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Electrification in Honduras

Deep-Dive Analysis

9 April 2025

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UAC country deep-dive reports were produced to serve as reference material to accelerate last-mile access. Reports consist of 3 components:

1. Overview of electrification in the country, including history, current status, geographic & demographic trends, and future plans.

Source: Various publicly available data sources; interviews with Coalition members & other partners

2. Summary of a geospatial plan, recommending electrification modalities for target communities in order to achieve 100% electricity access and improve quality of service

Source: Geospatial plans produced by comprising Waya Energy, the MIT-Comillas Universal Access Lab, and/or TTA (authorship varies by country), based on satellite imagery and data inputs from national agencies & other sources

3. Summary of challenges & considerations for operationalizing electrification plans, organized by theme

Source: Interviews with coalition members & other partners; publicly available reports; analysis by Catalyst

DISCLAIMERS

- The geospatial plans are not government-endorsed roadmaps. They are intended as reference material to support future electricity access planning and implementation. As such, they are presented for informational purposes only.
- Each plan is based on modeling that incorporates a specific set of assumptions (including a specific definition of "unelectrified"). Thus, the plans' conclusions may not be directly comparable to those of other electrification analyses for that country.
- Grid densification activities outlined in the geospatial plans are intended to represent business-as-usual operations for utilities, based on expected service improvements & demand growth in communities already electrified today.

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Table of Contents

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Acronyms and abbreviations

ENEE	National Electric Energy Company
EU	European Union
FHIS	Honduran Social Fund
FOSODE	Social Fund for Electricity Development
GIZ	German Corporation for International Cooperation
HH	Household
ICAEH	Coverage and Access to Electricity Report for Honduras
IDB	Inter-American Development Bank
JICA	Japan International Cooperation Agency
KOICA	Korea International Cooperation Agency
kWh	Kilowatt hour
NREL	National Renewable Energy Laboratory
O&M	Operations and maintenance
PAUEH	Universal Access to Electricity Policy for Honduras
PEAUE	Strategic Plan for Universal Electricity Access
PERLA	Remote Area Rural Electrification Programme
PPP	Public-private partnership
PV	Photovoltaic
PUE	Productive use of energy
RE	Renewable energy
SAG-PRONADERS	National Program for Sustainable Rural and Urban Development
SEN	Secretariat of Energy
SERNA	Ministry for Natural Resources and Environment

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Current status of electrification and energy access in Honduras

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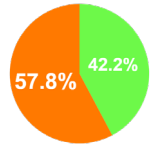
Honduras has the lowest electricity access rate in Central America.

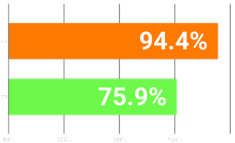
1.2 million people without access to electricity[1] in 2022

9.6 million
Total population[1], with an urban & rural split of:[1]



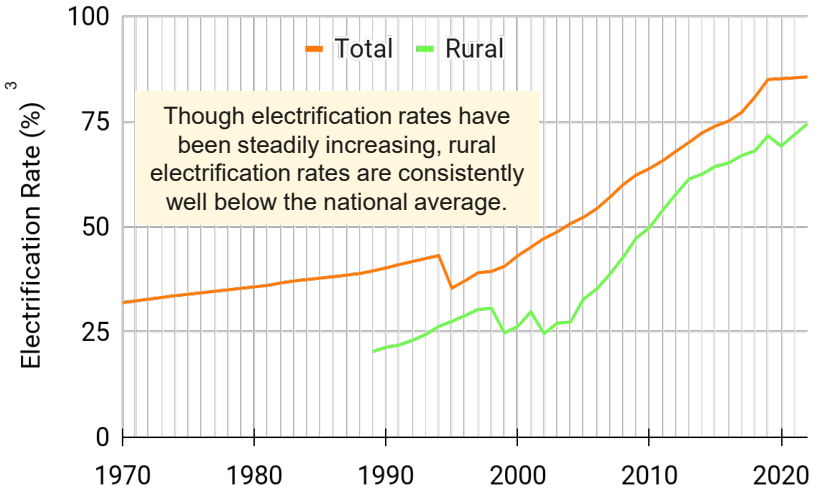
*There is a current population growth rate of 1.7%[5]

86.28%
Total electrification rate, corresponding to **346 thousand households** without electricity access[1].



urban/rural electrification rate (%)[1]

298 kWh
Annual residential electricity demand per capita[4]



[1]Informe de Cobertura y Acceso a la Electricidad, Secretaria de Energia de Honduras (2023). [2]Honduras Country Profile, CIA World Fact Book (2024). [3]IADB Energy Hub - Electricity Access Database (2022). [4]Honduras Country Profile, IEA (2024). [5]World Population Prospects UNPD (2024).

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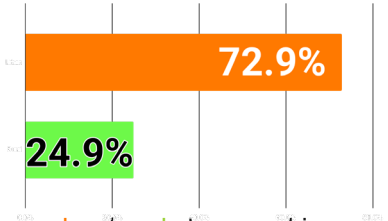
Honduras has a diversified energy sector, increasingly embracing its renewable energy resources.

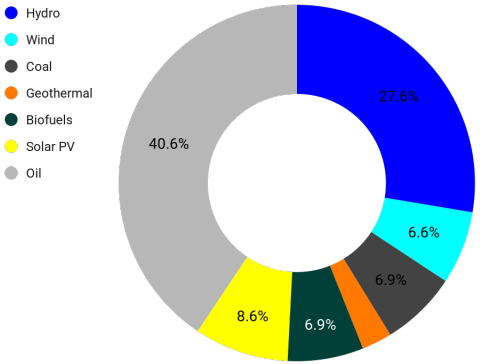
50%

Clean cooking access rate[1] - **1.29 million households** without access to clean cooking in 2022[2]

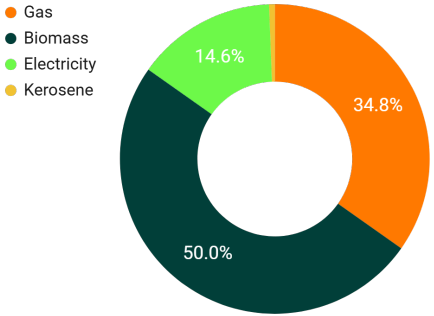


urban/rural clean cooking access rate (%)[1]

Electric grid mix in 2022[4]



Breakdown of primary cooking fuels in 2021[3]



Grid reliability in 2023[5]

Total unmet electricity demand **92.5** GWh

Average daily electricity interruptions **27** times/day

[1]WHO, 2022 Clean Cooking Access rate, 2024. [2]Calculated based on access rate, and the household size calculated with information from Informe de Cobertura y Acceso a la Electricidad, Secretaria de Energia de Honduras (2022). [3]WHO, Database: Cooking fuels and technologies (by specific fuel category) (2021). [4]Honduras Country Profile, IEA (2024). [5]Estado del Pais - Subsector Electrico, ASJ Honduras (2024).

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Geographic and demographic trends

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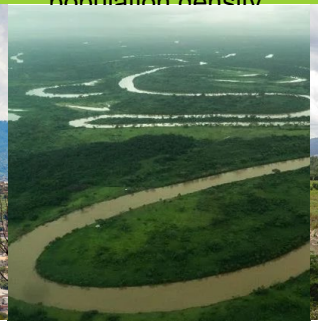
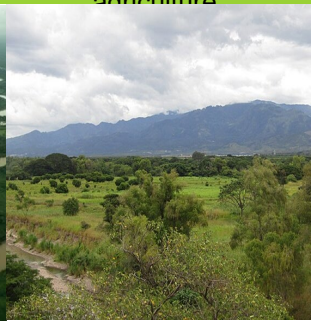
The geography of Honduras consists of three types of terrain, with the topographic conditions of the lowlands posing significant challenges to expanding electricity access.

Highlands	Lowlands	Plains
High altitudes, rugged terrain, densely populated	Dense jungle, difficult accessibility, and low population density	Deep valleys and fertile lands fit for agriculture

- 65% of Honduras is mountainous terrain, and about 50% of the territory is covered in forests.
- About 5 million hectares of protected areas, with 64% on land and the remaining at sea.

Source: Ficha País Honduras, Oficina de Información Diplomática Honduras (2024)

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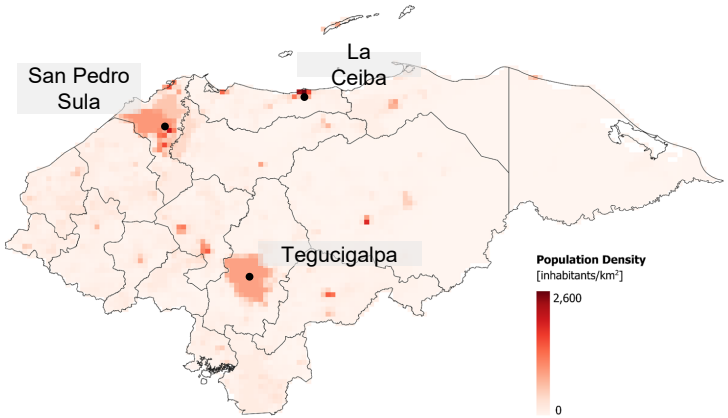
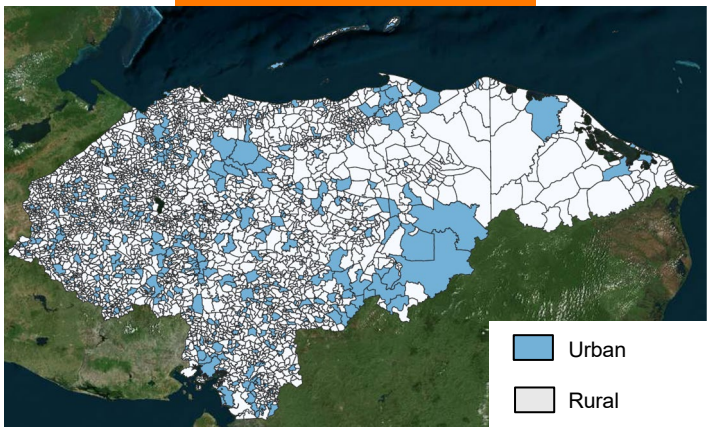
The urban population is clustered in particular areas, while other zones are sparsely populated.

POPULATION DENSITY



There are a handful of densely populated centers, mostly located in the Central Highlands and Northern Plains regions.

RURAL POPULATION



Approximately 42% of the population resides in rural areas, one of the highest proportions in Latin America.

Source: Informe de Cobertura y Acceso a la Electricidad, Dirección General de Electricidad y Mercados (2022)

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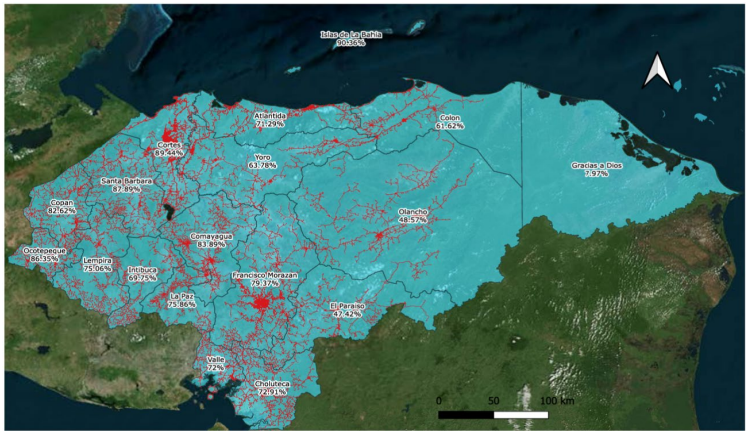
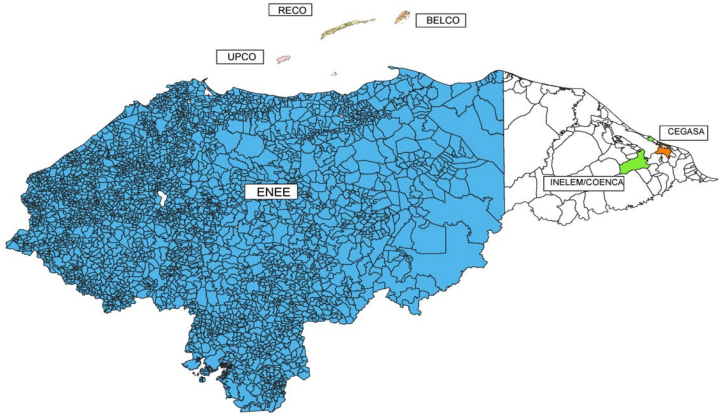
Honduras's power grid is extensively developed in all departments except the easternmost department, Gracias a Dios.

GRID NETWORK



UTILITY CONCESSIONS



- Honduras has granted distribution concessions to **7 utilities** nationwide, with the state-owned Empresa Nacional de Energía Eléctrica (ENEE) managing nearly 99% of the electricity grid.
- **Gracias a Dios** is the only department without grid infrastructure; however, two utilities operate in parts of the departmental capital, Puerto Lempira, granting 12% of the population access to

Source: Informe de Cobertura y Acceso a la Electricidad, Dirección General de Electricidad y Mercados (2024)

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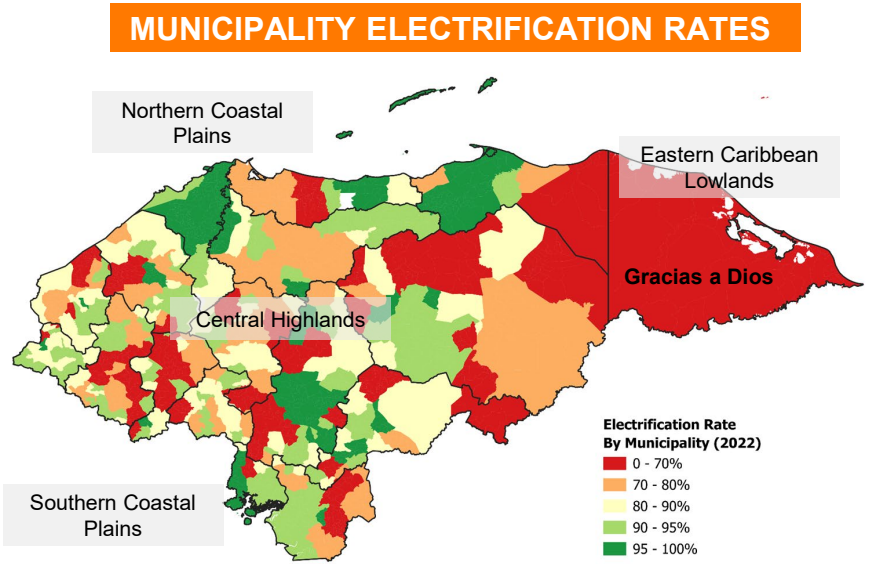
Municipality-level electrification rates validate Honduras' geographic disparity in access



- Gracias a Dios is by far the department with **lowest electricity access rates**.

Municipalities in Gracias a Dios	Electricity Access
Puerto Lempira	63%
Juan Francisco Bulnes	4%
Villeda Morales	2%
Brus Laguna	30%
Ahuas	0%
Wampusirpi	0%

- **17 municipalities** across Honduras have access rates **below 50%**.
- The **Northern Coastal Plains** region boasts the highest average access rate at **87.3%.**

Source: Informe de Cobertura y Acceso a la Electricidad, Dirección General de Electricidad y Mercados (2024)

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Honduras is rich in ethnic and cultural diversity, with indigenous and Afro-Honduran groups dispersed throughout the territory

ETHNIC GROUPS

- In Honduras, **~20% of the population is of indigenous or Afro descent**, inhabiting 16 of 18 departments.
- Gracias a Dios has the **highest concentration** of people of indigenous or Afro-Hondurian descent at **99%.**
- The **Lencas is the most populous indigenous group** in Honduras, making up ~29% of the population.
- These minority groups commonly make a living from **agriculture, fishing, crafts, and tourism.**
- Many of these groups live in **remote, hard-to-reach areas** that lack basic services.
- The majority of indigenous communities are **highly susceptible to climate change** due to poverty and reliance on farming.

Sources: Numero de Población por Etnia y Sexo, Honduras Estadísticas INE (2022), MARCO DE PLANIFICACIÓN PARA PUEBLOS INDÍGENAS Y AFROHONDUREÑOS – Proyecto de Mejoramiento de la Calidad del Nivel de Educación Prebásica en Honduras, Secretaría de Educación (2019).

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Socio-economic conditions vary drastically among the minority groups and within the regions they inhabit

Select Departments	Indigenous Communities	Population Earning < USD $150 /month	Electrification Rate
Honduras Average		53%	87.5%
Lempira	Lencas	86%	79.3%
Intibucá	Lencas	70%	75.3%
Santa Bárbara	Lencas	68%	83.5%
La Paz	Lencas	60%	82.8%
Francisco Morazán	Tolupán, Lencas	48%	93.5%
Gracias a Dios	Miskitu, Tawahka, Garífunas, Pech	48%	28.8%
Yoro	Tolupán	45%	90.2%
Comayagua	Lencas	40%	79.2%

- While some departments have high electrification rates, **significant disparities exist** across municipalities due to variations in population density and geographic conditions.
- Municipalities with electricity access **below 50%** have about **50% fewer households** than the national average.

Sources: Índice de Acceso a la Electricidad, Honduras Estadísticas INE (2022), MARCO DE PLANIFICACIÓN PARA PUEBLOS INDÍGENAS Y AFROHONDUREÑOS – Proyecto de Mejoramiento de la Calidad del Nivel de Educación Prebásica en Honduras, Secretaría de Educación (2019), Número de familias por vivienda, Honduras Estadísticas INE (2023), Promedio de Ingreso mensual por vivienda, Honduras Estadísticas INE (2023).

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Honduras' electrification efforts to date

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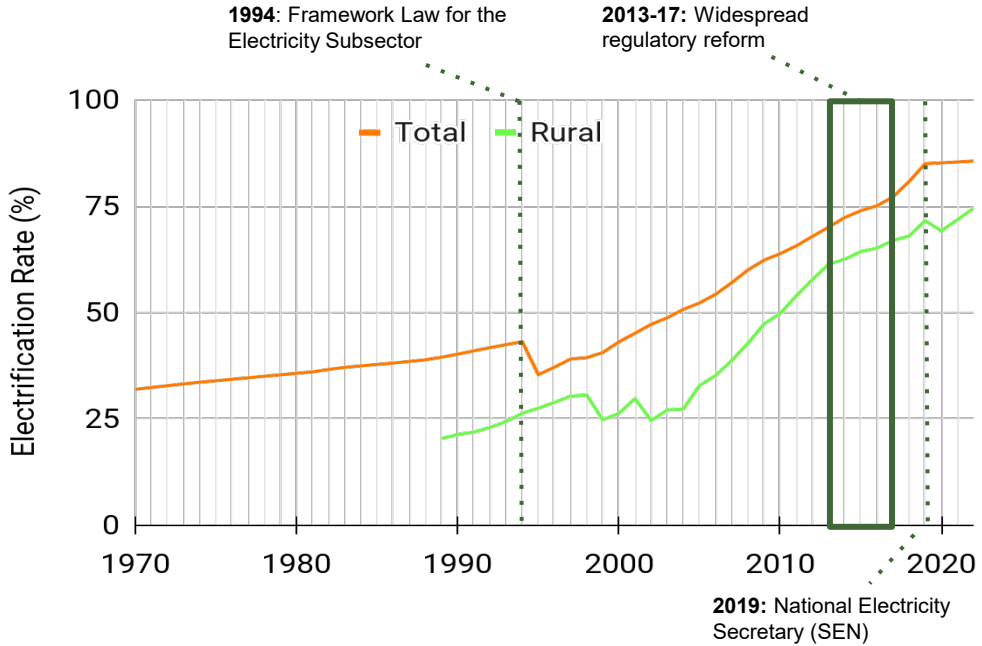
The private sector accounts for about 80% of the current installed generation capacity in Honduras

- The grid is concentrated in the country's most populous regions, where most electricity is generated.
- The National Electric Energy Co. (ENEE) has existing debt and expensive PPAs that limit its ability to finance new investments in the energy sector.



- In 1994, Honduras faced a severe energy crisis, which the government responded to by passing the **Framework Law of the Electricity Subsector**, permitting the private sector to participate in electricity generation.
- In 2013, **Decree 138** was passed to promote investment in solar PV plants by providing preferential pricing.
- In 2014, the **General Law for the Electricity Industry** replaced the framework from 1994, regulating all levels of the electricity sector.
- In 2017, Decree PCM-017-2017 created the **National Energy Council** to drive strategic intersectoral coordination in all matters related to energy.
- In 2019, the **Secretariat of Energy (SEN)** begins to operate. SEN is currently the governing body of the national energy sector and oversees regional and international energy integration.

Sources: Energy efficiency and energy intensity in Honduras electrical subsector: Background and present situation. Marco Antonio Flores (2019), Informe Estadístico Anual del Subsector Eléctrico Nacionas, Direccion General del Electricidad y Mercados (2021); Renewables Readiness Assessment Honduras, IRENA (2023)

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Program spotlight: Remote Area Rural Electrification Programme (PERLA)

Who	Energía Gobierno de la República; ENEE; IDB Inter-American Development Bank
What	Support the increase of electricity coverage in Honduras through the implementation of decentralized and distributed RE projects
Where	Remote regions (Brus Laguna, Guanaja, El Corpus, and Concepción de María)
When	2018 - ongoing
Funding	USD $6.42 million from IDB; USD $250,000 from Honduran government (FOSODE)
Technology	Standalone solar; Solar PV mini grids with Li-ion batteries and diesel backup
Affordability	Reduced the cost of electricity for populations that have access through gensets with high fuel costs.

Successful Outcomes

Has supported in the **increase of electricity access rates from 77% in 2017 to 87% in 2023** while **reducing overall CO_2 emission from energy production** by 0.13 tCO_2/MWh.

- The installed mini-grids and isolated solar PV systems provided more stable and cheaper electricity service for the communities, relative to incumbent generators.
- In total, over **8,000 households** benefited from renewable energy solutions in the four target communities, amounting to over **20,000 beneficiaries**.
- Involved women from the community as labor and project staff.
- Provided capacity building to ENEE in managing the projects
- The improved electricity service is **driving socioeconomic development,** supporting healthcare centers, schools, and businesses to improve their services and increase productivity.

Challenges

- **Complex multimodal logistics** of material and personnel due to complicated access.
- **Connection to a network with unbalanced electrical demand** across phases.
- **Adverse weather conditions** during logistics and installation.
- **Socialization** of the project with local indigenous groups.

Sources: Convenio de Financiamiento no Reembolsable para la inversión No. GRT-SX-17123-HO, IDB (2018), Informe de Monitoreo del Proyecto, IDB (2024), Avanza la electrificación de comunidades aisladas de Honduras, La Prensa (2024), Un proyecto del BID lleva la fotovoltaica a una zona rural de Honduras, PV Magazine, (2025), Project descriptions, Solartia (2024)

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Program spotlight: National Program for Sustainable Rural and Urban Development (SAG-PRONADERS)

Who	Agricultura y Ganadería
What	Provide electricity access to 21,000 households
Where	Intibucá, Lempira, La Paz, and Santa Bárbara departments
When	Ongoing
Funding	USD $44.8 million from international loan and USD $3.4 million from Honduran gov't
Technology	Standalone solar

Successful Outcomes

In its initial stage, the program **provided electricity** to 21,036 households, 416 schools and 34 health centers, for a total installation of 21,486 PV systems, benefiting **21,036 families in the Western part of the country**.

- The standalone solar PV systems were able to **provide electricity** to families that **lacked electricity access due to budget or physical access challenges.**
- The project is designed to incorporate plans for **O&M** of the systems, **socio-economic development for the target communities**, and long-term project management, to maximize its long-term sustainability.

Challenges

- **The process for selecting beneficiaries and the procurement procedure for contracting a builder were compromised**, thought to be driven by political considerations rather than objective criteria.
- The **poor quality of the PV systems** deployed in the initial phase resulted in their failure after a short period of operation.

Sources: ProEnergia Rural, Desarrollo Rural y Urbano Sostenible SAG-PRONADERS Honduras (2024), El proyecto Pro-Energía Rural llevará energía a 2,347 familias, La Prensa (2023).

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Future plans and considerations for electrification

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Honduras's electrification goals are anchored in the Universal Access to Electricity Policy for Honduras (PAUEH).

TARGETS

Develop a Strategic Plan for Universal Electricity Access (PEAUE) as an instrument to implement electrification projects in Honduras, prioritizing zones based on the **Coverage and Access to Electricity Report for Honduras (ICAEH)**

Electrify all schools and hospitals nationwide by 2027.

Achieve 100% electrification by 2030 and continue improving electricity service until 2050. Improvements will include scaling generation capacity to meet demand, improving the quality of the service, and actively reducing CO_2 emissions.

The estimated investment required to enact this policy until 2030 ranges from **USD $225 - 583 million**.

The government has pledged the equivalent of **USD $588,000** and the proceeds from a **1% tariff** on distribution services.

Source: Executive Decree PCM-120-2021

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To support plans for operationalizing these targets, a research group recently developed a **least-cost geospatial plan** to identify unelectrified areas and recommend appropriate technologies to electrify them.

THE OBJECTIVE

To collect the information necessary and build the tools necessary to develop the Strategic Plan for Universal Electricity Access (PEAUE).

THE USE CASE

To serve as a reference for ENEE and relevant partners to develop plans to achieve universal electricity access in Honduras by 2030.

Note that this plan references satellite images & other supporting data to run a model based on a specific set of assumptions (including a specific definition of “unelectrified”). As such, its conclusions may not be directly comparable to those of other electrification analyses. This plan is *not* a government-endorsed roadmap, and it was not originated for the context of UAC research. It is presented here for informational purposes only.

Least cost geospatial plan partners

Client & Contracting entity

ENEE
Empresa Nacional de Energía Eléctrica
Gobierno de la República

Financing support

IDB
Inter-American Development Bank

Technical partners

SIGLA
CONSULTORA EN ENERGIA

ASINELSA S.A.

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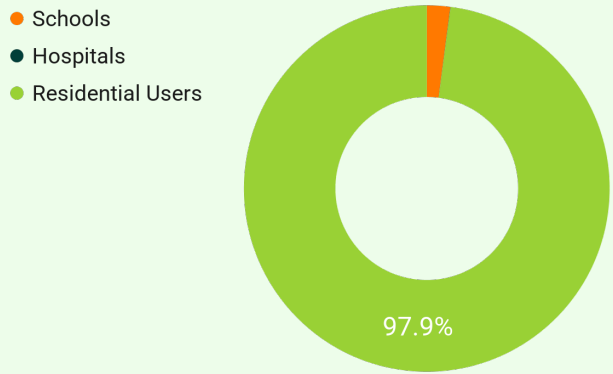
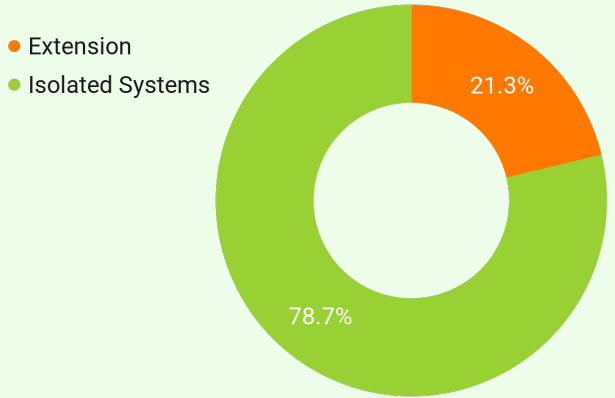
The least-cost plan estimates a required investment of about USD $700 million to achieve universal access in Honduras by 2030.

- The plan designates each new connection to one of two zones based on whether a grid connection or an isolated system is the least-cost option. It also includes detailed iterations of system configurations for varying demand levels, summarizing the overall minimum and maximum connection costs.
- The technologies to be used and a precise number of target residential users **remain unclear**, limiting the use case of this plan.

Breakdown of Investment by Client



Breakdown of Investment by Connection



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Key players in electrification efforts

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Key Players in Mini-Grid and Standalone Solar Projects: Development Partners

Name	Description
WORLD BANK GROUP	The **World Bank** has been a major financier and technical advisor for energy projects in Honduras. Funds include a USD $2.35 million GEF project fund for rural electrification, and USD $47 million IDA Rural Infrastructure Project, both implemented by the Honduran Social Fund (FHIS).
IDB Inter-American Development Bank	The **IDB** has been actively involved in financing and promoting sustainable energy projects in Honduras, including mini-grids. The IDB has financed projects such as the Jilamito Hydroelectric plant, through a USD $20.25 million loan, and the Brus Laguna and Guanaja hybrid (solar-diesel) mini-grids developed by Solartia. IDB also provides technical support to the Government of Honduras, including the the smart grid assessment for Guanaja Island as part of "Guanaja Green Island Program".
KOICA Korea International Cooperation Agency	The **Korea International Cooperation Agency (KOICA)** has provided Official Development Assistance (ODA) to support energy access. KOICA has conducted a master plan and feasibility study for a mini-grid in Guanaja island, and later mobilised funds for project implementation, together with IDB.
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH	**GIZ** has worked in Central America through a regional approach, for example by supporting the Renewable Energies and Energy Efficiency (4E) project, which focuses on energy efficiency, grid stability and digitalisation. In the energy access space, GIZ supported initiatives like the Energia Y Luz para la Vida - Yu Raya, that aims to provide 180 families with standalone solar systems.
European Union	The **EU** has had a regional approach to support Central America, mostly on energy efficiency and policy. In Honduras specifically, the EU has financed the construction of dams and has supported the Energia Y Luz para la Vida - Yu Raya initiative to provide 180 households with standalone solar systems.
NREL National Renewable Energy Laboratory	In collaboration with the U.S. Department of Energy and the U.S. Department of State, **NREL** conducted an integrated assessment of photovoltaic and battery energy storage systems, focusing on rural electrification in Honduras, particularly in the Gracias a Dios region.
aecid	**Spanish Agency for International Development Cooperation (AECID)** financed the Seed for the Development of Yoro (CORYLUS) project which aims to both reduce energy poverty and improve the living conditions of 987 rural indigenous and mestizo families living below the poverty line in the municipality of Yoro by providing an energy plan for the department, encouraging its replicability in other municipalities.

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Key Players in Mini-Grid and Standalone Solar: Government Partners

Name	Description
Energía Gobierno de la República	The **Secretariat of Energy (SEN)** is the primary government body responsible for overseeing the energy sector in Honduras, including mini-grid development. It sets national energy policies, plans rural electrification strategies, and coordinates with stakeholders to implement mini-grid projects. SEN also oversees the National Rural Electrification Plan, allocating funding and resources to underserved areas.
ENEE	The **National Electric Energy Company (ENEE)** plays a central role in implementing rural electrification projects, including mini-grids. It works on grid expansion and maintenance, collaborates with municipalities and private entities to develop mini-grid solutions, and ensures the integration of these projects into the national electricity strategy.
FOSODE Gobierno de la República	The **Social Fund for Electricity Development (FOSODE)** provides funding and technical assistance for rural electrification, including standalone systems and mini-grids. It works to reduce electricity access gaps by supporting projects in regions that are uneconomical for private investment.
HONDURAS CREE	The **Regulatory Commission for Electricity (CREE)** regulates the electricity market in Honduras, including tariff setting and oversight of electricity generation and distribution.

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Key Players in Mini-Grid and Standalone Solar: Execution

Name	Description
Solartia Positive Energy	**Solartia**, in partnership with Ingeteam, developed hybrid mini-grids (solar-diesel) to serve remote communities in Brus Laguna and Guanaja, funded by IDB.
SOLUZ EL SOL SALE PARA TODOS	**Soluz** has been a key player in providing standalone solar home systems and micro-financing solutions to expand energy access in off-grid rural areas since 1989. They have distributed more than 6,000 standalone solar systems.

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Key Players in Grid Extension: Development Partners

Name	Description
WORLD BANK GROUP	The **World Bank** has been a major financier and technical advisor for energy projects in Honduras. Funds include a USD $2.35 million GEF project fund for rural electrification and a USD $47 million IDA Rural Infrastructure Project, both implemented by the Honduran Social Fund (FHIS).
IDB Inter-American Development Bank	The **IDB** has provided funding for energy sector initiatives, including rural electrification projects and support for transmission infrastructure improvements.
JICA	**The Japan International Cooperation Agency (JICA)** has been involved in various infrastructure projects in Honduras, including those aimed at expanding and improving the electrical grid to enhance energy access, such as the Cañaveral and Río Lindo Hydropower Strengthening Project
European Investment Bank	The **European Investment Bank (EIB)** has been actively involved in supporting Honduras's electricity sector, focusing on renewable energy development and infrastructure enhancement by providing options for low-interest loans. Most recently, Honduras has acquired a loan for US $29.4 million to build a 51.1 MWp solar PV plant.

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Key Players in Grid Extension: Government Partners

Name	Description
Energía Gobierno de la República	**Secretariat of Energy (SEN)** is the primary government body responsible for overseeing the energy sector in Honduras. It sets national energy policies, plans rural electrification strategies, and coordinates with stakeholders to implement distribution projects. SEN also oversees the National Rural Electrification Plan, allocating funding and resources to underserved areas.
ENEE	The **National Electric Energy Company (ENEE)** is the state-owned utility responsible for electricity generation, transmission, and distribution in Honduras. It manages grid extension projects, maintenance of existing infrastructure, and integration of renewable energy into the national grid.
HONDURAS CREE COMISIÓN REGULADORA DE ENERGÍA ELÉCTRICA	The **Regulatory Commission for Electricity (CREE)** regulates the electricity market in Honduras, ensuring fair tariff structures, overseeing grid reliability standards, and enforcing regulations to promote efficiency and competition in the sector. It also ensures compliance with technical and financial regulations for grid-connected projects.
SERNA	The **Ministry for Natural Resources and Environment (SERNA)** is responsible for environmental oversight and permitting of grid extension projects. It ensures that large-scale infrastructure projects comply with environmental regulations and promotes the integration of sustainable energy sources into the national grid.

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Key Players in Grid Extension: Execution

	Name	Description
Generation	ENEE	**ENEE** is the state-owned utility and responsible for part of the electricity generation. ENEE manages about 20% of the total installed generation capacity through mostly hydropower plants, as well as three fossil fuel plants used in emergencies. Notable plants include: Francisco Morazán (300 MW), Patuca III (104 MW), Rio Lindo (80 MW), Cañaveral (29 MW) and Nípero (22.5 MW)
	Private Sector	The private sector contributes to about 80% of generation capacity through hydropower, wind farms, solar, geothermal and biomass plants. Notable companies include: ENERSA, Lufussa, Globeleq, Soposa and Cohessa
Transmission	ENEE	**ENEE** is responsible for operating the national grid (SIN).
Distribution	ENEE	**ENEE** has a **monopoly on distribution and commercialisation**, with a few exceptions.
	Private sector	The private sector operates a few isolated grids, including Bay Islands (operated by RECO, UPCO, and BELCO) and Puerto Lempira (operated by INELEM and ELESA)

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Risks and Challenges for Electrification in Honduras

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Mini-Grids and Standalone Systems: Key Challenges

Planning, Political & Regulatory (1/3)

Challenges	Key considerations going forward
• **Lack of information** on the exact number and location of households without electricity. Current process to determine HHs without access is done manually based on georeferenced maps.	• Develop a **centralized, updated database** using **satellite imagery and census data** to improve planning and decision-making. Implement **digital tools** to streamline data collection and ensure **real-time monitoring**.
• **Low quality of geospatial maps** hinders proper identification of HHs without access	• Improve geospatial data accuracy by integrating **high-resolution satellite imagery** and **GIS-based mapping** systems. Establish **partnerships** with institutions experienced in geospatial analysis to enhance data quality.
• The existing **geospatial plan developed in 2021 by ASINELSA and SIGLA** is a good start to defining a georeferenced plan to achieve universal access in Honduras, but it still **lacks detail and clarity** in regard to the investment needed to achieve universal access with each technology: standalone solar, mini-grids, expansion, and densification	• Develop an **updated plan** that follows the format of the least-cost geospatial plans of other LAC countries, such as Peru or Panama, in order to **improve clarity** for the government and other stakeholders. Ensure the plan includes specific **financing mechanisms, cost projections, and timelines** for each technology.
• **Lack of technical quality standards for standalone systems** results in distribution of substandard equipment. For example, between 2007 and 2012, a program distributed 25,000 standalone systems. However, some companies reported that these **systems began failing within months** due to issues such as poor LED bulb quality and incorrectly sized solar controllers, among other deficiencies.	• Government should design **policies and standards** to ensure distribution of **high-quality products** in Honduras. Establish **certification requirements** for standalone solar systems to guarantee durability and performance. Implement **quality control mechanisms at importation and distribution stages**.

Sources: Interviews with Coalition members and government stakeholders, 2025.

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Mini-Grids and Standalone systems: Key Challenges

Planning, Political & Regulatory (2/3)

Challenges	Key considerations going forward
• **Corruption and low political commitment to energy access**: Previous governments have faced allegations of corruption and illicit practices, hindering progress on energy projects and damaging institutional credibility. This has created a lack of trust and slowed the implementation of essential reforms.	• Strengthen governance by **promoting transparency, enforcing anti-corruption measures,** and **fostering partnerships** with international organizations to rebuild trust and attract investments in the energy sector. Implement **accountability frameworks** and **public reporting** mechanisms for energy projects.
• **Inconsistent and Ineffective Policies:** Previous governments made some detrimental decisions, such as high subsidies and ineffective electricity policies, which hindered the sector's progress.	• Develop a long-term national electrification strategy that provides **clear guidelines** and **realistic targets** for energy access. • **Engage stakeholders**, including communities and private sector players, in the policy-making process to improve implementation. • Strengthen **a bottom-up approach** to electrification, **where local governments lead** the expansion of electrification projects in their region.
• **Regulatory Gaps:** There is no approved law defining universal electrification goals, despite the existence of a draft from 5-6 years ago.	• **Finalize and approve a universal electrification law** that sets clear targets and regulatory mechanisms. Ensure that policies support **grid expansion, mini-grids, and off-grid solutions** in a coordinated manner. Secure political commitment to maintain **policy stability** and avoid delays in implementation.

Sources: Interviews with Coalition members and government stakeholders, 2025.

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Mini-Grids and Standalone systems: Key Challenges

Planning, Political & Regulatory (3/3)

Challenges	Key considerations going forward
• **Restrictions on private sector participation**: Current regulations do not allow the private sector to sell electricity, limiting the development and operation of mini-grids. This blocks private investment and hinders innovation in energy access.	• Reform regulatory frameworks to **enable private sector participation** in mini-grid development. **Provide incentives** such as tax breaks or subsidies for private operators and create mechanisms for **public-private partnerships** to expand energy services.
• **Limited human resources in public institutions:** Public institutions responsible for energy access, such as SEN, lack sufficient staff, with only a handful of individuals dedicated to electrification efforts. This capacity constraint hampers project planning, implementation, and oversight.	• Build institutional capacity by **hiring and training additional personnel** for energy-related roles. Collaborate with international agencies to provide **technical support** and **capacity-building** programs. Establish dedicated units within institutions to **focus on energy access initiatives**.

Sources: Interviews with Coalition members and government stakeholders, 2025.

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Mini-Grids and Standalone systems: Key Challenges

Economic (1/2)

Challenges	Key considerations going forward
• **Low Electricity Consumption**: Electricity demand in many rural areas is predominantly low and limited to domestic use, which affects the financial sustainability of mini-grids and standalone systems. Additionally, the lack of industrial or commercial anchor clients reduces energy usage and revenue generation potential.	• **Develop and promote productive uses of energy (PUE)** by supporting small businesses, agricultural processing sites, and community facilities to boost electricity demand and improve mini-grid viability. • **Improve access to PUE equipment** through innovative financing
• **Limited Economic Viability**: Low density or small populations connected to the grid drive up the cost per connection, limiting returns that may not justify investment.	• **Integrate PUE into off-grid projects** to boost energy demand and improve the financial sustainability of these initiatives. • Develop a coherent **micro-utility framework** for off-grid supply, including clear standards and a **sustainable business model**, to provide investors with a pathway to profitability.
• **Insufficient government funding for energy access:** Limited financial resources constrain the government's ability to invest in grid expansion, mini-grids, or standalone solutions, as it prioritizes maintaining failing grid infrastructure.	• Seek **international donor support** and **multilateral development funds** to supplement government investment. **Develop public-private partnerships (PPPs)** to share costs and risks. Focus on **scalable solutions** that provide immediate benefits to underserved areas without extensive grid infrastructure investments.

Sources: Interviews with Coalition members and government stakeholders, 2025.

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Mini-Grids and Standalone systems: Key Challenges

Economic (2/2)

Challenges	Key considerations going forward
• **High logistical cost of collecting payments** due to remoteness of localities and lack of PayGo-enabled systems	• Expand **digital payment solutions** such as mobile money to reduce collection costs. Encourage **partnerships with telecom providers** to facilitate PAYGo adoption in remote areas. Explore **community-based agents** to manage collections efficiently.
• **Lack of financial incentives**, such as results-based financing (RBF) or government subsidies, make standalone systems unattractive for the private sector and difficult to scale	• Advocate for **targeted government subsidies** or **RBF mechanisms** to de-risk private sector investments. Develop **blended finance** models that combine public and private funding.
• **Low profitability of mini-grid and standalone solar business model** due to high operational costs and low purchasing power of potential customers	• Promote affordability through **flexible financing** options, such as longer-term payment plans. Support cost reduction strategies, including **portfolio-building (bulk procurement)**, **supply chain improvements**, and **tax benefits**.

Sources: Interviews with Coalition members and government stakeholders, 2025.

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Mini-Grids and Standalone systems: Key Challenges

Logistical & Geographic (1/2)

Challenges	Key considerations going forward
• **Extended project timelines:** Long lead times of up to 6 months for system delivery can hinder implementation	• Work with SEN and the customs administration (Aduanas Honduras) to create a **simplified clearance process** for off-grid energy equipment. **Partner with transport services** to integrate mini-grid and standalone solar equipment deliveries into **existing supply chains**.
• **Operations and Maintenance (O&M) Difficulties**: Maintaining mini-grids in remote areas presents significant challenges due to logistical issues, such as limited access to spare parts and low availability of technical expertise. The long maturation time of these projects, coupled with the need for ongoing support and maintenance, adds to the operational complexity and costs.	• **Partner with private mini-grid developers** to provide O&M for government projects. Implement a **subscription-based or PayGo payment model** with lockout capability to fund ongoing maintenance. • **Train local personnel to perform routine maintenance** and basic troubleshooting, reducing reliance on external experts. Deploy teams of **experts to handle more complex O&M** for multiple mini-grids across a department. • Partner with vocational training institutions to develop **specialized courses in mini-grid management** for longer term capacity-building • **Store frequently needed spare parts at mini-grid sites or in nearby towns**, in coordination with ENEE and local cooperatives.
• **Protected Areas:** Restrictions in protected regions hinder infrastructure expansion.	• **Work with environmental authorities** to develop **sustainable electrification solutions** that comply with conservation regulations. Promote **decentralized renewable energy systems**, such as solar home systems and micro-grids, to minimize environmental impact.

Sources: Interviews with Coalition members and government stakeholders, 2025.

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Mini-Grids and Standalone systems: Key Challenges

Logistical & Geographic (2/2)

Challenges	Key considerations going forward
• **Remote localities and poor or no road access** leads to high transportation cost of installation and O&M	• Deploy **modular or prefabricated components** to reduce the need for heavy equipment transport

Sources: Interviews with Coalition members and government stakeholders, 2025.

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Mini-Grids and Standalone systems: Key Challenges

Community Engagement & Education

Challenges	Key considerations going forward
• **Lack of involvement of local communities** in planning and implementation to ensure acceptance and sustainability.	• **Awareness campaigns and engagement with local leaders** are necessary to build trust and promote adoption
• **Community resistance and distrust** of outsiders, unfamiliarity with new technologies, and concern of being excluded from grid electrification.	• Effective implementation requires **close coordination with local authorities, municipal governments, and community organizations** to ensure that electrification projects align with local needs and expectations
• **Economic constraints** may limit the ability of communities to afford off-grid systems.	• **Assessing energy expenditures** before electrification and considering affordability measures is crucial for project sustainability
• **Communities express disillusionment** with organizations that visit to conduct studies but never come back to deliver results	• **Ensure follow-up and accountability mechanisms** in project implementation. Establish feedback loops with communities to maintain communication and provide transparency on progress.
• **Literacy rates may be lower in remote areas**, limiting the socio-economic development enabled by electrification projects.	• **Integrate education and capacity-building initiatives** into electrification projects. Develop local training programs to promote digital and technical literacy, ensuring communities can fully utilize and maintain new energy systems and reap their benefits.

Sources: Interviews with Coalition members and government stakeholders, 2025; IRENA (2023), Renewables Readiness Assessment: Honduras, International Renewable Energy Agency, Abu Dhabi.

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Grid extension: Key Challenges

Planning, Political & Regulatory

Challenges	Key considerations going forward
• **Poor quality of existing grid:** The quality of the national grid has deteriorated over recent years due to inadequate investment in maintenance and upgrades. High technical and non-technical losses (around 38%) further exacerbate inefficiencies. The government is prioritizing grid improvement before expanding its reach.	• **Invest in infrastructure upgrades**, **smart grid technologies**, **and loss reduction programs** while continuing to implement grid extension as system quality improves
• **Financial Instability of ENEE**: ENEE struggles with inadequate cost-recovery mechanisms, leading to financial underperformance. Policies lacking thorough economic assessments have exacerbated this situation, resulting in significant debt and limiting ENEE's ability to invest in new generation, transmission, and distribution infrastructure.	• **Support CREE to develop updated tariff structures** for improved cost recovery; for example, CREE may implement higher tariffs for commercial and industrial customers or restructure subsidies to serve only the poorest customers • **Modernize infrastructure** to reduce technical losses • Deploy **smart meters**, **prepaid metering systems**, and **remote monitoring** to reduce losses due to theft and nonpayment • Work with multilateral lenders to **renegotiate and restructure existing debt** under better financial conditions. • Enable **private investment** in new grid extension projects through **PPPs**, reducing ENEE’s direct financial burden.

Sources: Interviews with Coalition members and government stakeholders, 2025; IRENA (2023), Renewables Readiness Assessment: Honduras, International Renewable Energy Agency, Abu Dhabi.

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Grid extension: Key Challenges

Economic

Challenges	Key considerations going forward
• **Low Energy Consumption:** In rural areas, low energy consumption further challenges the profitability of grid extensions.	• **Develop and leverage *clear* least-cost geospatial analysis** to determine where off-grid systems are a more viable solution than grid extension • **Invest in productive use of energy (PUE) and value chain development** by promoting agricultural processing, small-scale manufacturing, and other income-generating activities that require electricity.
• **Financial constraints:** It has become increasingly harder to obtain financing for electrification projects, stalling initiatives from both the public and private sectors.	• Ensure **fair remuneration** for electricity services to build a sustainable business model. It is key to provide affordable tariffs through the effective implementation of direct and cross subsidies.

Sources: Interviews with Coalition members and government stakeholders, 2025; IRENA (2023), Renewables Readiness Assessment: Honduras, International Renewable Energy Agency, Abu Dhabi.

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Grid extension: Key Challenges

Logistical & Geographic

Challenges	Key considerations going forward
• **Complex terrain:** Honduras's geography, including mountainous regions and isolated communities like those in the Mosquitia, poses significant challenges for extending the grid. Transportation of materials is costly and logistically difficult, with some areas only accessible by boat or air.	• **Prioritize decentralized energy solutions** such as mini-grids and standalone solar systems for hard-to-reach areas. • **Improve geospatial mapping** to identify the most feasible locations for grid expansion and alternative solutions. • Deploy modular or prefabricated components to reduce the need for heavy equipment transport

Sources: Interviews with Coalition members and government stakeholders, 2025; IRENA (2023), Renewables Readiness Assessment: Honduras, International Renewable Energy Agency, Abu Dhabi.

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Annex: Future and Early-Stage Programs

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Program spotlight:
Energía y Luz para la Vida - Yu Raya

Who	Energía, Gobierno de la República; giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
What	Electricity access provject for 180 households
Where	Sirsirtara community of Gracias a Dios
When	2023 - ongoing
Technology	Standalone solar PV

Early Outcomes

Following a **robust socialization process**, Sirsirtara inhabitants have **unanimously approved this project** to bring **standalone solar** systems to 180 families in their community in Gracias a Dios (the department with the lowest electricity access rate in Honduras). Successful elements include:

- Extensive **collection of socio-economic data** to ensure the **systems are designed to meet the needs of the community.**
- **Plans to train local community members** on maintenance and operation of the solar PV systems to guarantee the longevity of the project.

Opportunities

- Develop a **successful partnership** between multiple stakeholders including community leaders, local government bodies, SEN, ENEE, and development partners
- **Learn from partners' past electrification experiences** to guarantee a successful project.
- **Expand productive use of energy** to improve socioeconomic conditions of the region.

Sources: SEN Avanza Edición 06 2023, Secretaría de Energía (2023), YU RAYA- Trilateral project will bring electricity to isolated area in Honduras, Brazil Ministry of Foreign Affairs (2023), La luz del gobierno de Xiomara cada vez más cerca de Sirsirtara, Secretaría de Energía (2023)