

# ECO-INNOVATION IN BRAZIL AND US

Cornell Tech, Roosevelt Island, New York City, April 28, 2023



## The US Agenda on Green/Sustainable Innovation: Current Policies, Programs, and Implementation Status



ZONA DE INOVAÇÃO  
SUSTENTÁVEL DE  
PORTO ALEGRE

**Dr. Marc A. Weiss, Chairman and CEO, Global Urban Development (GUD)  
Coordinator, Porto Alegre Sustainable Innovation Zone (ZISPOA)**

# **Energy Independence and Security Act of 2007**

- **Renewable Energy Innovation Manufacturing Partnership Program**
- **Promoting Energy Efficiency in:**
  - **Buildings**
  - **Motor Vehicles**
  - **Appliances**
  - **Lighting**
- **Renewable Fuel Standard (Promoting Biofuels)**

# **American Recovery and Reinvestment Act of 2009**

## **(\$787 billion)**

- **Smart Grid Investment (\$4.5 billion)**
- **Infrastructure Investment (\$105.3 billion), including Transportation and Energy**
- **Energy Efficiency and Renewable Energy Research and Investment (\$27.2 billion), including \$6 billion for Loan Guarantees (supported \$465 million debt financing for Tesla)**
- **Scientific Research (\$7.6 billion)**
- **Energy Efficiency in Housing (\$4.25 billion)**
- **Clean Energy Investment Tax Credits (\$26 billion)**

**See *The New New Deal* by Michael Grunwald (2012)**

# **American Clean Energy and Security Act of 2009 (Waxman-Markey bill)**

- **National Cap and Trade System to reduce greenhouse gas emissions**
- **Expanded requirements for renewable electricity and energy efficiency**
- **Promoting energy productivity**
- **Major new investments in energy efficiency and renewable energy, in clean transportation, smart grid and electricity transmission, research and development, and state energy and economic development**

**Passed the US House of Representatives in June 2009, but did not pass the US Senate**

# **President Obama's National Manufacturing Initiative and Advanced Manufacturing Partnership**

- **Sustainable Manufacturing**
- **National Network for Manufacturing Innovation**
- **15 Advanced Manufacturing Institutes, including Clean Energy Smart Manufacturing Innovation Institute (Los Angeles)**
- **Manufacturing Extension Partnerships**

**Coordinated by Dr. Phillip Singerman, Associate Director for Innovation and Industry Services, National Institute of Standards and Technology (NIST), US Department of Commerce (and GUD Senior Fellow and Board Member)**

## **Bipartisan Infrastructure Law (\$1.2 trillion) (Infrastructure and Jobs Act of 2021)**

- **Clean energy transmission (\$65 billion)**
- **National network of electric vehicle charging stations (\$7.5 billion) for 500,000 chargers**
- **High speed internet/universal broadband (\$65 billion)**
- **Public transportation (\$90 billion)**
- **Passenger rail (\$66 billion)**
- **Roads and bridges (\$110 billion)**
- **Water ports (\$17 billion)**
- **Airports (\$25 billion)**
- **Climate resilience (\$50 billion)**
- **Clean drinking water (\$55 billion)**
- **Toxic pollution cleanup (\$21 billion)**

# **CHIPS and Science Act of 2022 (\$52.7 billion)**

## **Semiconductor Research, Development, Manufacturing, and Workforce Development**

- **Manufacturing Incentives, including legacy chips, R&D and Workforce Development (\$39 billion)**
- **Regional Innovation and Technology Hubs (\$10 billion)**
- **Wireless Technology Innovation and Supply Chains (\$1.5 billion)**

**Has already stimulated over \$200 billion in private semiconductor manufacturing investments, including Micron Technology (\$100 billion in New York), TSMC (\$40 billion in Arizona), Intel (\$20 billion in Ohio), IBM (\$20 billion in New York), and SK Siltron CSS (\$300 million in Michigan to produce silicon carbide wafers for electric vehicles).**

# **Inflation Reduction Act of 2022 (\$433 billion in spending, and \$739 billion in revenue)**

**Energy security and climate change (\$369 billion)**

**(see Clean Energy Business Network: [www.cebn.org](http://www.cebn.org))**

**Has already generated \$150 billion in clean energy investments**

- **Tax credits could total \$1 trillion by 2032**
  - **Investment tax credits for renewable energy production**
  - **Tax credits for renewable energy and energy efficient consumption and electrification (electric vehicles, heat pumps, homes, buildings, small businesses)**
- **Grants**
  - **Billions in grant funds for private sector, civil society, academia, and state and local governments**
  - **Promoting private cleantech and climatetech expertise and entrepreneurship**
- **Loans and loan guarantees to support financing startups and emerging companies and technologies (\$400 billion) -- led by Jigar Shah, Director, Loan Programs Office, US Department of Energy (and longtime GUD Advisory Board Member)**





## The Atlanta Journal-Constitution

### Georgia plant gets \$80 million grant to make jet fuel from wood chips

Project is one of several receiving new funding from the federal Department of Energy

**In January 2023 Brazilian biotechnology company GranBio's US subsidiary AVAPCO was awarded an \$80 million grant from the US Department of Energy to produce Sustainable Aviation Fuel (SAF) from biomass. GranBio, together with other investors, will invest an additional \$150 million in this NET ZERO SAF project.**

## US Department of Energy's Inclusive Energy Innovation Challenge



**Wheaton Sustainable Innovation Zone (WSIZ)**  
**Montgomery County, Maryland**



## Economic Development Through Green Savings • Green Opportunities • Green Talent • Green Places

**Building on a project funded by the US Department of Energy through the Inclusive Energy Innovation Prize, the partners below work to strengthen economic development efforts, climate resilience and promote innovation in a diverse urban community through the creation of a Sustainable Innovation Zone.**

**Through extensive community engagement, project partners apply the international lessons of sustainable innovation to the curated needs of an underserved community, creating a model for similar communities in the County, State, and Nation.**







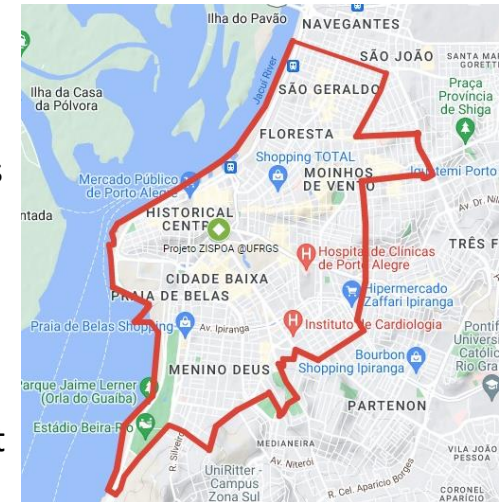
Global Urban  
Development

# Porto Alegre Sustainable Innovation Zone (ZISPOA)



## Sustainable Innovation Zones Combine 6 Key Elements:

- Innovation and Technology
- Entrepreneurship and Startups
- Sustainability and Resource Efficiency
- Creativity and Collaboration
- Participatory Community Management
- Business-Friendly Environment



Map of ZISPOA

**Rio Grande do Sul Leapfrog Economic Strategy:  
Most Sustainable and Innovative Place in Latin America by 2030**



Solar Electric Car Charging Station



Solar "Tree"

NATIONAL  
ACADEMIES

Sciences  
Engineering  
Medicine

# Operationalizing Sustainable Development to Benefit People and the Planet

Consensus Study Report

## BOX 5-2 Global South: Porto Alegre, Brazil

Generating sustainable prosperity and quality of life for urban residents requires a new development paradigm, stated Marc Weiss, chairman and CEO of Global Urban Development (GUD), but “fear and inertia get in the way.” A solution: “We need to replace economic fear with economic hope.” GUD was founded in 2001 with a 30-year strategy to enable people to thrive in peace with each other and with nature through sustainable innovation and inclusive prosperity.

### “Four Greens”

Sustainable innovation economic development strategies are built on a paradigm that innovation, efficiency, and conservation in the use and reuse of all natural and human resources is the best way to increase jobs, incomes, productivity, and competitiveness (Nixon and Weiss, 2010; Weiss and Nixon, 2011). These economic strategies are also the most cost-effective method of promoting renewable energy and clean technologies, protecting the environment, and preventing harmful impacts of climate change. “People, places, and organizations get richer by becoming greener,” Weiss said, through:

- **Green savings:** Cutting costs of businesses, families, communities, and governments by efficiently using renewable resources and by reducing and reusing waste
- **Green opportunities:** Growing jobs and incomes through business development and expanding markets for resources efficiency, sustainability, and clean technologies
- **Green talent:** Investing in fundamental assets such as education, research, technological innovation, and modern entrepreneurial and workforce skills
- **Green places:** Establishing sustainable transportation and infrastructure, and protecting and enhancing the natural and built environment, to create more attractive, livable, healthy, productive, and resource-efficient areas and communities

### Porto Alegre Sustainable Innovation Zone (ZISPOA)

GUD has been involved in a World Bank-funded strategy for the southern Brazilian state of Rio Grande do Sul. To keep people actively engaged at the local level and over the long term, the strategy employs Sustainable Innovation Zones that combine six elements: (1) innovation and technology, (2) entrepreneurship and startups, (3) sustainability and resource efficiency, (4) creativity and collaboration, (5) participatory community management, and (6) business-friendly environment (Weiss, 2019).

ZISPOA was created within Porto Alegre, a city of 1.5 million. The aim is for the city to become the most solar-powered, energy-efficient, bike-friendly, circular economy, and digitally-connected community in Latin America by 2030. Com-

# Thanks!

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