



BRC
ENERGIA LIMPA

PRODUCE YOUR OWN ELECTRICAL ENERGY
Photovoltaic Systems
Good for you, better for the planet!



Company Overview

Our Mission

- ▶ Provide innovative, efficient and sustainable energy solutions

Vision

- ▶ Become the largest Brazilian supplier of PV solutions

Who we are

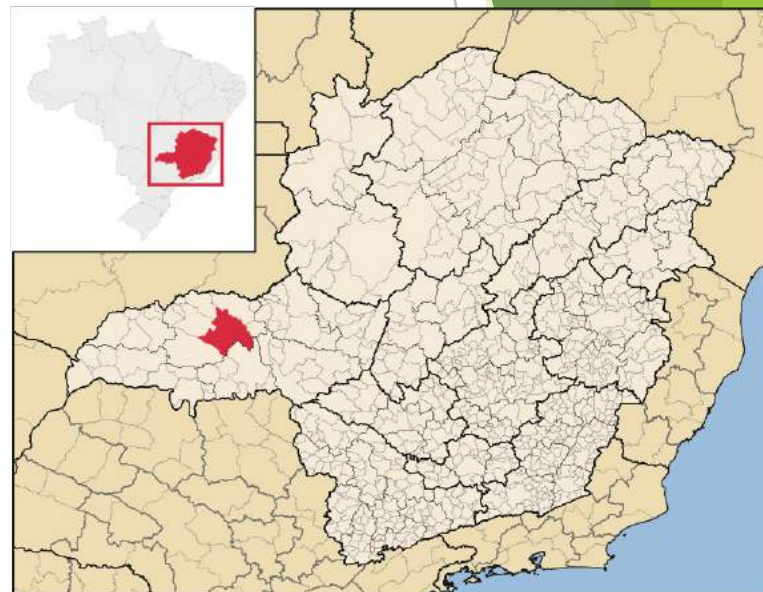
- ▶ PV system integrator (EPC: engineering, procurement & construction)
- ▶ Started operations in 2014
- ▶ >300 kW PV systems integrated until Oct/2016
- ▶ 5 collaborators and 2 outsourced engineers

Location



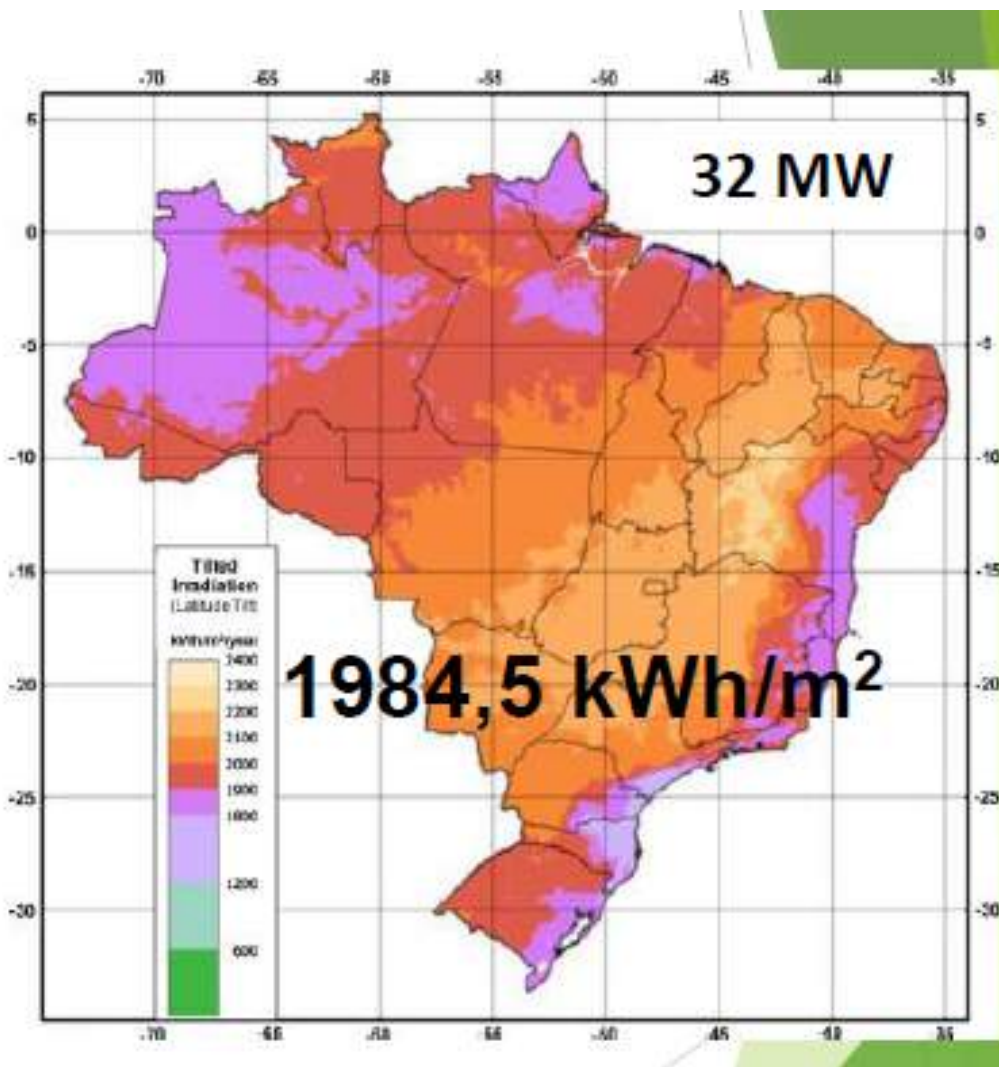
Brazilian Map
Population: 190,732,694

State of Minas Gerais
20,000,000



Uberlândia
Population: > 600,000
Coordinates: 18.9000° S, 48.2833° W

Location

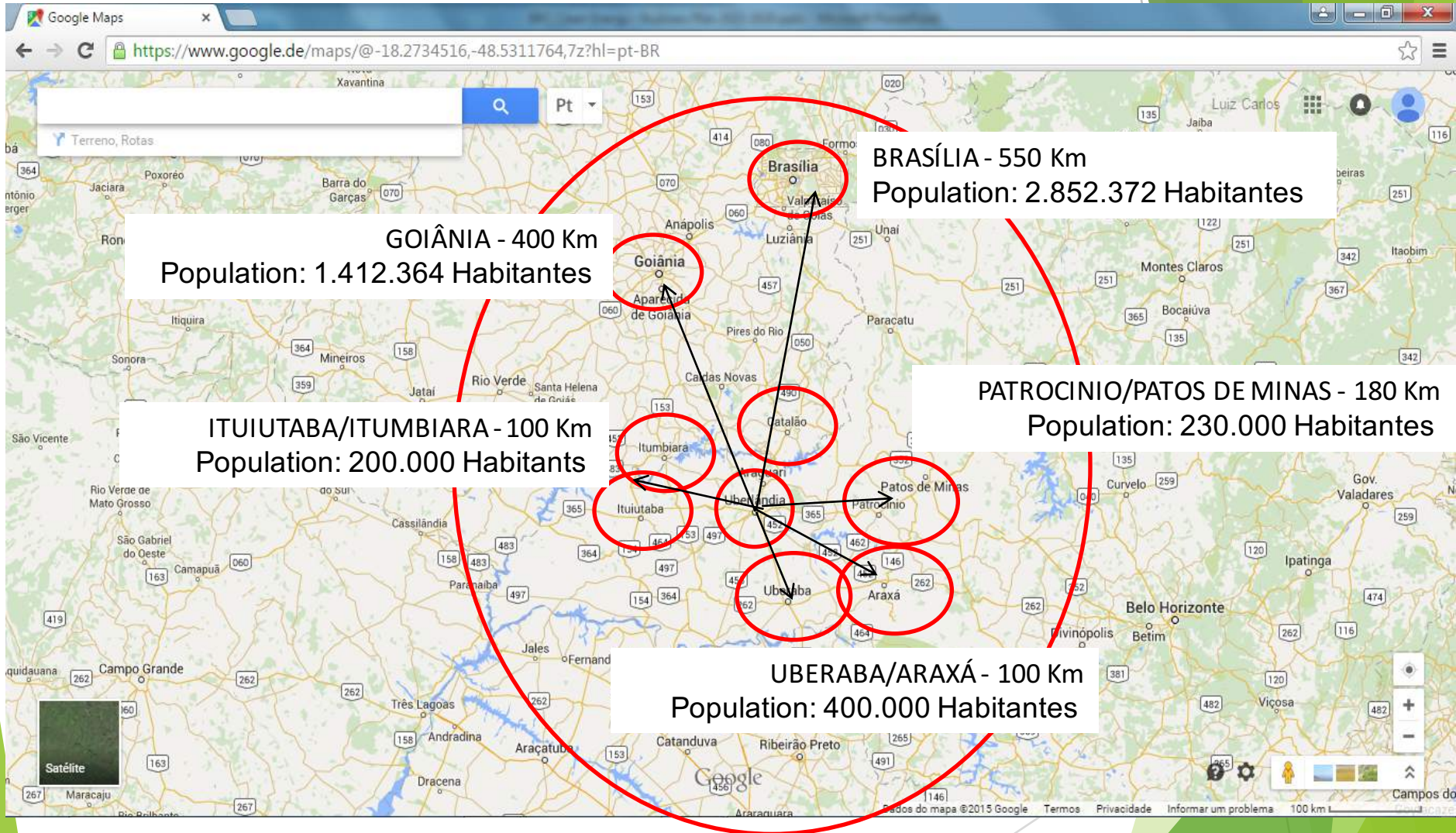


Uberlândia

Population: > 600,000

Coordinates: 18.9000° S, 48.2833° W

BRC in 2016



**MARKET OF MORE THAN 5.000.000,00
PEOPLE**

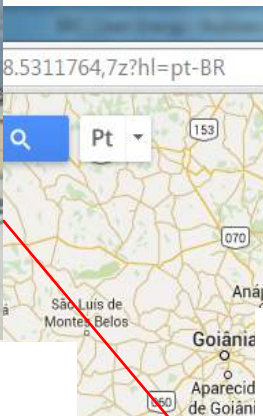
BRC in JUN/2014-JUN/2016

- ▶ 300 KWp PV SYSTEMS INSTALLED;
- ▶ RESIDENTIAL MARKET - HOUSE OWNER;
- ▶ BILLING: US\$ 430,000.00

BRC in 2016



SUNSET CABLE PARK
UFV: 13 kWp – JUN/2015



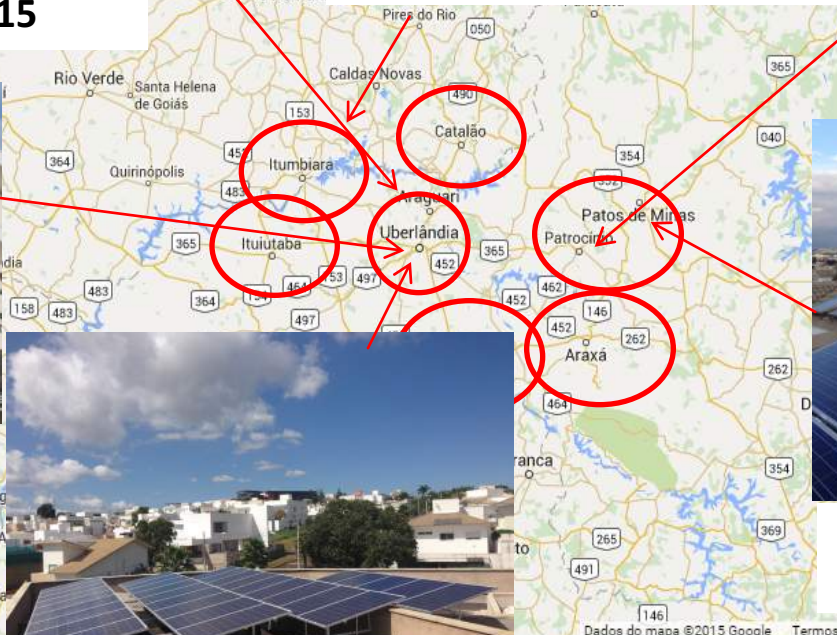
HOUSE OWNER
UFV: 5.1 kWp – Jun/2015



GREEN BUILDING
UFV: 3.8 kWp – Feb/2015



HOUSE OWNER
UFV: 2.7 kWp – Mar/2015



HOUSE OWNER
UFV: 6.12 kWp – May/2015



HOUSE OWNER
UFV: 8.12kWp – Jun/2015

BRC in 2014

- ▶ Team members are responsible for the first grid-connected system authorized in the state of Minas Gerais, used as reference installation for grid operator CEMIG (6.58 kWp) - operation started in November 2012 (Regional Award: “Best Sustainable Actions 2012”).
- ▶ On-grid installations: ~300 kWp .
- ▶ 2013-2016: Team members are coordinating and executing a government-funded strategic R&D projects together with the FEDERAL UNIVERSITY OF UBERLÂNDIA - UFU



ANEEL: National Energy Regulatory Agency

BRC in 2020 - RESIDENCIAL MARKET

UBERLÂNDIA
EXPONENTIAL HORIZONTAL GROWTH



HOUSE OWNERS
HIGH ECONOMIC STANDARD
ENERGY CONSUMPTION
AROUND 1000 KWH/MONTH
PV SYSTEM: AROUND 6-8 KWp - US\$ 17,000.00

BRC in 2020

- ▶ Target: at least 2 MWp, reaching up to 3 MWp ...
- ▶ Real Possibilities:
 - ▶ RESIDENTIAL MARKET - HOUSE OWNER Projects: 1 M kWp;
 - ▶ BUSINESS MARKETS - COMPANIES, SCHOOLS AND HOSPITALS: 2 MWp
 - ▶ LOW-INCOME RESIDENTIAL OWNERS - PV systems using microinverters - Peak PV installed power will range from 500 W to 1.0 kW, which is in line with power requirements for.
 - ▶ PREDICTION OF ANUALL BILLING: US\$ 430,000.00

Complementary Activities

- ▶ Founded by professionals with extensive experience in projects of photovoltaic systems, BRC Clean Energy was created to bring sustainable energy solutions for businesses and residential consumers.
- ▶ Our target audience are those who seek sustainable solutions for their needs in the context of electricity, developing and executing large and small scale projects, making commissioning of distributed generation units with ANEEL and energy distribution companies, servicing and performance evaluation of systems already installed.

Partners

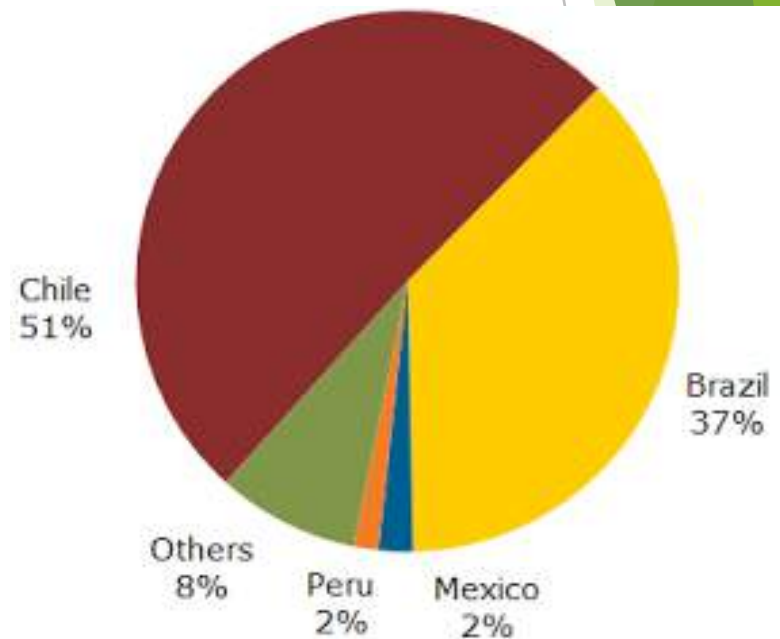


RECENT PV Activities - Brazil

- ▶ 23.6 MW solar power plants to be installed across the country under ANEEL's strategic sponsored projects
- ▶ The Ideal Institute (NGO) launched solar label in 7/12, awarded to companies using solar electricity (either from own PV system or free market)
- ▶ 1 MW plant built by MPX and E.ON in Tauá; working on expansion to 2 MW while the plan is 50 MW.
- ▶ Martifer Solar has signed an EPC contract with General Motors Brasil a 300 kW installation in Santa Catarina (LEED certification).
- ▶ Yingli partnered with Light ESCO, EDF Consulting and the State of Rio de Janeiro to install modules in Maracanã stadium for the 2014 FIFA World Cup.
- ▶ Gehrlicher Ecoluz Solar do Brasil S.A. installed grid connected 408 kWp in Salvador's Pituaçu stadium.

Market information - Latin America

- ▶ Latin American & Caribbean market to grow with 45% CAGR till 2017
- ▶ Brazil, Mexico and Chile will lead the race; all together to have 74% of PV development by 2017
- ▶ 60% of PV demand to be catered by ground-mount segment
- ▶ Commercial and residential segments will increase from 2015 onwards, as PV prices continue to decline, but hard to predict market size
- ▶ The off-grid sector will continue to benefit from increased demand from rural electrification and development initiatives.



Latin America and the Caribbean Market Current Solar Installed Capacity - 6GW

Market Information in Brazil

- ▶ Residential: roof installation < 6 kW single-phase string inverters
- ▶ Commercial: roof installation including up to 100kW - string type or central
- ▶ Large plants: still sponsored projects above 100 kW. It will evolve toward selling energy in the free market, competing with hydro and wind energy.
- ▶ Price of solar power still higher than wind or hydro

- ANEEL* regulates micro-generation grid connection (from Dec. 2012)
- Sponsored projects
- 20M ~ 30M installed

2012

- ~20 MW installed
- Rooftop installation and few solar farms through public bidding

2015

- ~ 5000-8000 MW estimated, mainly through public-bidding
- Rooftop will continue growth, but hard to estimate, PROBABLY

2025

ANEEL = Agência Nacional de Energia Elétrica (Electrical Energy National Agency)

Government Initiatives

- ▶ According to the Brazilian Decennial Energy Expansion Plan, 7 GWP of photovoltaic energy will be added to the country's infrastructure by 2025
- ▶ The Government's housing program known as "Minha Casa, Minha Vida - My House, My Life" will include PV systems in the future projects:
 - ▶ These houses are already delivered with solar heaters to replace typical electrical showers used in Brazil
 - ▶ Thousands of units will be built under the government's program
 - ▶ Peak PV installed power will range from 500 W to 1.0 kW, which is line with power requirements for those families living in those projects
 - ▶ Due to low power requirements, microinverters can be a good choice for a competitive solution

Challenges for PV Implementation

- ▶ LACK OF ATTRACTIVE BANK FINANCING
- ▶ HIGH PV Costs due to High Import Duties AND LOW SCALE PROJECTS

Risks

- ▶ Highly competitive market, but local suppliers will have advantages
- ▶ Availability of government incentives may not be enough for spread use of PV systems
- ▶ Sluggish demand for PV solutions
- ▶ More than 10-year warranty contracts are challenging (not enough history to backup long-term warranty)

SYNERGY

BRC

Strengths

- Know-how;
- Track records (Commercial and home systems)
- Good connections with GRID OPERATORS such as CEMIG, CELG, CEB;
- Team members with research activities in PV systems - OPINION MAKERS;
- Bank financing facilities.

Opportunities

- Good moment for PV market (home and industrial systems);
- Huge Increase of Hydro Energy costs;
- PV connection and integration procedures are clearly defined.

Finnpartnership

Strengths

- International solar inverter supplier;
- Connections with international photovoltaic modules supplier;
- PV kit with competitive price.



Clean Energy Solutions

Elisangela Rezende - CEO
comercial1@brcenergia.com.br

Luiz Freitas - Director of Technology
luizfreitas@brcenergia.com.br