



Deploying Advanced Low-Carbon Energy Systems in the Legal Amazon Region

National Renewable Energy Laboratory (NREL)
November 2024

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For Brazil to achieve its pledge to reach net-zero emissions by 2050, **just and equitable** clean energy transitions are critical, particularly in the isolated, energy-burdened communities of the Legal Amazon.

The Legal Amazon represents:

61% of the Brazilian territory

26% of the electricity generated in Brazil (2020)

>14% of the Legal Amazon (over 3 million people) lack energy access or rely on expensive, unreliable, and isolated diesel grids

Highest percentage of **marginalized communities and indigenous peoples** (bearing a disproportionate amount of the burden from the region's reliance on fossil fuels)



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Project Goal: conduct a **techno-economic analysis of 3 target sites** and develop a robust **social impact assessment framework** to help guide investment to decarbonize power and improve energy access in the Legal Amazon, while enhancing local socio-economic opportunity and livelihoods for communities.



Development of an assessment framework for socio-economic impacts of mini-grids



Techno-economic analysis of potential mini-grid sites (3 sites)



Implementation of robust community / site assessments (3 sites)



Technical capacity building on social impact frameworks and microgrid design

MINISTRY OF
MINES AND ENERGY



Overview of Environmental and Social Assessment Approach

The project will develop a **hybrid framework** for assessment of environmental and social risks/benefits combining approaches from a variety of sources to **ensure actionable inputs** for multiple scale-up pathways.

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CONAMA

IFC
International Finance Corporation
World Bank Group

International Finance Corporation's
Guidance Notes:
Performance Standards on Environmental
and Social Sustainability

IDB
Inter-American
Development Bank

BANCO CENTRAL DO BRASIL

G20 BRASIL 2024
CONTRIBUINDO EM
MUNDOS JUSTOS E EM
PLANEJA SUSTENTÁVEL

BNDES The Brazilian
development bank

Assessment of key negative and positive impacts



Environmental

- Climate
- Air Quality
- Acoustic Environment
- Soil
- Surface/Ground Water
- Land-use and Vegetation
- Biodiversity and Natural Resources
- Waste / Pollution Prevention



Social

- Land Acquisition and Resettlement
- Employment and Livelihoods
- Labor
- Cultural Heritage
- Resilience
- Health
- Gender
- Vulnerable Persons
- Safety and Security
- Indigenous Peoples



Mitigation / Risk Management and Benefit Enhancement Strategies

CONAMA; IFC E+S Performance Standards; IDB Environmental and Social Policy Framework; G20 JET Proposal; BNDES Socioenvironmental Policy; BCB Risk Management

Overview of Site Assessment Approach

Site assessments will be carried out by a local partner in coordination with NREL and EPE. At a high level, the assessments will have 4 major components:

Engagement with Local Authorities

Including **government, electricity providers, community leaders**, and other authorities to secure project buy-in, discuss local regulations and permitting, identify key stakeholders for surveys and interviews, and collect information on past studies/reports on the community.

Community / Site Assessment

Assessment of the community and potential generation sites including land ownership and availability, site accessibility, generation site characteristics, electricity service and infrastructure, community assets, community perceptions, and potential environmental and social risks/impacts.

Customer Surveys and Community Interviews

Surveys of individual households, businesses, and institutions to assess demographics, energy expenditures and needs, appliance use, etc. followed by detailed **interviews with community leaders, women's groups, business owners, and other stakeholders** discussing local needs to inform project goals from the community perspective.

E+S Assessment

Hybrid environmental and social impact assessment approach that **aligns with multiple international frameworks** as well as the processes used by various financial and government institutions in Brazil.

Potential Parallel Programs Supporting Community Energy Transitions

The initial pilot project is expected to identify several pathways to support the deployment of clean energy mini-grids for the communities in the Legal Amazon.

Deployment of additional community microgrids

Scaling the deployment of clean energy mini-grids (and associated socio-economic assessments) to other communities across the Legal Amazon. This will include support for de-risking investment, mobilizing the private sector, and ensuring equitable access.

Clean energy workforce development

Training programs focusing on developing local community capacity and jobs (particularly for women, youth, and indigenous peoples) for the installation, operation, and maintenance of new clean energy mini-grids across the Legal Amazon region.

Enterprise development and community resilience

Supporting community infrastructure (healthcare, education, telco, etc.), productive use of energy, and other enterprise support programs (particularly for women, youth, and indigenous peoples) to enhance socio-economic impact from deployed mini-grids.



Thank you!

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