America's Industrial Policy and the Green Transition: A Paradigm Shift Underway?

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Quotes

- *This moment demands that we forge a new consensus. President Biden is pursuing a modern industrial and innovation strategy—both at home and with partners around the world. … This strategy will build a fairer, more durable global economic order, for the benefit of ourselves and for people everywhere (Sullivan, 2023).*

- *Our economic strategy is centered around investing in ourselves – not suppressing or containing any other economy (Yellen, 2023).*

- *As President, I have a responsibility to act with urgency and resolve when our nation faces clear and present danger. And that's what climate change is about. It is literally, not figuratively, a clear and present danger. (Biden, 2022)*

Abstract

- *The U.S.'s position as a global economic leader means that its industrial policies can have far-reaching effects. By adopting an **experimental governance approach**, the U.S. can lead by example, demonstrating how innovative, adaptive policies can drive industrial growth while addressing global challenges like climate change and economic inequality. Furthermore, the U.S. can play a pivotal role in international knowledge sharing, contributing to and learning from industrial policy experiments conducted worldwide.*

Introduction: USA’s new industrial strategy and the Biden Administration's shift

- **Strategic Paradigm Shift**: The Biden Administration represents a significant change in policy orientation towards industrial and climate change strategies.
- **Place-Based Industrial Strategy**: A focus on creating jobs in the US, rebuilding infrastructure, maintaining technological leadership, and advancing green transitions and technologies.
- **Shift From Past Policies**: Moving away from the neoliberal laissez-faire approach towards an active, government-led industrial policy.

Introduction: USA’s new industrial strategy and the Biden Administration's shift

- **Legislative Milestones**: The CHIPS Act, Infrastructure Investment and Jobs Act (IIJA), and Inflation Reduction Act (IRA) as cornerstones of the new strategy.
- **Sectoral Impact**: Emphasis on semiconductor manufacturing, clean energy, and infrastructural resilience.
- **Financial Commitment**: Substantial investments planned over the next decade to reshape the industrial landscape and stimulate innovation.
- **Global Implications**: The strategy is expected to have significant effects on international partnerships, competition, and global economic outcomes.

Definition of Industrial Policy

- **Definition by Rodrik et al.**: Industrial policy is defined as government policies aimed at transforming the structure of economic activity towards public goals.

The Biden Administration's Strategy

- **Objective-Oriented**: Goals often include fostering innovation, increasing productivity, and accelerating economic growth.
- **Climate Transition Alignment**: Includes policy levers that further climate transition objectives.
- **Comprehensive Design**: Comprises regulatory changes, tax adjustments, and incentives influencing market behavior and decision-making across firm and consumer levels.
- **Multiplier Effect**: Designed to leverage public expenditure to produce amplified results through private sector multipliers.

Historical Context: The shift from past American industrial policies.

- The historical context of the Biden Administration's industrial policy can be understood through the lens of Dani Rodrik's work. In his 2004 analysis, Rodrik underscores a pivotal shift in the global economic landscape, which refutes the notion that industrial policy had declined over the past two decades. Instead, Rodrik suggests a reinvigorated focus on industrial policy with an orientation towards exports and direct foreign investment. He argues that these sectors are instrumental due to their capacity to generate positive externalities.

Literature Review

Aspect	Key Authors and Works	Main Contributions
Evolving Definitions and Approaches	Juhász, Lane, Rodrik (2023); Ken Warwick (2013)	- Expansion on the role of industrial policy in contemporary economies. - Proposal of a new typology of industrial policies reflecting a broader range of interventions.
Market Failures and Policy Dynamics	Hausmann, Rodrik	- Advocacy for policies encouraging early-stage investments and diversification in new sectors. - Highlighting a dynamic, responsive role for policy intervention throughout stages of economic development.
Globalization and National Interests	Paul Krugman (2023); Lashkaripour, Lugovskyy (2023); Anatol Lieven (2020)	- Discussion of globalization's impact on industrial policy. - Analysis of trade benefits and scale economies. - Exploration of climate change policies within nationalistic frameworks.

Literature Review - Evolving Definitions and Approaches

- Industrial policy traditionally lacked a precise definition, varying widely in interpretation and application across economic development literature.
- Juhász, Lane, and Rodrik's 2023 work, "The New Economics of Industrial Policy," expands on the role of industrial policy in modern economies.
- Ken Warwick’s OECD report delves into the changing landscape of industrial policy, proposing a new typology that reflects a broader spectrum of policy interventions.

Literature Review - Market Failures and Policy Dynamics

- Hausmann and Rodrik advocate for policies that address market failures by encouraging early-stage investments and the diversification of new sectors.
- A dynamic policy role is highlighted, adapting to the stages of economic development and entrepreneurial discovery.

Literature Review - Globalization and National Interests

- Krugman (2023) discusses the interplay between globalization and industrial policy in the modern context.
- The analysis of profits, scale economies, and the benefits of trade and industrial policy are explored by Lashkaripour and Lugovskyy (2023) in their contribution to the American Economic Review.
- Lieven (2020) examines the intersection of climate change policies and national interests, emphasizing the case for nationalistic approaches in this realm.

Rodrik's Reevaluation: The changing nature of industrial policy.

- **Institutional Approach**: Advocates for a nuanced institutional approach, where industrial policy extends beyond mere policy implementation to include dialogue with the private sector for identifying and solving significant externalities.
- **Strategic Collaboration**: Proposes a model where the government collaborates with the private sector to identify barriers to economic restructuring and determine effective interventions.
- **Government Role Expansion**: Envisions the government's role as not only a regulator or incentive provider but as an active collaborator in continuous economic development.
- **Adaptive and Informed Policy**: Calls for an industrial policy that is adaptive, responsive, and informed by the specific economic contexts of countries and the dynamic nature of industries and markets.

Global Examples

- **East Asian Models**: East Asian countries, particularly South Korea and Japan, have demonstrated the evolution and effectiveness of industrial policies. These nations' approaches offer valuable insights into the implementation and impact of such policies.
- **Information and Rent-Seeking Challenges**: The global application of industrial policy is not without its challenges, such as information shortcomings and the risk of rent-seeking behavior. This includes concerns about the government's ability to identify and address market failures and the susceptibility of policies to lobbying and political influence.
- **Empirical Studies and Global Coordination**: Studies by Lashkaripour and Lugovskyy (2023) suggest that while unilateral interventions might have mixed results, globally coordinated industrial policies could yield substantial benefits. This highlights the importance of international collaboration in formulating and executing industrial strategies.

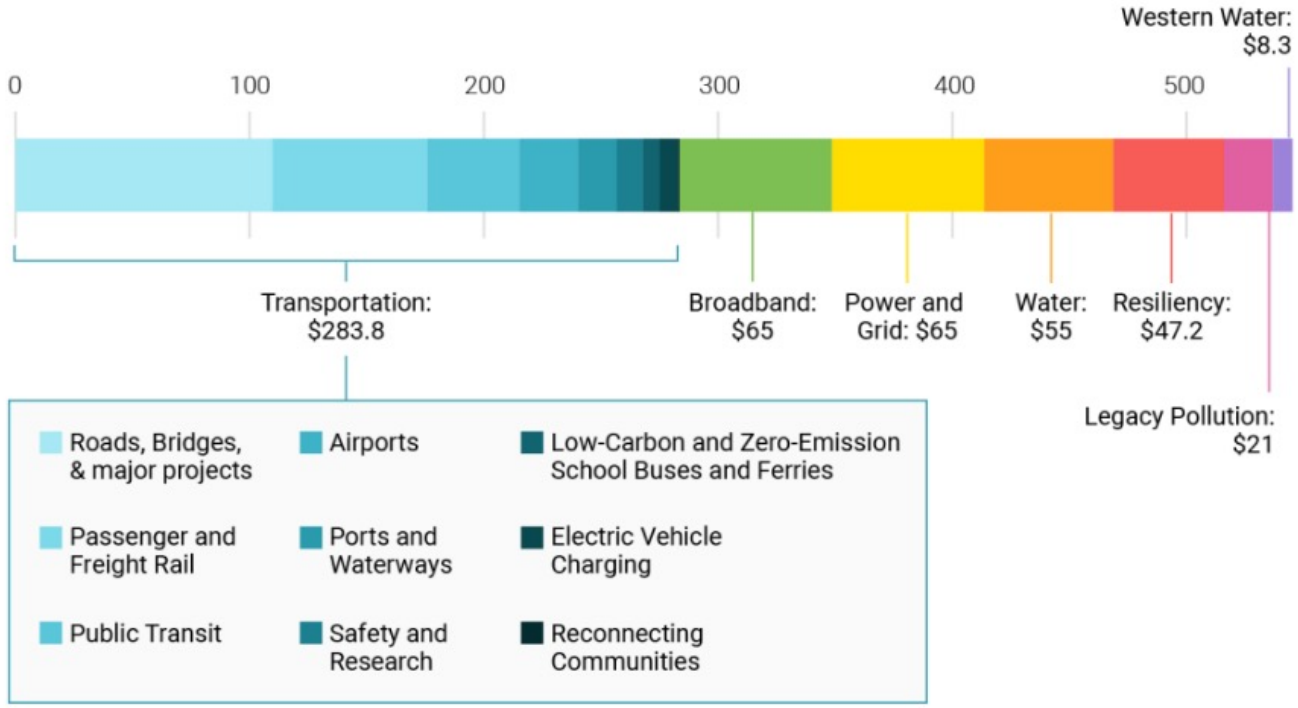
American Legislative Milestones

- **CHIPS Act (2022)**:
  - Aimed at incentivizing semiconductor manufacturing in the U.S.
  - Addresses supply chain vulnerabilities, especially in the context of geopolitical tensions and pandemic-related disruptions.
  - Commits $280 billion over ten years, primarily for R&D and commercialization.
- **Infrastructure Investment and Jobs Act (IIJA)**:
  - A sweeping infrastructure investment bill with bipartisan support.
  - Encompasses a wide range of infrastructure projects, from transport to energy systems.
  - Expected to significantly boost construction spending and employment.
- **Inflation Reduction Act (IRA)**:
  - Passed narrowly in the Senate, this act represents a major shift in climate policy.
  - Estimated to cost $750 billion over ten years, with a significant portion allocated to climate change incentives.
  - Heralded as a historic shift, potentially understated in its impact at $800 billion, according to Credit Suisse.

Infrastructure Investment and Jobs Act (IIJA) 1/2

- **Bipartisan Landmark Legislation**: The IIJA represents a significant bipartisan effort, providing $1.2 trillion in infrastructure funding.
- **Place-Based Tax Incentives**: Aimed at transforming markets, accelerating the adoption of new technologies, and embedding green transitions across the economy.
- **Sectoral and Individual Impact**: Designed to alter sectoral incentives, affecting commercial decisions, CEO strategies, investor preferences, and consumer behavior.

Figure 1. Topline above-baseline spending in IIJA (billions of USD)



Source: Bipartisan Infrastructure Investment and Jobs Act Summary

Metropolitan Policy Program at BROOKINGS

Infrastructure Investment and Jobs Act (IIJA) 2/2

- **Unprecedented Allocation**: $550 billion in new commitments over ten years, spanning various sectors such as transport, power grids, high-speed internet, water systems, and resilience.
- **Infrastructure Decade**: Marking the start of what has been termed “an infrastructure decade,” it's the largest investment in U.S. infrastructure in over half a century.
- **Local and National Impact**: The IIJA supports and creates numerous programs, significantly influencing national, state, and local investment plans, with immediate and striking impacts on local communities. The U.S. construction sector, in particular, is experiencing a boom.

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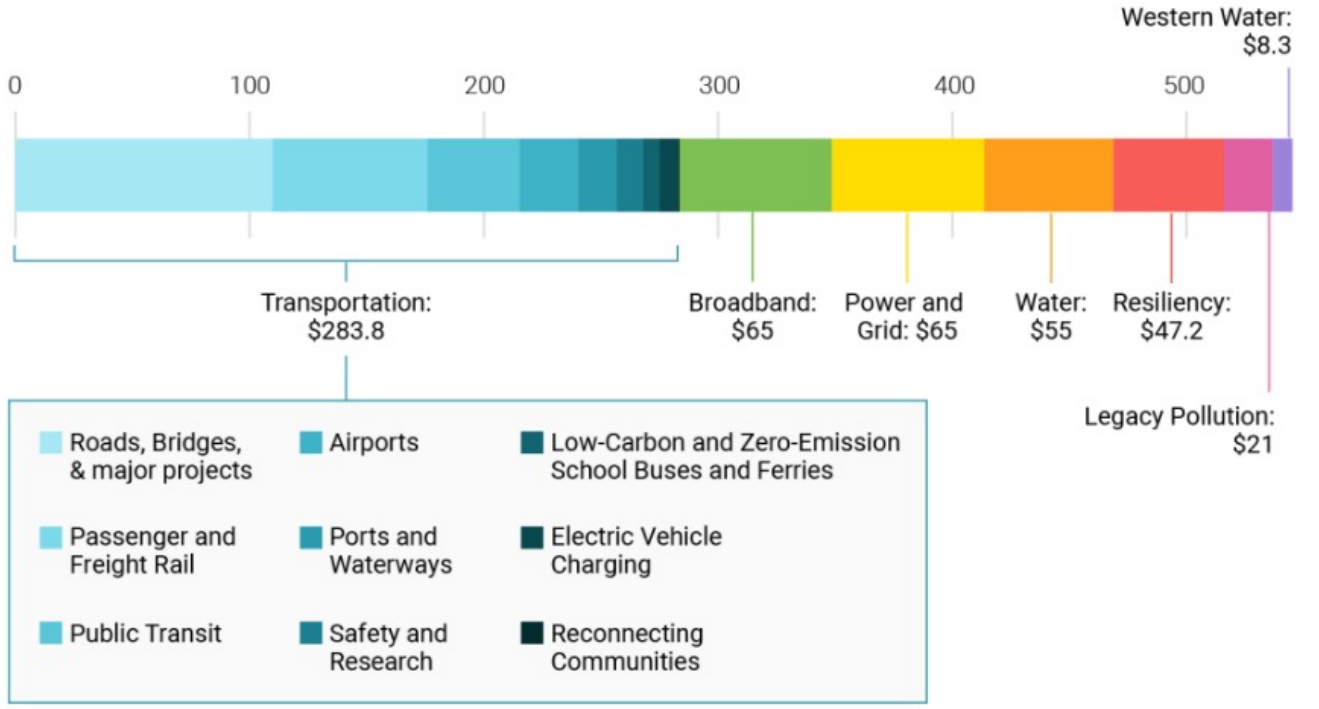


Source: Bipartisan Infrastructure Investment and Jobs Act Summary

Metropolitan Policy Program at BROOKINGS

CHIPS Act - Rebalancing the Supply Chain

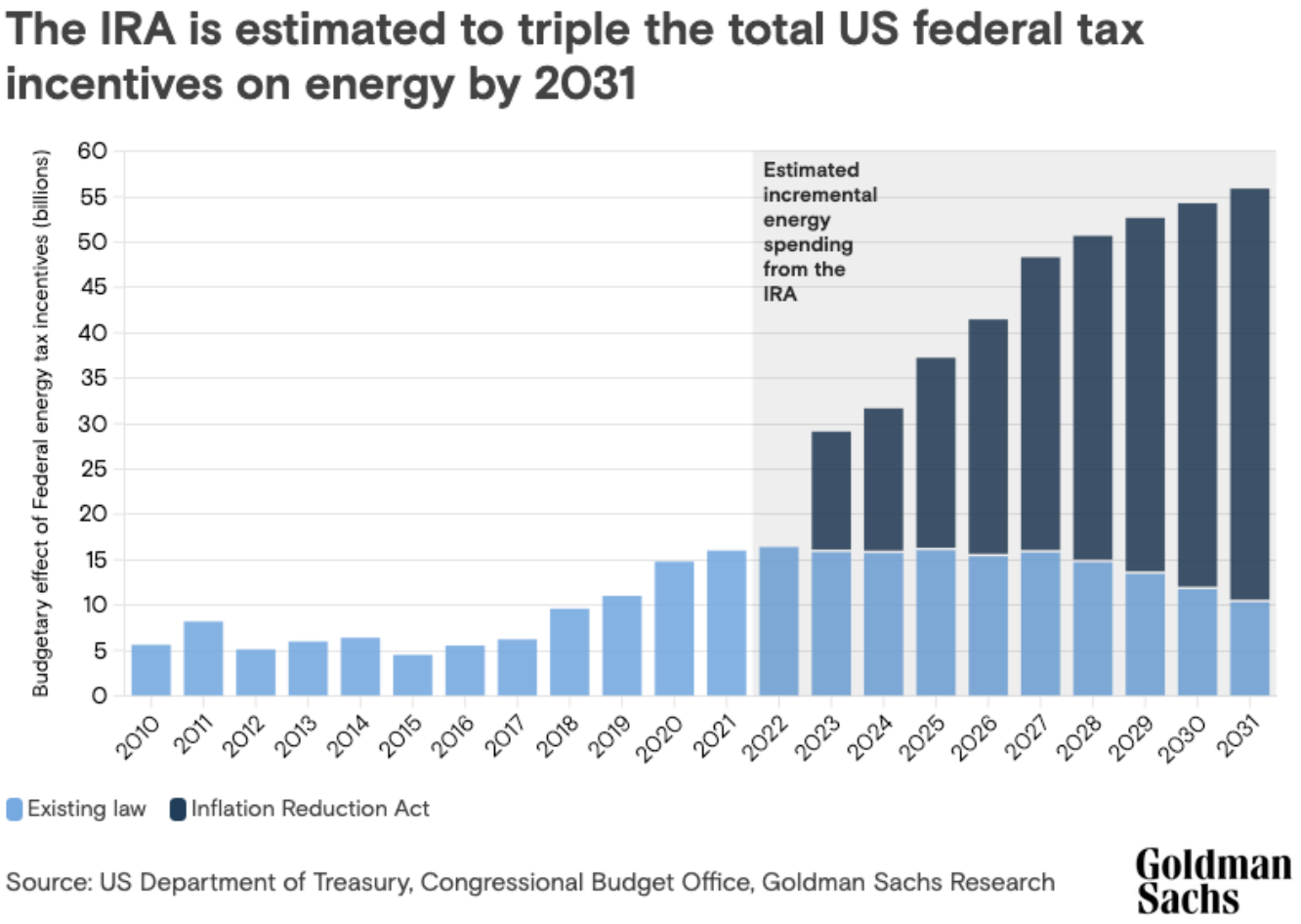
- **Purpose and Design**: The CHIPS Act of 2022 incentivizes semiconductor manufacturers to establish facilities in the U.S., aimed at rebalancing the supply chain.
- **Geopolitical and Pandemic Drivers**: Addresses supply chain vulnerabilities highlighted by geopolitical tensions and the COVID-19 pandemic.
- **Financial Commitment**: Allocates $280 billion over ten years, with the majority ($200 billion) earmarked for research and development (R&D) and commercialization efforts.

CHIPS Act - Investment Incentives and Impact

- **R&D and Workforce Development**: $52.7 billion dedicated to semiconductor manufacturing R&D and workforce development.
- **Tax Credits**: An additional $24 billion in tax credits for chip production.
- **Reversing Decline in U.S. Semiconductor Production**: Aims to counter the decline in U.S. semiconductor production, which has fallen from 37% to 12% of the world's output since the 1990s.
- **Initial Success**: Following the enactment of the CHIPS Act, over $166 billion in semiconductor and electronics manufacturing investments have been announced, impacting 19 states.

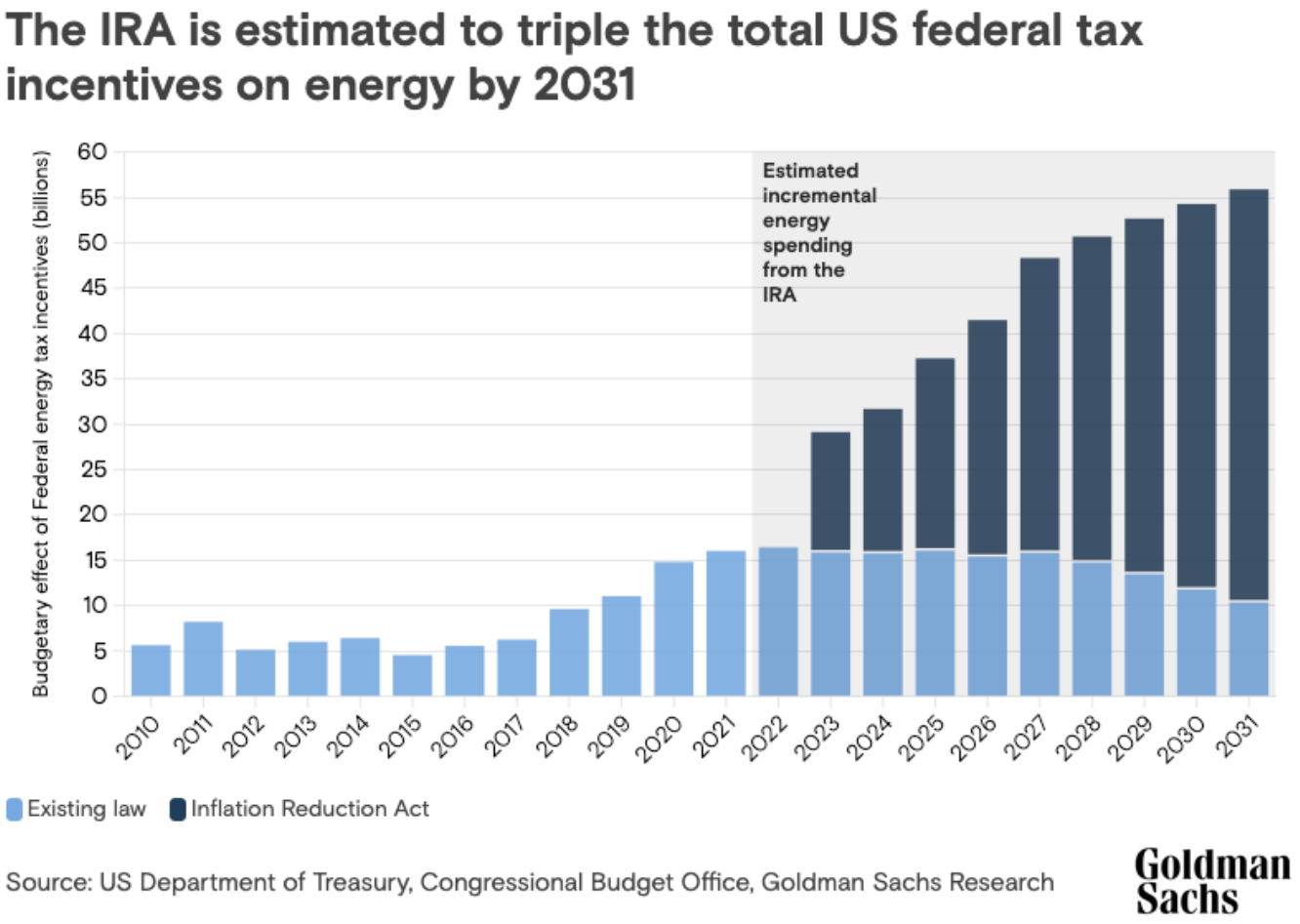
IRA Overview - Climate Change Goals and Funding

- **Pivotal Legislation**: The IRA fundamentally altered the U.S. climate policy landscape.
- **Financial Commitment**: Estimated by the Congressional Budget Office to cost $750 billion over ten years, with a significant part ($361 billion) specifically for climate change incentives.
- **Wider Impact**: The act also addresses healthcare subsidies, lowering healthcare costs, and other medical policy fixes.
- **Gamechanger**: Described as historic, it is seen as a crucial step towards the U.S. achieving its net-zero goals, potentially underestimated at $800 billion by Credit Suisse.



IRA Economic Incentives and Sectoral Impact

- **Sectoral Shifts and Planning**: The IRA aims to transform sectoral and firm decisions, with a focus on forward planning.
- **Generous Incentive Programs**: Contains a variety of incentive programs across various sectors, all designed to reduce costs for producers and consumers through tax credits and other mechanisms.
- **Fund Allocation Categories**: Includes clean electricity tax credits, air pollution, hazardous materials, transportation, infrastructure, individual clean energy incentives, clean manufacturing tax credits, clean fuel and vehicle tax credits, conservation, rural development, forestry, building efficiency, electrification, transmission, industrial grants and loans, and more.
- **Estimated Overall Cost**: Goldman Sachs estimates the cost could reach $1.2 trillion, as key climate technology incentives lack ceilings on total tax credits.



Green Jobs and Growth

- **Jobs and Climate Policy Integration**: President Biden's climate plan is also conceptualized as a jobs plan, linking its success with economic growth.
- **Clean Energy Jobs Uptick**: As of 2019, clean energy jobs accounted for almost 50% of all employment in the energy sector, totaling over 4 million jobs.
- **Impact of IRA on Job Creation**: The Energy Futures Initiative predicts over 1.4 million green jobs will be created above the baseline of general job creation in the economy.
- **Job Growth and Pay Premiums**: In 2022, clean energy job growth exceeded 3%, double the payroll growth rate, with green jobs paying 8-19% more than comparable positions.
- **Accessibility and Distribution**: About 45% of clean energy production jobs require only a high school diploma, offering higher wages than similarly educated peers in other industries. Green jobs are widely distributed across the U.S., not just concentrated on the coasts.

Figure 2: Job Creation from the Inflation Reduction Act, 2021-2030

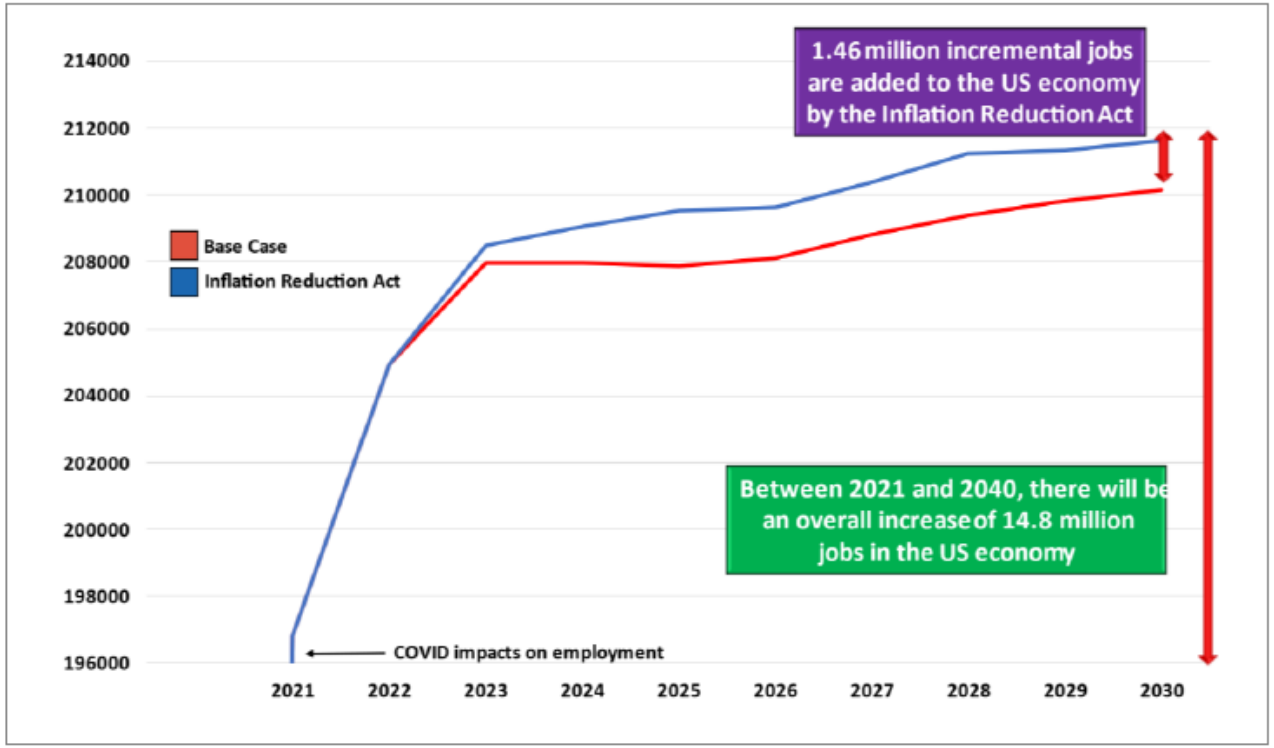
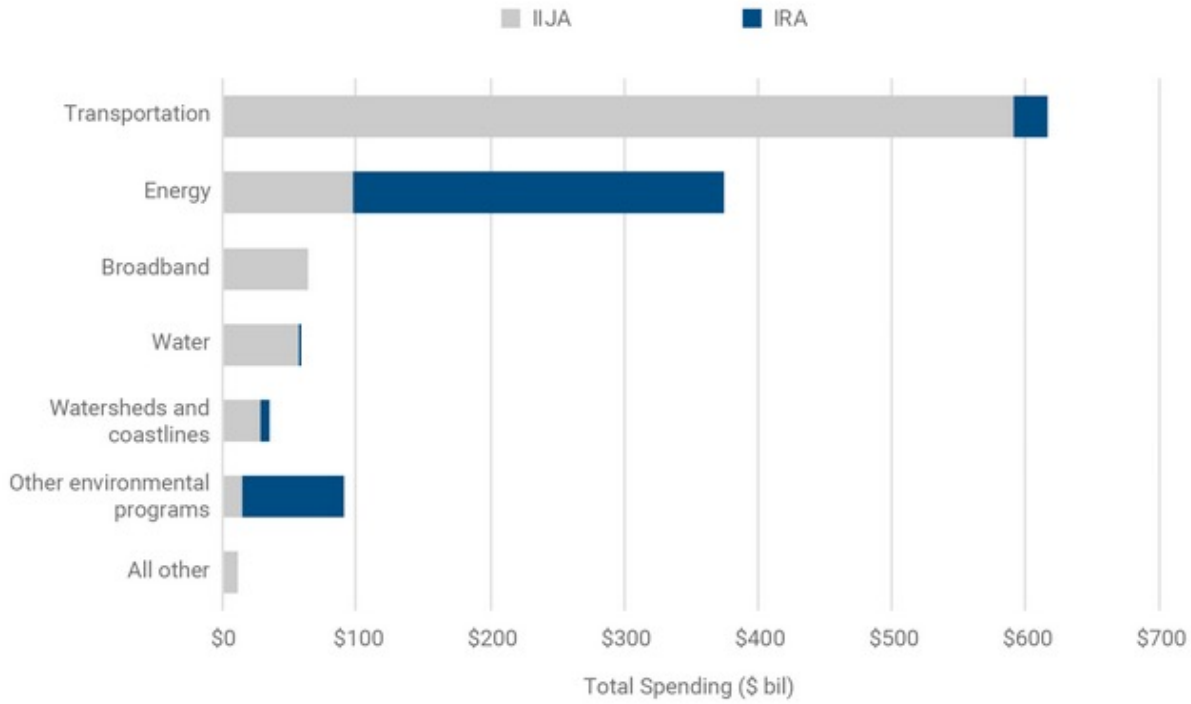


FIGURE 1

Projected federal spending from IIJA and IRA



Note: Projected spending includes advance appropriations, budget impacts of IRA tax credits as estimated by the CBO, and a small number of authorized programs.

Source: Brookings analysis of Infrastructure Investment and Jobs Act, Inflation Reduction Act, and CBO data.

Brookings Metro

Green Jobs and Growth

- **Table 1. Allocation of Funds in Energy and Climate Spending**
- *Source: Committee for a Responsible Federal Budget, 2022*

Category	Allocation (in billions)
Clean Electricity Tax Credits	$161
Air Pollution, Hazardous Materials, Transportation, and Infrastructure	$40
Individual Clean Energy Incentives	$37
Clean Manufacturing Tax Credits	$37
Clean Fuel and Vehicle Tax Credits	$36
Conservation, Rural Development, Forestry	$35
Building Efficiency, Electrification, Transmission, Industrial, DOE Grants and Loans	$27
Other Energy and Climate Spending	Not Specified

Projected GHG Reductions and Progress

- **Current Status**: Many projects under the Biden Administration's policies are still in the planning stages or early implementation, making the full impact on GHG reductions not yet fully visible.
- **Market Alterations and Firm Shifts**: Evidence of market changes and shifts in firm behaviors are already observable, indicating movement towards reduced emissions.
- **EPA Forecasts**: Models from the Environmental Protection Agency (EPA) suggest significant impacts on the power sector from the IRA implementation.
- **Projected CO2 Emissions Reduction**: Economy-wide CO2 emissions are forecasted to decrease by 35 to 43 percent below 2005 levels by 2030. In the electric power sector, reductions could be between 49 and 83 percent below 2005 levels.
- **Overall Sectoral Impact**: CO2 emissions across all end-use sectors are projected to decline, reinforcing the wide-reaching impact of these policies.

Green Reindustrialization and Digitization - Broader Implications

- **Paradigm Shift in Industrial Policy**: The U.S. is undergoing a green reindustrialization, marking a significant shift in the nature and approach of its industrial strategy and policy.
- **Reshaping Globalization**: This strategy represents a reseeding and renewing of globalization, embodying a new form and scale, unprecedented in peacetime.
- **Integration Across Sectors**: Involves embedding economic, infrastructure, technology, climate change, security, and resilience goals across various agencies, sectors, markets, communities, cities, and towns.
- **Revenue Scale**: The financial scale of these policies surpasses those of previous administrations, indicating a substantial commitment to this strategy.
- **National and Global Impact**: Aligning industrial and climate change goals not only within U.S. national policy priorities but also within the context of global climate challenges.
- **Ongoing Policy Dialogue**: These strategies and goals have become integral to the ongoing policy dialogue and are now key components of annual targets and regulations.

Challenges - Competing Pathways, Trade Implications, and Deconstruction Risks

- **Competing Pathways**: The Biden Administration's industrial strategy, with its emphasis on "Buy America" and place-based requirements in the CHIPS Act, IIJA, and IRA, has led to competing pathways with global allies.
- **Trade Implications**: These U.S.-centric policies have caused concerns among allies, leading to complaints that the policies distort trade and disadvantage friendly nations.
- **Response from Allies**: In response, European and other global allies have adjusted their industrial policies, changing rules, incentives, and standards to counteract the U.S. approach. The European Union, for instance, has increased its commitments, including the "Fit for 55" plan.
- **Global Industrial Policy Shifts**: The U.S. incentives have led some firms to redirect investments toward the U.S., affecting global capital expenditure (capex) in green technologies.
- **Risk of Policy Fragmentation**: This situation could lead to a fragmentation of industrial policies globally, with potential long-term implications for international trade and collaboration.

Challenges and Implications for Low-Income Countries

- **Spillover Effects**: Industrial policies of advanced economies, including the U.S. and China, have troubling spillover effects on emerging and low-income economies.
- **Funding Struggles**: These economies face challenges in securing funding, as incentives in the global market favor investments in advanced economies.
- **Inequality in Industrial Policy**: Industrial policy is predominantly a game for wealthy nations, offering significant incentives that low-income states cannot match.
- **Competitive Disadvantage**: Low-income countries are at a disadvantage in competing for investments, especially in sectors like renewable energy.
- **Disproportionate Investment Flow**: Of the estimated $1.8 trillion in global renewable energy investment, only a small fraction (around 2%) reaches lower-income countries in Africa and other regions, highlighting the disproportionate allocation of resources.

Policy Levers and Considerations for Enhancement

- **Complementing Incentives with Policy Levers**: To enhance the effectiveness of the Biden Administration's industrial policy and accelerate the green transition, a combination of incentives and specific policy levers is necessary.
- **Permitting Reforms**: Streamlining and reforming the permitting process can facilitate faster adoption of green technologies and infrastructure.
- **Carbon Taxes and Pricing**: Implementing carbon taxes and pricing mechanisms to internalize environmental costs and incentivize lower emissions.
- **Emissions Trading Schemes**: Adopting emissions trading schemes to create market-driven incentives for reducing greenhouse gas emissions.
- **Carbon Border Adjustment Mechanisms**: Utilizing revenues from carbon border adjustments to further support environmental goals.
- **Regulatory Enhancements**: Examples like Washington D.C.'s Building Energy Performance Standards (BEPS) demonstrate how regulation can multiply the impact of incentives, such as state tax credits for solar installation.

Conclusion - Tipping Points, Paradigm Shifts, and a Hot House Future

- **Significance of Experimental Governance**: The study underscores the importance of an experimental governance framework, allowing industrial policy to be adaptive and responsive to evolving global challenges.
- **Broader Implications for Industrial Policy**: Highlights the need for industrial policies to be collaborative and learning-oriented, contributing to global efforts in crafting effective, sustainable, and responsive strategies in an interconnected world.

- Thank you!