

# Industry Sector Report: Electrification



The rebuild of Venezuela represents a historic opportunity to advance economics, democracy, and geopolitics in the Western Hemisphere.

Electricity is fundamental.

This **Baseline Sector Report: Electrification** assembles the critical information needed by decisionmakers based on geography and electricity needs.

It includes a database of the key players in the overall ecosystem and technologies worldwide that may offer solutions.

Executive Summary  
Regional Analysis  
Key Actors Database  
Technologies Database  
Production  
Updates

# Electrification Sector Report

Venezuela faces significant electricity challenges. Decades of underinvestment, deferred maintenance, operational inefficiencies, and economic disruption have left **large portions of the country vulnerable to recurring blackouts** and unreliable power.



Persistent blackouts are debilitating the country's economy, limiting industrial productivity, and weakening essential public services. Venezuela lacks the energy infrastructure needed to monetize its vast energy resources.

Ironically, the collapse of the traditional centralized grid may accelerate the adoption of faster, more flexible distributed energy solutions that are transforming energy systems globally.

This presents an opportunity for Venezuela to **leapfrog into a more decentralized 21st-century energy architecture** utilizing extensive and rapidly evolving emerging technologies and deployment models.

## The collapse of the centralized grid may accelerate the adoption of faster, more flexible distributed energy solutions systems

The objective of this research is to facilitate communication, coordination, and collaboration among stakeholders to address the challenge as efficiently as possible.

The **Baseline Report on Electrification** is an accurate assessment of the current situation to provide a starting point.

The report will establish a foundational baseline with the goal of identifying the most effective solutions and strategic pathways forward.

The first critical step to address the electrification problem is an accurate assessment of the situation and challenges and an inventory of potential solutions engages all stakeholders in process upon which an intelligent thoughtful strategy

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## REPORT CONTENTS AND PRODUCTION

A primary objective is an inventory of resources — technologies, projects, institutions, expertise, and infrastructure — to create a comprehensive directory and database of solutions, and resources to address Venezuela's electrification future. Key components:

1. A **summary** of the current situation in each part of the country. A common starting point.
2. An **analysis** of the key needs and potential approaches for each region of the country.
3. A **database** of the key stakeholders and active participants in the sector.
  - Organizations
  - Governmental entities
  - Corporations
4. **Profiles** of specific technologies and potential solutions.

Highlights of research content added to the report will appear in bi-weekly updates along with relevant developments such as policies, news from projects, new members and will include descriptions of technologies being added to the database.

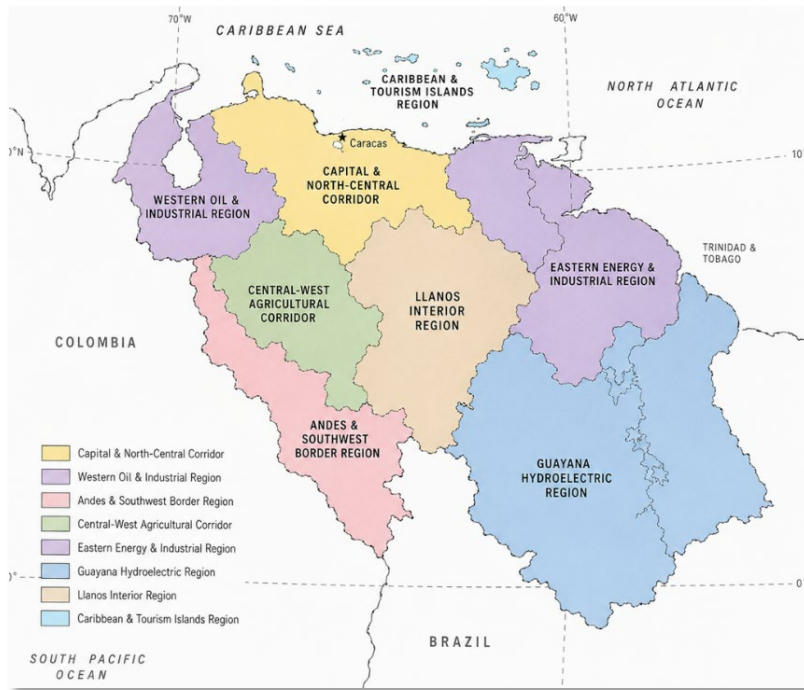
## CONVENING STRATEGY

In addition to the information is facilitating relationships and collaboration through convening of individuals and organizations identified through the research process as important contributors to the electrification challenge. This will be both in person and virtual beginning with a working session in Caracas and online via webinar for those in diaspora.

These gatherings will be ongoing and provide updates and to build the community focused. The first gathering would be to present progress on the research and to get feedback on strategies for practical pathways toward measurable and transparent progress.

## Regional Analysis

A breakdown by geographic region and energy profile across Venezuela.



Capital & North-Central Corridor

Western Oil & Industrial Region

Andes & Southwest Border Region

Central-West Agricultural Corridor

Eastern Energy & Industrial Region

Guayana Hydroelectric Region

Llanos Interior Region

Caribbean & Tourism Islands Region

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### DISTRIBUTED ENERGY

Centralized infrastructure will continue to play central role, but **its function should evolve into serving as the anchor to a broader, distributed network**. The more diversified and distributed the energy system the more stable and resilient the national electricity supply resulting in faster deployment, improved resilience, lower transmission requirements, reduced outage exposure, and faster modular scalability.

### ELECTRICITY APPLICATION ANALYSIS

Within each region we conduct an analysis of need by area of application.

1. Residential
2. Commercial
3. Industrial
4. Public sector
5. Transportation
6. Critical infrastructure
7. Agriculture & Food Systems
8. Oil, Gas & Energy Operations
9. Telecommunications & Digital Infrastructure
10. Tourism & Hospitality

### SOLUTIONS ANALYSIS

And within each region and application we summarize potential solutions.

1. Solar generation
2. Battery storage
3. Microgrids
4. Gas-to-power systems
5. Industrial self-generation
6. Waste-to-energy systems
7. Community energy projects
8. Smart energy management technologies

## Key Participants Database

A comprehensive database of relevant organizations will be continually updated. Categories will include:

1. Government entities
2. Business associations
3. Private companies
4. NGOs, think tanks, and Universities
5. Investment groups and financial institutions

### IDENTIFIED ORGANIZATIONS

1. Fedecámaras – the principal national business federation
2. Consecmercio – represents commerce and service-sector.
3. Conindustria – national industrial manufacturers association.
4. Fedenaga – livestock and cattle producers.
5. Fedeagro – agricultural producers.
6. Cámara Venezolana de la Construcción
7. Cámara Inmobiliaria de Venezuela
8. Consejo Bancario Nacional
9. VenAmCham – over 500 member companies
10. Cámara Venezolano-Británica de Comercio
11. Cámara Venezolano-Alemana de Industria y Comercio
12. Cámara Venezolano-Italiana de Comercio
13. Cámara Venezolano-Española de Industria y Comercio
14. Cámara Venezolano-Suiza de Comercio e Industria
15. Cámara Venezolano-Francesa de Comercio e Industria
16. Cámara de Comercio Venezolano-Brasileña
17. Indo-Venezuelan Chamber of Commerce
18. Cámara Petrolera de Venezuela
19. Asociación Venezolana de Procesadores de Gas
20. Cámara Venezolana de Energía
21. Cámara Venezolana de Empresas Eléctricas
22. Cámara Minera de Venezuela
23. Cámara de la Construcción
24. Cámara Venezolana de Telecomunicaciones
25. Fedecámaras regional chapters
26. Fedecámaras Caracas
27. Fedecámaras Zulia
28. Fedecámaras Carabobo
29. Fedecámaras Lara
30. Fedecámaras Anzoátegui
31. Fedecámaras Bolívar
32. Fedecámaras Nueva Esparta
33. Fedecámaras Falcón

### IDENTIFIED CORPORATIONS

1. PDVSA
2. CORPOELEC
3. Empresas Polar
4. Banesco
5. Mercantil
6. Banco Provincial
7. Banco de Venezuela
8. Digitel
9. Movistar
10. CANTV
11. Farmatodo
12. Central Madeirense
13. Excelsior Gama
14. Grupo Cisneros
15. Inelectra
16. Otepi
17. Fospuca
18. Laboratorios LETI
19. Venemergencia
20. Chevron Venezuela
21. Bolsa de Valores de Caracas
22. Grupo Sambil
23. Grupo Vollmer
24. Repsol
25. ENI
26. Cámara Petrolera de Venezuela
27. Siemens Energy
28. GE Vernova
29. Mitsubishi Power
30. ABB
31. Schneider Electric

### NOTES REGARDING THE DATABASE

An online portal will be available to upload information directly and for search functions. To provide names in the interim, sent to [contact@vzeconomics.com](mailto:contact@vzeconomics.com)

## Technology Categories

Traditional approaches focused solely on rebuilding the **centralized grid will require many years and billions of dollars** in investment. While grid rehabilitation remains essential, Venezuela also has an opportunity to accelerate recovery through distributed energy resources (DERs) deployed closer to where electricity is consumed.

The **Distributed Energy Report** a directory of technologies, vendors, economics, case studies, financing models, and deployment opportunities. Below are technologies to be investigated



### SOLAR ENERGY SYSTEMS

#### Residential Systems

Small rooftop solar systems paired with batteries that provide households with reliable electricity during outages while reducing dependence on the grid and diesel generators.

#### Commercial Systems

Solar and battery installations designed for businesses, offices, retail facilities, and institutions to lower energy costs, improve reliability, and maintain operations during blackouts.

#### Community-Scale Installations

Shared solar and battery systems that serve multiple homes, businesses, or public facilities through a local microgrid, improving resilience at the neighborhood or village level.



### GAS-BASED DISTRIBUTED GENERATION

#### Natural Gas Generators

Distributed power systems fueled by natural gas that provide reliable, dispatchable electricity close to where it is consumed, reducing dependence on long transmission networks.

#### Reciprocating Engines

Highly efficient internal combustion engines powered by natural gas that can be rapidly deployed and scaled to provide flexible electricity generation for industrial, commercial, and community applications.

#### Small Gas Turbines

Compact turbine-based generation systems that convert natural gas into electricity and are well suited for industrial facilities, microgrids, and distributed power projects requiring continuous operation.

#### Combined Heat and Power (CHP)

Cogeneration systems that simultaneously produce electricity and thermal energy from a single fuel source, improving overall efficiency and reducing operating costs for industrial and commercial users.



### BATTERY ENERGY STORAGE SYSTEMS (BESS)

#### Backup Power

Battery systems provide instant electricity during grid outages, ensuring continuity for homes, businesses, hospitals, telecommunications, and other critical facilities.

#### Peak Shaving

Batteries store electricity during periods of low demand and discharge during peak consumption periods, reducing energy costs and easing stress on the electrical system.

#### Grid Stabilization

Utility-scale and distributed batteries help maintain voltage and frequency stability, improving reliability and reducing the risk of outages and power quality issues.

#### Community Batteries

Shared battery systems installed at the neighborhood or community level store electricity for multiple users, enhancing resilience, supporting local renewable energy, and reducing dependence on centralized infrastructure.



### FLARED GAS UTILIZATION

#### Mobile Generation Opportunities

Containerized gas capture and power generation systems can be deployed directly at oil fields to convert otherwise wasted gas into electricity for local communities, industrial facilities, and grid support.

#### Industrial Applications

Recovered flare gas can be used to power industrial facilities, mining operations, processing plants, and oilfield infrastructure, reducing fuel costs while improving energy reliability and environmental performance

## WIND ENERGY



### Utility and Distributed Applications

Wind energy can be deployed through large utility-scale wind farms or smaller distributed systems that supply electricity directly to communities, industrial facilities, and microgrids.

### Regional Opportunities

Venezuela's coastal regions, particularly Falcón, Zulia, and parts of the Caribbean coastline, possess favorable wind resources that could support both utility-scale and distributed wind generation projects.



## WASTE-TO-ENERGY

### Municipal Solid Waste

Waste-to-energy technologies convert household and commercial waste into electricity and heat, reducing landfill volumes while providing a reliable source of local power generation.



### Agricultural Waste

Crop residues, livestock waste, and agricultural byproducts can be transformed into electricity, biogas, or thermal energy, creating new revenue streams for rural communities and agricultural producers.

### Landfill Gas Opportunities

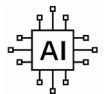
Methane generated from decomposing waste in landfills can be captured and used to generate electricity, converting an environmental liability into a productive energy asset.

## EMERGING TECHNOLOGIES



### Hydrogen

Hydrogen can serve as a clean energy carrier and long-duration storage medium, offering future opportunities for power generation, industrial decarbonization, and energy export markets.



### AI-Enabled Energy Management

Artificial intelligence systems can optimize electricity generation, storage, and consumption in real time, improving efficiency, reducing costs, and enhancing grid reliability.

### Virtual Power Plants (VPPs)

Virtual power plants use software to coordinate and manage large networks of distributed energy resources—such as solar panels, batteries, and generators—as a single flexible power system.

### Advanced Storage Technologies

Next-generation energy storage solutions, including long-duration batteries, thermal storage, flow batteries, and other emerging technologies, have the potential to improve grid resilience and support higher levels of renewable energy integration.



### Nuclear Power

Nuclear power producing large amounts of reliable, low-carbon energy can provide continuous baseload power, support grid stability, and help reduce dependence on fossil fuels while requiring relatively small land areas compared to many other energy sources.

## Funding and Investment Categories

There is currently significant interest among investors worldwide in Venezuela. Several billion-dollar investment funds are already being assembled. The easing of restrictions by international authorities as reopened the country to international trade and finance result in a gold rush mentality.

A variety of investment structures and capital sources will be evaluated in the context of their capacity to fund electrification projects in Venezuela.

### SOURCES OF CAPITAL

#### Private Investment

Capital provided by individual investors, family offices, private equity firms, and venture capital funds seeking financial returns from energy infrastructure and electrification projects.

#### Development Finance Institutions (DFIs)

Specialized financial institutions that provide loans, guarantees, and technical assistance to support economic development and infrastructure projects in emerging markets.

#### Multilateral Organizations

International institutions such as the World Bank, Inter-American Development Bank, and CAF - Development Bank of Latin America and the Caribbean that finance large-scale infrastructure, energy, and economic development initiatives.

#### Infrastructure Funds

Investment funds focused on acquiring, developing, and operating long-term infrastructure assets such as power plants, transmission systems, renewable energy projects, and utilities.

#### Climate Finance

Funding specifically designed to support projects that reduce greenhouse gas emissions, improve energy efficiency, or accelerate the transition to cleaner energy systems.

#### Carbon Markets

Mechanisms that allow projects to reduce emissions to generate and sell carbon credits, creating an additional source of revenue for qualifying energy and environmental initiatives.

#### Public-Private Partnerships (PPPs)

Collaborative arrangements in which governments and private-sector participants share the financing, risks, and rewards associated with developing and operating infrastructure projects.

### INVESTMENT MODELS

#### Energy-as-a-Service (EaaS)

A financing model in which a third party owns and operates energy equipment while customers pay for the energy services provided, avoiding large upfront capital expenditures.

#### Power Purchase Agreements (PPAs)

Long-term contracts under which an electricity buyer agrees to purchase power from a project developer at predetermined prices, providing revenue certainty for investors.

#### Leasing Structures

Financing arrangements that allow customers to use energy equipment such as solar panels, batteries, or generators through periodic payments rather than purchasing the assets outright.

#### Community Ownership Models

Structures that enable local residents, businesses, or institutions to collectively invest in and benefit from energy projects serving their communities.

#### Build-Own-Operate (BOO) Structures

Project delivery models in which a private developer finances, constructs, owns, and operates an energy asset while earning revenues from its ongoing operation over the life of the project.

## Technologies Database

Every energy source and enabling technology will be examined as a potential component of the solution. For each of the technologies, we will evaluate applicability and potential deployment opportunities within Venezuela.

Our affiliation with the **Davos Technology Platform** provides global reach for technologies worldwide that may offer solutions for Venezuela. For selected solutions we provide a comprehensive profile and data room for investors:

For each will be put into a searchable database. Below are examples of energy listings from the Platform.

### Powering the Future with Advanced Energy Storage

A developer of advanced battery technologies focuses on rechargeable sodium-ion and lithium-ion designs with thionyl chloride-based electrolytes. These **batteries offer high capacity and energy density for applications such as electric vehicles, drones,** and renewable energy systems, emphasizing enhanced rechargeability and scalable manufacturing for sustainable energy storage solutions.

### Advancing Safer, Cleaner Energy with Thorium Technology.

Thorium-based nuclear technology offers enhanced safety and efficiency by **using thorium, which has low radioactivity and high availability.** This results in reduced nuclear waste, higher fuel efficiency, and improved environmental safety, while also preventing weapons production, tackling critical challenges in the future of nuclear energy.

### Revolutionizing Energy Storage: 10x Better Than Lithium.

A novel flow battery design uses a unique membrane to overcome limitations that have hindered commercial adoption. Unlike lithium-based storage, **flow batteries generate energy from reactions between energy-rich chemicals.** This innovation significantly improves performance, with one expert estimating a tenfold advantage over lithium batteries, potentially enabling broader commercial application.

### Transforming Landfill Gas into Renewable Energy

Utilizing proprietary technology, the company **converts landfill gas into biomethane, capturing methane emissions** to reduce greenhouse gases and generate renewable energy. With operations in Europe and North America, it emphasizes sustainable waste management and provides clean energy alternatives to fossil fuels, contributing to environmental sustainability.

### Optimizing Energy for the AI-Powered Future

Using AI technology, this solution targets the U.S. grid's largest unmanaged electrical load, offering **savings of up to 100 TWh per year.** Virtual power plant technology helps meet the rising energy demand from AI data centers, with plans for quick, profitable nationwide deployment to manage peak load effectively.



The technology is **wireless energy transmission**, delivering power efficiently across long distances without the need for physical cables. Its goal is to **replace cumbersome wiring with scalable wireless charging solutions**, making energy access seamless for industries such as automotive, logistics, hospitality, and smart infrastructure.



Watt By Watt

Specializing in perovskite-based energy solutions, this company develops modules for autonomous devices and solar cells that **increase the efficiency of traditional panels by 25%.** These advancements broaden the potential of renewable energy, offering more efficient and versatile solutions for various industries.

## ADDITIONAL DATA ROOM CONTENT

- Technology
- Status
- Origins
- Ownership
- Competitive analysis
- Financial information
- Management Team and Key Contact information
- CEO interview.

## Research and Database Report Updates

The production of the **Baseline Report** and **Resource Database** is ongoing.

Members will receive bi-weekly updates as to progress on our database along with other valuable timely information.

We will interview thought leaders and experts in this field while **building a database of experts, technologies, and solutions** that can contribute to Venezuela's electrification efforts.

Our readers will stay current on critical matters, learn of new members and their interests, and review technologies as they are entered. Updates include:

- Important news
- Regulatory developments
- Notable Technologies
- Investment projects
- KOL Interviews
- Events
- Member Profiles

Rebuilding the grid will take years. **Distributed energy can be the bridge** that keeps the economy functioning while the national grid is rebuilt.

Around the world, billions have been invested in new energy solutions and breakthrough technologies. **Venezuela can be a platform to prove these technologies at scale.**

**We will evaluate hundreds of approaches.** Determining which technology is best suited for which energy needs will be a matching exercise.

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### Electrification Update: No.1

Update of progress on the Electrification Database Baseline Sector report and updates on the Venezuela Electrification Project.

VZ Economics VZ Economics VZ Economics

**EDITORS NOTE:** This is the first weekly Electrification Updates that will follow progress on the **Electrification Baseline Report** being built for Electrification Industry Council. The Baseline Report analyze the country's electricity situation by region. Its purpose is to **end the blackouts and the energy holidays.**

**Without electricity, Venezuela remains stuck.** It doesn't have the energy to monetize its energy. No funds. No rebuild. The grid rebuild can't help now. If started tomorrow it would take years before an impact. **The country needs electricity now. Not 2032.**

The **Baseline Report** analyze the country's electricity situation by region. Its purpose is to accelerate Venezuela's recovery by ensuring sufficient and reliable energy supplies.

#### DISTRIBUTED ENERGY

**Distributed energy is the bridge that can restart the economy** while the national grid is rebuilt. This will be the focus for the research and the sourcing of solutions.

The good news is that around the world, vast investments have been made in the energy transition. Venezuela is where this innovation can land now. **Venezuela could be the capital of clean energy innovation** as it pursues solar, batteries, natural gas, hydrogen, waste to energy, AI, Nuclear, flared gas and wind.

#### TECHNOLOGIES

The world is full of clean energy innovation innovations, innovators. Some examples:

- » **A diesel engine** bolt on reduces fuel consumption and emissions up to 20%.
- » **A coating for solar panels** that takes them to 40% (vs. average today of 23%).
- » **Flared gas to power oil industry operations.**

#### INTERVIEWS

**Christian Schmitz** who as director of PDIE, Tokyo based has been the leading nominator for the Earth Shot Prize (finalists and winners) and has developed a keen idea as to what will win and a large database of vetted sustainable energy technologies worldwide.

#### REGULATORY & GOVERNMENT

Recent policy developments: The government directed **oil companies to secure their own power supplies** rather than rely on the national grid, (I don't think they were) reducing competition with households and essential services for limited electricity resources.

#### PROFILES:

The **Venezuelan American Chamber of Commerce** of the United States (VACC) is the leading platform for connection, representation, and business growth for Venezuelan entrepreneurs and companies in the U.S. [more](#)

#### EVENTS:

July 15-16, **5th Edition of the Caracas Gas Forum 2026.** Venezuela holds massive natural gas reserves that are ready for strategic expansion. To unpack these developments, the Instituto de Estudios Superiores de Administración (IESA), Venezuela's premier business school will host a conference to bring together the key players. [more](#)