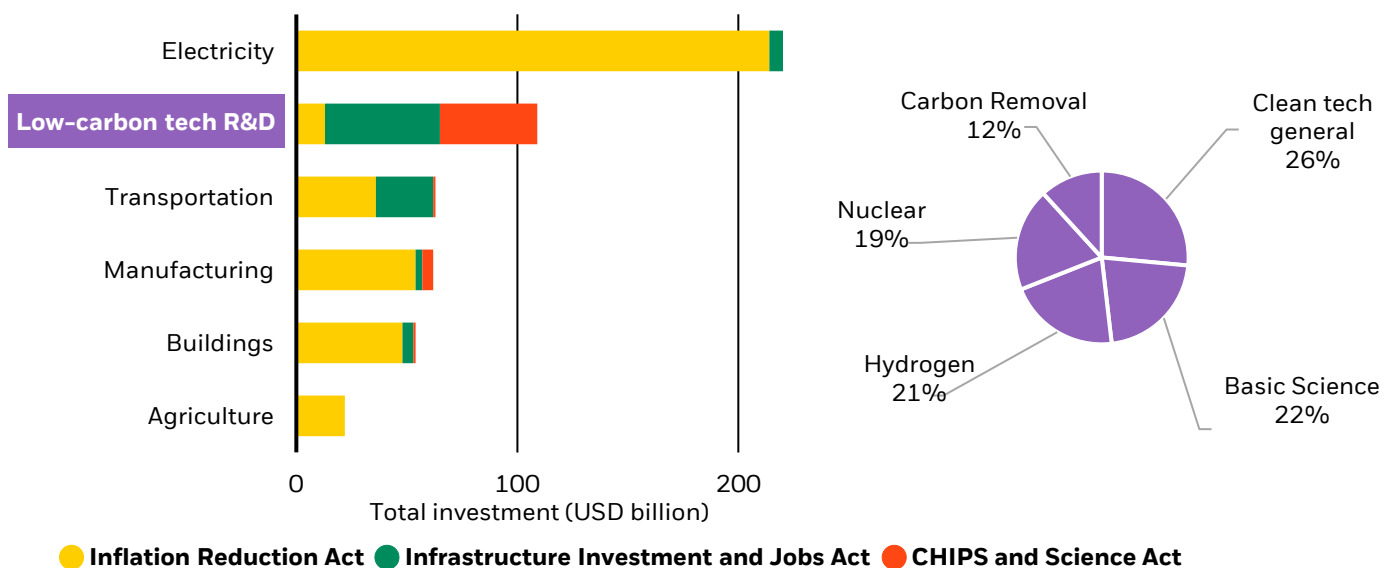
Manufacturing: Tax credits are provided for solar panels, wind turbines, batteries, critical minerals processing and clean hydrogen. We see potential for the law to help scale CCUS as well as direct air capture through both demand-side (tax credits) and supply-side (R&D) incentives.

Buildings: Measures include rebates for high-efficiency electric appliances and whole-home energy retrofits, with incentives for heat pump water heaters, electric wiring upgrades and insulation. The residential energy efficiency tax credit is enhanced and extended for 10 years. There are also incentives for energy efficiency in commercial buildings and new homes.

Traditional energy and other: Some public land can be used for fossil fuel development. But penalties are now imposed for methane emissions above federal limits. Complementary legislation was [discussed](#) to help speed up the permitting process for energy infrastructure – but its passage now seems less certain. Some \$27 billion is also set aside for a [Greenhouse Gas Reduction Fund](#) to help fund state and local green banks and source private investment. In agriculture, there’s funding for conservation and restoration programs.

Significant public spending

Breakdown of public investment in this year’s major climate-related U.S. legislation, December 2022



Source: BlackRock Investment Institute and Rocky Mountain Institute, December 2022. Notes: The chart shows a breakdown of estimated investment and incentives in this year’s major U.S. legislation that had climate-related elements – the Inflation Reduction Act, the Infrastructure Investment and Jobs Act and the CHIPS and Science Act – as estimated by RMI (see <https://rmi.org/climate-innovation-investment-and-industrial-policy>) The analysis should be considered approximate and may be updated or refined by subsequent analysis.

Cost impact and spillovers

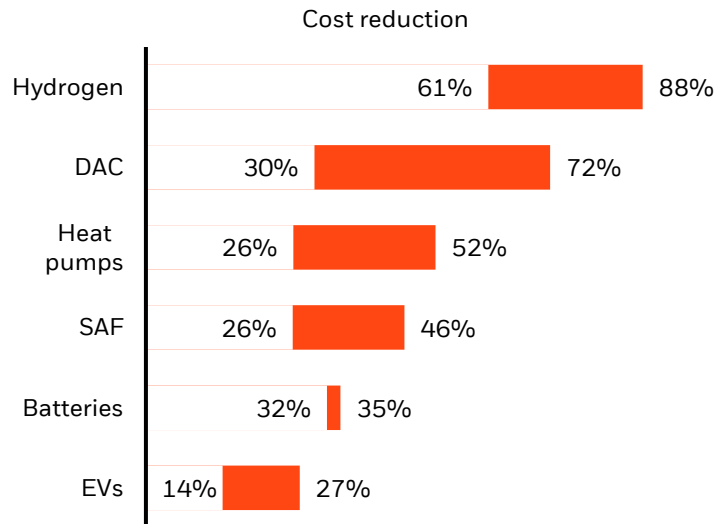
As the Inflation Reduction Act was passed relatively quickly following its announcement, we have since seen more detailed analysis of its potential impact. Many analyses have come to the same conclusion: the law's many fiscal incentives will result in substantial cost reductions across many types of low-carbon technologies over time, resulting in their greater deployment. The chart on the right compiles a number of direct cost reduction estimates. Taking the midpoint of these estimates, we could see costs falling by about 20% for EVs all the way up to 70% for clean hydrogen. Plus, if the Act and other legislation leads to substantial cost reductions in emerging technology like green hydrogen and CCUS, that could boost adoption well beyond U.S. borders – just as huge investment in, and subsidies for, solar slashed costs and helped hasten global adoption.

The climate provisions of the Act largely represent industrial policy that provides subsidies to specific technology or sectors. But that means it is directing capital in ways that could create inefficiencies, in our view. And there could be barriers to implementation. Because the Act focuses on incentives and not mandates, the ultimate amount of investment will depend on the extent to which two important barriers can be overcome: 1) the requirements for local content and scaling up the supply of materials, and; 2) the need for reforms to support securing sites in a timely way – both for power generation and transmission infrastructure.

The implications for trade and geopolitics are quickly being noted, too. The incentives linked to domestic requirements – to build up domestic sourcing and production of minerals and metals needed for renewable energy – were aimed squarely at China, a key supplier now. We have seen some criticism about the subsidies and incentives in [the UK](#) and [Canada](#). But the competition tensions over the Act have been most notable in Europe given the region's ongoing energy crisis. The Act's incentives are so large that some European companies are starting to consider moving low-carbon technology manufacturing facilities to the U.S. from Europe. That has prompted the EU to consider a response, recently focused on providing similar [state subsidies](#). This has become a hot topic of diplomacy between the U.S. and EU, as seen with French President Emmanuel Macron directly challenging the U.S. at a summit last December. This flashpoint in the economic relationship and Europe's response will be key to watch in coming months, in our view. The EU has also recently agreed a deal on another transition-related competitiveness policy – the [carbon border adjustment mechanism](#), where the carbon content of imports will be taxed. This will bring climate policy directly into global trade rules for the first time.

Cheaper tech

Inflation Reduction Act potential tech cost reduction, 2022



Sources: BlackRock Investment Institute and ClimateTech VC, "[IRA and the New Capital Cost of Climate](#)", December 2022, with cost estimates from Rhodium Group (hydrogen, sustainable aviation fuel), [BloombergNEF](#) (batteries), [Modernize](#) (heat pumps), [WRI](#) (direct air capture), [IEA](#) (carbon capture and storage), [InsideEVs](#) (EV). Assumes SAF prices estimated in 2027 and hydrogen prices estimated in 2030. Discounts are estimated based on credits by category in the Inflation Reduction Act.

Transition-related policy developments are quickly progressing around the world. Europe's drive for greater energy security has also prompted it to double down on efforts to build low-carbon energy infrastructure. The clearest example of that is the European Commission's [RePowerEU Plan](#).

Yet total global annual investment would need to triple to achieve net-zero carbon emissions by 2050, according to [IEA estimates](#). It's possible the Inflation Reduction Act will achieve this sort of scaling in the U.S. (see page 4), but other countries are yet to implement policies of the same magnitude. Plus, the Inflation Reduction Act could displace investment elsewhere. And EMs, who account for [more than a third](#) of global carbon emissions (excluding China), continue to face [financing challenges](#). Recently, major economies have joined together to help finance renewable energy projects in important emerging economies. For example, at COP27 the U.S. and Japan led a [group](#) to facilitate \$20 billion of public and private financing of renewable energy projects for the next three to five years in Indonesia, helping enable the early retirement of its coal-fired power plants.

Incentives for private investment

As outlined on the previous page, we think the Inflation Reduction Act will – both directly and indirectly – bring down the cost of low-carbon technology over time. That should, in turn, boost demand for it and spur private investment in supply capacity.

The uncapped nature of the tax credits means it’s hard to know how much investment will result. Estimates suggest total public and private investment could quadruple by 2035, when you also take into account past legislation aimed at raising investment and demand for renewable energy infrastructure and technology. See the chart below left. Many incentives are tied to domestic content rules, so capital investment in manufacturing capacity is already ramping up. Several large manufacturing announcements have been made in the few months since the Act was signed. We estimate that nearly \$40 billion of new investment has been announced in battery, EV and solar panel manufacturing, based on our compilation of media reports. Domestic solar panel manufacturing capacity is set to be nearly double the amount of solar installed in the U.S. in 2021. Some of that newly announced investment is coming from overseas: the Act’s incentives are available to foreign investors without a U.S. tax base, so we also see the potential for a large inflow of foreign capital to the U.S.

Whatever the ultimate amount of investment, we expect it to come across a broad range of sectors. REPEAT Project analysis shows the biggest investment is likely to be in wind and solar energy – but substantial investment is also likely in transmission, hydrogen, biofuels and fossil fuel power. See the chart below right.

We see that stimulating demand for a wide variety of low-carbon technologies such as renewable energy, heat pumps in buildings and electrified transport.

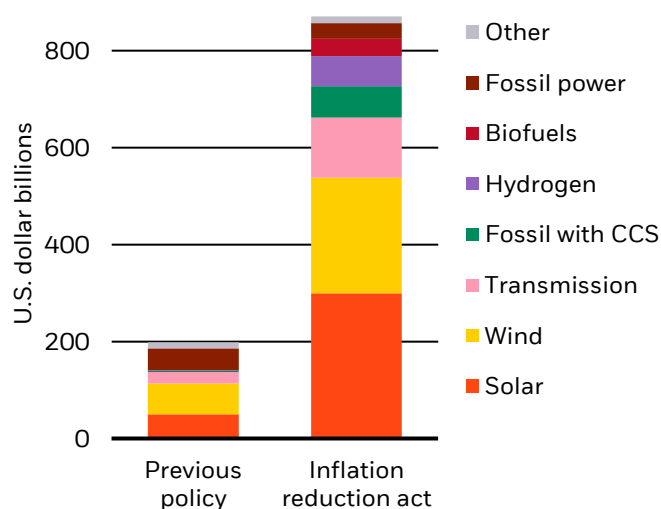
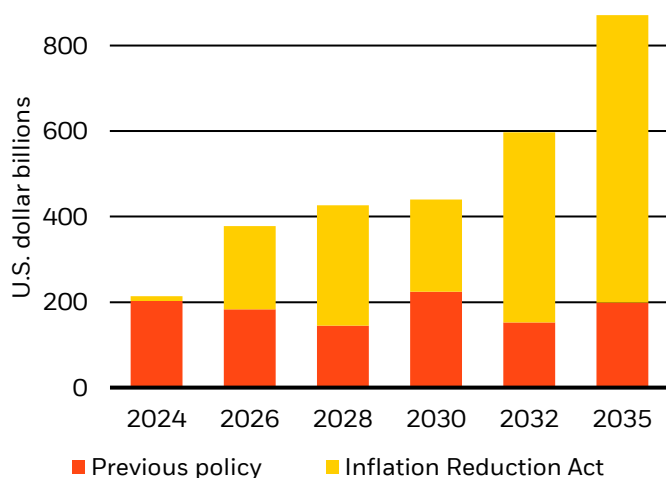
In addition to investment in renewable energy supply, the law includes substantial incentives for the domestic production and assembly – using primarily domestic materials – of batteries and related technologies, renewable power equipment and renewable fuels like hydrogen. That builds on prior legislation like the Infrastructure Investment and Jobs Act (IIJA, Nov. 2021), which earmarked \$6 billion to build a domestic battery supply chain. Yet the short timeline linked to those incentives will, in our view, be very difficult to keep to, given the years needed to develop mines for metals. That could limit the near-term effectiveness of those incentives, especially as automakers have recently struggled to meet demand.

The Inflation Reduction Act also builds on the CHIPS and Science Act (Aug. 2022), which aims to turbocharge domestic production of semiconductors and funnels billions of dollars toward early-stage research and associated infrastructure to hasten the development of renewable energy technologies. And the IIJA provides funds for infrastructure that supports the transition, including grid and EV charging infrastructure.

We see this combination of legislation reducing U.S. dependency on China, especially for sourcing materials, batteries and solar panels.

Public and private capital on the way

Estimated investment in U.S. energy supply, 2024-2035



Source: BlackRock Investment Institute and REPEAT Project at repeatproject.org, November 2022. Notes: The charts show projections for capital investment – both public outlays and private investment – based on repeatproject.org’s analysis of the bill’s potential impacts. It does not include impacts on renewable energy components, batteries, electric vehicles or critical minerals. The analysis should be considered approximate and may be updated or refined by subsequent analysis. Other category in right chart includes CO2 transport and storage and nuclear.

Macro and investment implications

We think the Inflation Reduction Act will have notable longer-term macro and investment implications. On the macro side, we think it supports our view that that we are now in a regime of more persistent and volatile inflation because it will drive shifts in demand and investment. We believe the tax credits and incentives will spur some forms of private investment. If this happens quickly, it creates the potential for mismatches between demand patterns and the way the economy is set up to supply it – even if the shift to renewable energy could reduce the marginal cost of energy over time and boost the economy’s long-term productive potential. These mismatches of demand and supply risk more volatile overall inflation, in line with our arguments in [A world shaped by supply](#) from January 2022. One example: EV producers facing constraints on battery materials and components. The transition to a lower-carbon world is one trend, along with geopolitical fragmentation and aging workforces, that is likely to keep supply constrained longer term and keep inflation persistently higher.

When it comes to forming an investment view, we think it’s important to assess whether the Act’s implications for the macro outlook and for companies are reflected in market prices. Where they are not reflected, we see investment opportunities. Inflation-linked bonds are one example. Inflation-linked bonds don’t currently reflect the persistently higher inflation we see on both tactical and strategic horizons.

Infrastructure debt can also help portfolios amid higher inflation. We believe infrastructure can help diversify returns and provide stable long-term cashflows. Infrastructure earnings tend to be less tied to economic cycles than corporate assets. Contracts can span decades. And infrastructure assets can help hedge against inflation, with fixed costs and prices linked to inflation.

Overall, we think the effects of an accelerating transition are not fully priced now. That’s why we think assets that stand to benefit from transition opportunities are likely to add returns over time as the transition accelerates and becomes more fully priced. We find opportunities in the following areas:

- Where the Act provides investors with long-term certainty, such as the 10-year investment and production tax credits for wind and solar, and fixed incentives for solar polysilicon manufacturing.
- Where changes to existing rules will allow new investors to crowd in, more easily co-invest or transfer tax credits, including government entities, non-profits and foreign investors without a U.S. tax base.

- In the manufacturers of consumer EV parts, charging networks and the decarbonization of buildings – depending on some of the constraints we’ve mentioned previously.

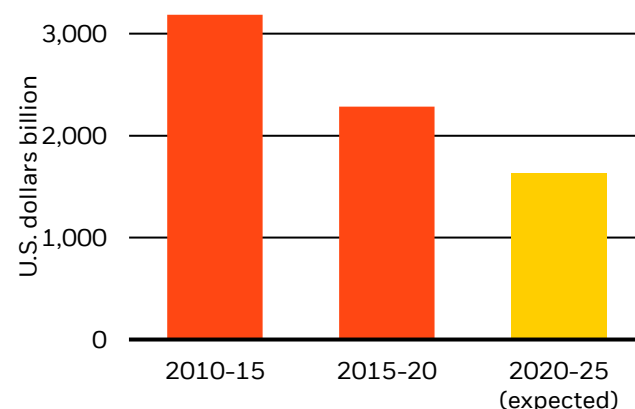
What is in the price bears constant monitoring. It is possible that assets set to benefit from the transition could become overvalued. We would then consider tilting portfolios away from them as we would any other asset whose expected returns we assess – even if we still see the potential for strong earnings growth in the long term.

How do we think about high-carbon exposures in the context of the transition? As an asset manager, BlackRock’s fiduciary role is about helping clients achieve the best risk-adjusted returns – and that means we treat the transition like we would any driver of investment risk and return.

Many companies that are carbon-intensive today are developing credible transition plans, reducing their exposure to the transition. With global energy demand still increasing and the west seeking to wean itself off Russian energy, we see continued strong earnings for traditional energy suppliers, even with rapid buildout of renewable energy alternatives. Yet oil and gas capex has dropped by nearly half since 2014. See the chart below. That low level of capex increases the prospect of mismatches between supply and demand. These mismatches could be a feature of the transition if high-carbon assets are reduced faster than low-carbon replacements are phased in. So a portfolio that excludes exposure to sectors like traditional energy is unlikely to be as resilient to the expected bumps in the road during the transition, in our view.

Oil and gas investment declining

Capex expenditure in oil and gas, 2010-2025



Forward-looking estimates may not come to pass. Source: BlackRock Investment Institute, Wood Mackenzie, December 2022. Notes: The chart shows capex expenditure in the oil and gas sector from 2010 to 2015 and from 2015-2020, as well as projected capex expenditure for the period 2020-2025.

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