



Enabling PV in Brazil: Market Opportunities under the Net Metering Scheme

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Policy Consulting

Strategy Consulting

Financial Advisory

Business Promotion

Market Intelligence



**Renewable
Energy**

**Energy
Efficiency**

**Climate
Policy**

Policy Consulting

- Analysis of policies and legal framework
- Support in policy making
- International knowledge sharing
- Databases
- Project management

Strategy Consulting

- Entry strategies
- Commercial & Business strategy
- New ventures & business planning
- Corporate strategy

Financial Advisory M&A

- Commercial due diligence
- M&A advisory
- Company valuation
- Target screening & partner search
- Investment opportunities

Market Intelligence Business Promotion

- Market information tools and publications for the RE sector
- Organization of trade delegations and sector conferences

- I. Overview of the Electric Matrix and Solar Potential**
- II. General Framework of the ANEEL RN 482/2012**
- III. Current Market and Projections under the ANEEL RN 482/2012**
- IV. Main Steps for Project Development**
- V. Key Challenges**

Framework Assessment for the Photovoltaic Business Opportunities in Brazil

Developed by:

BSW-Solar
eclareon GmbH

To:

Agência de Cooperação
Técnica Alemã – GIZ
Deutsche Gesellschaft für
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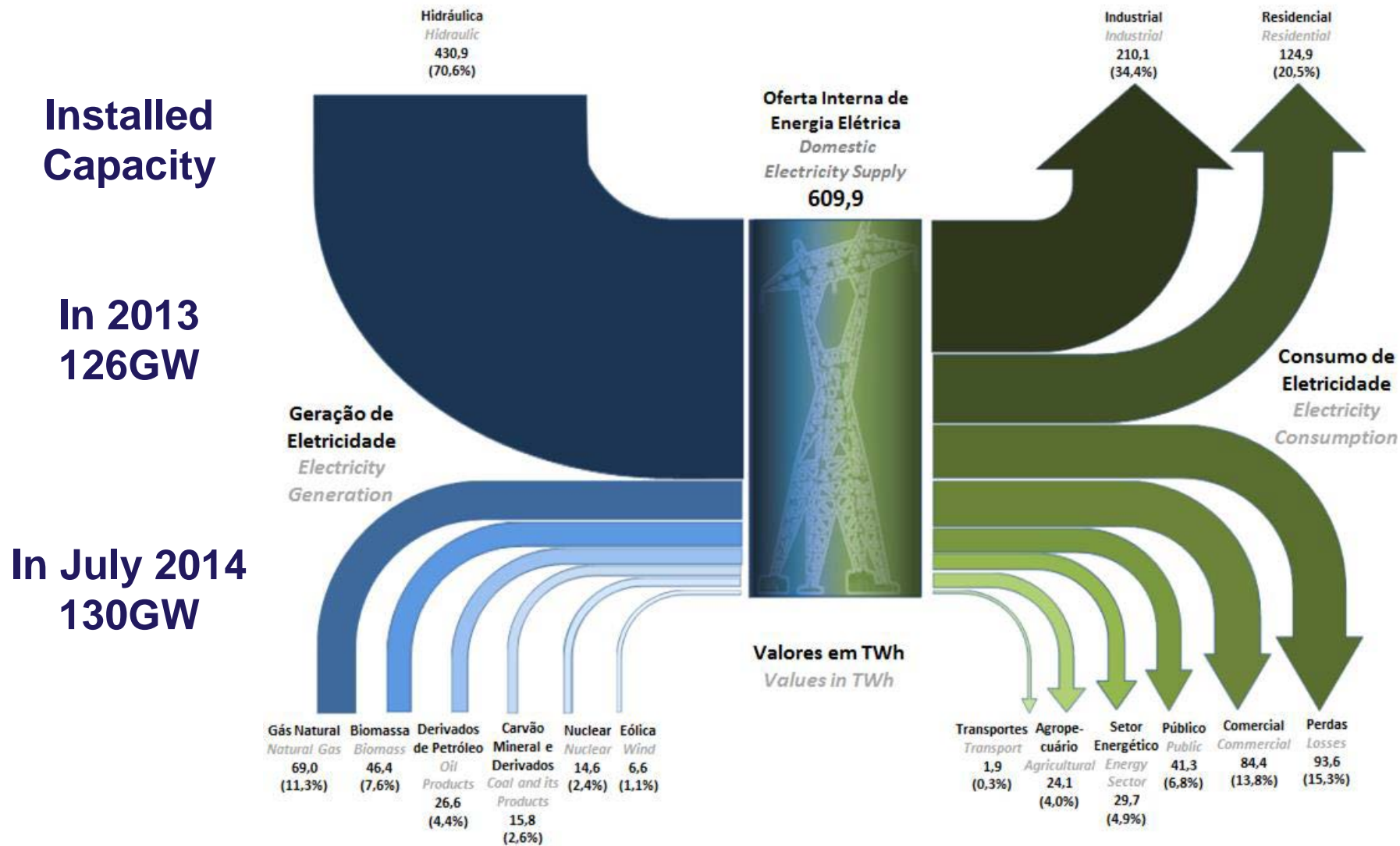
Berlin, 31 July 2014



giz



I. Overview of the Electric Matrix



Source: ANEEL; EPE, Balanço Energetico Nacional, 2014

I. Overview of the Electric Matrix

- **Electricity consumption**

Ano	Consumo ⁽¹⁾ (TWh)	PIB (R\$ bilhões de 2010)	Intensidade (kWh/R\$[2010])
2013	520,0	4.129	0,126
2017	625,8	4.950	0,126
2022	785,1	6.314	0,124
Período	Variação (% a.a.)	Variação (% a.a.)	Elasticidade
2013-2017	4,7	4,5	1,05
2018-2022	4,6	5,0	0,93
2013-2022	4,7	4,8	0,99

Nota.: (1) Inclusive autoprodução.

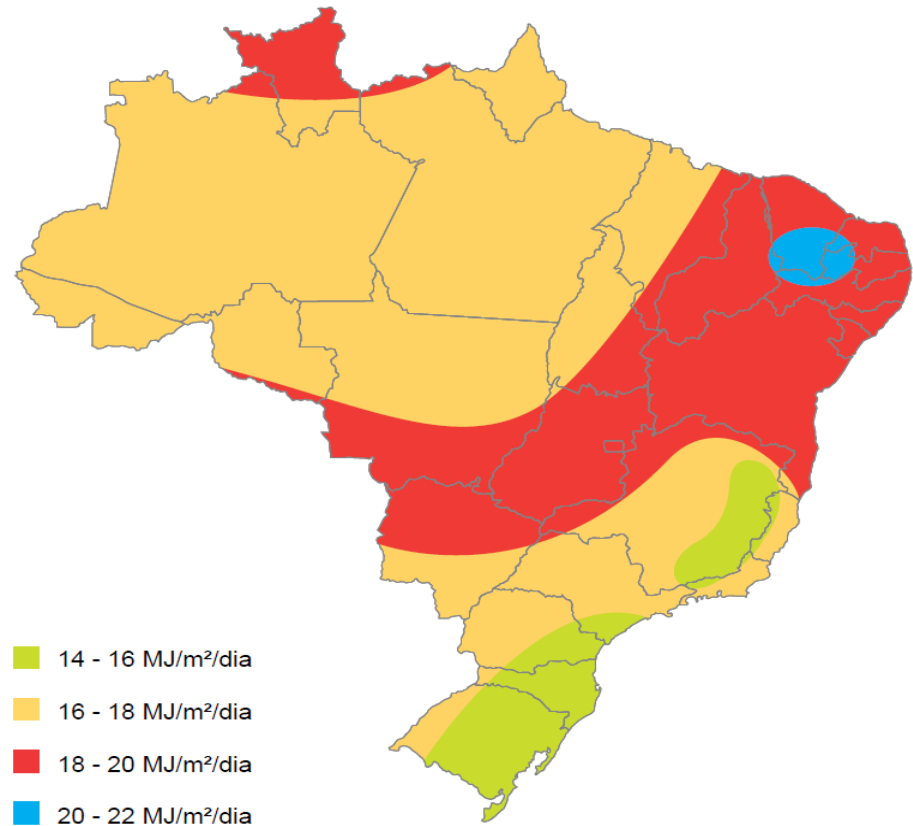
Source: EPE, PDE 2022

I. Solar Potential

- Annual solar radiation of about 1500-2200 kWh/m²

→ e.g. in Germany: 900-1220 kWh/m²

- Complementary to other RES



Source: ANEEL, Atlas de Energia Elétrica do Brasil, 2008

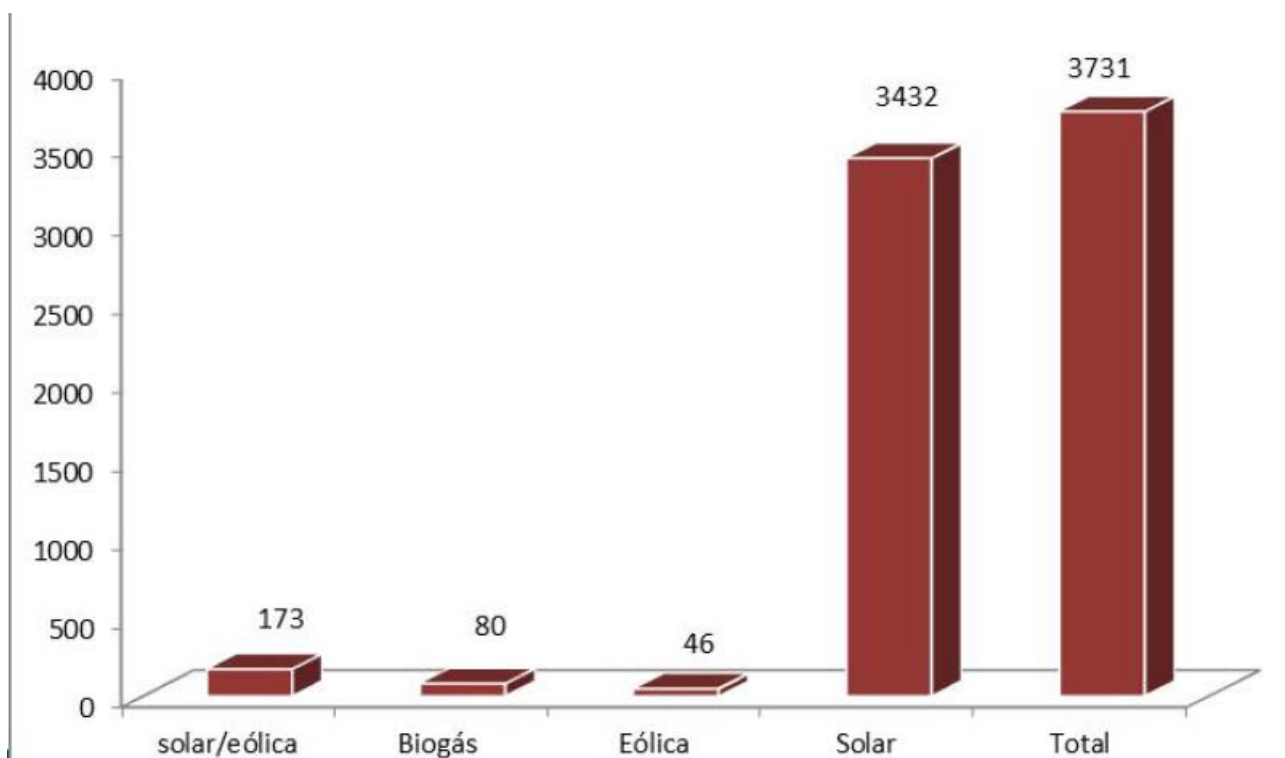
II. General Framework of the ANEEL RN 482/2012

ANEEL RN 482/2012

- **Micro generation:** installed capacity of $\leq 100\text{kW}$
- **Mini generation:** installed capacity $> 100\text{ kW}$ and $\leq 1\text{MW}$
- **Compensation scheme:** energy credits
 - 36 months
 - Compensation in other units
 - Minimum consumption (30kWh, 50kWh, 100kWh)
- **Technical Standards:** PRODIST

III. Current Market under the ANEEL RN 482/2012

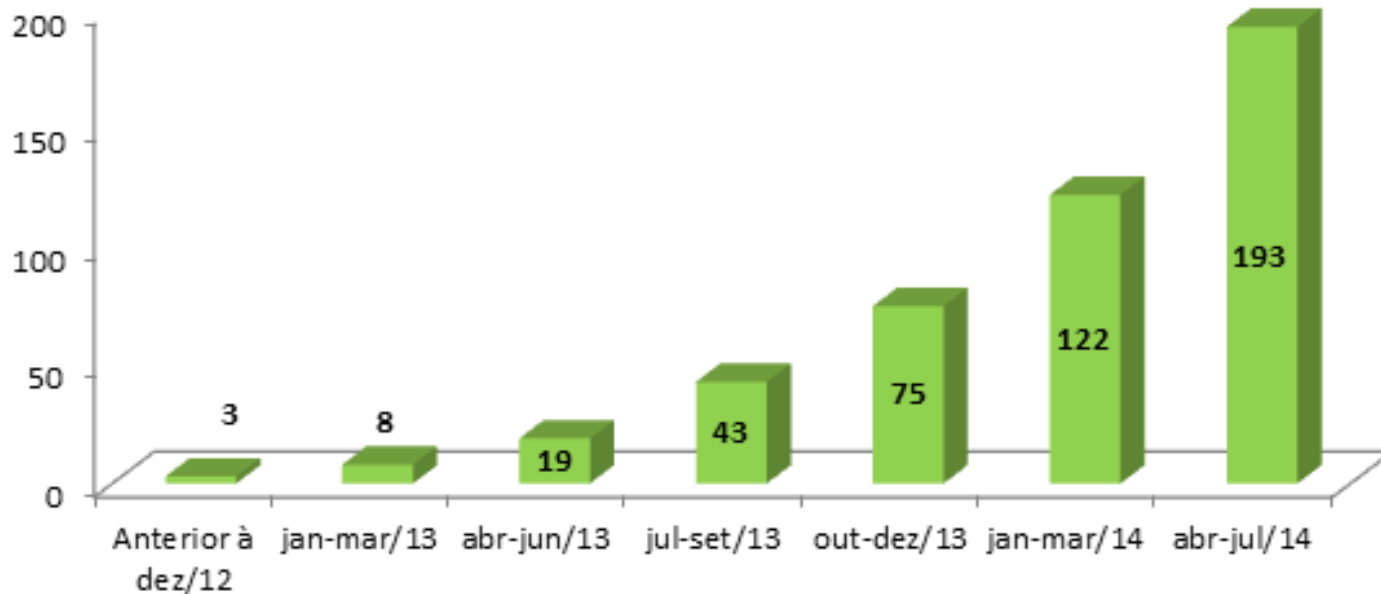
Total installed power (kW)



Source: ANEEL

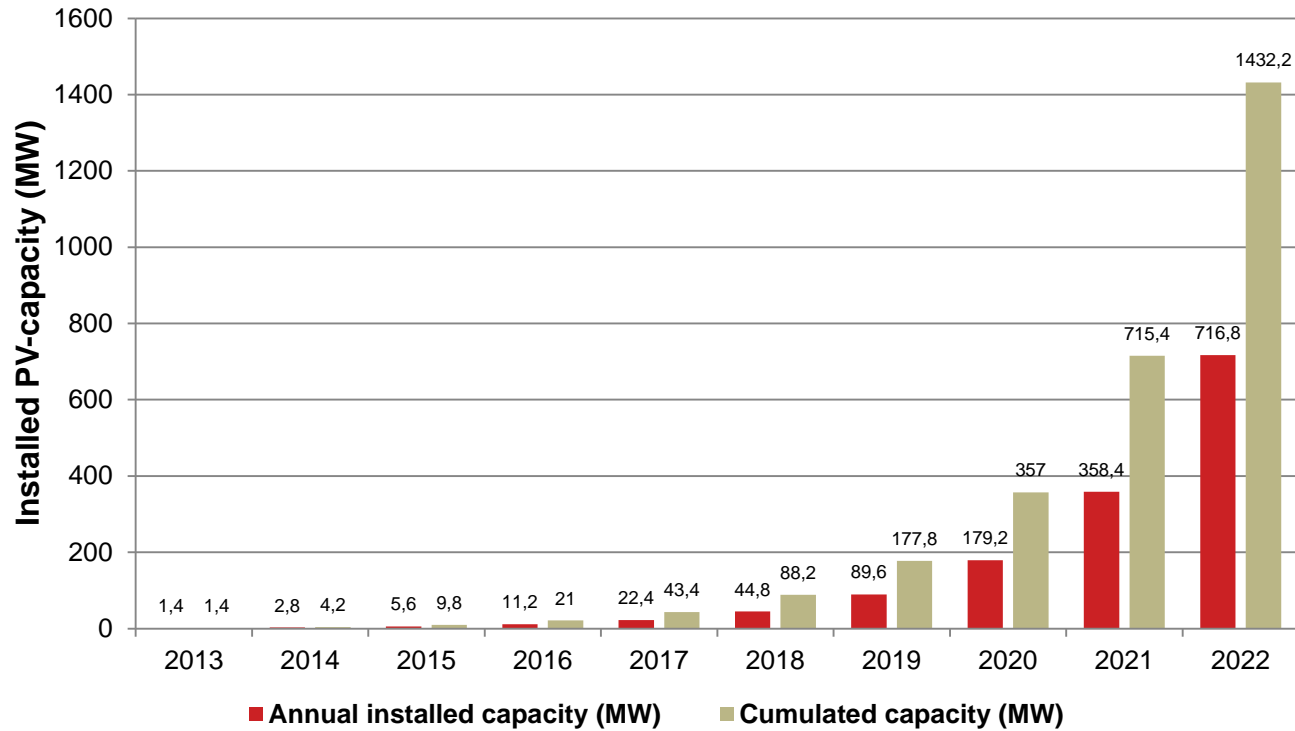
III. Current Market under the ANEEL RN 482/2012

Number of accumulated connections



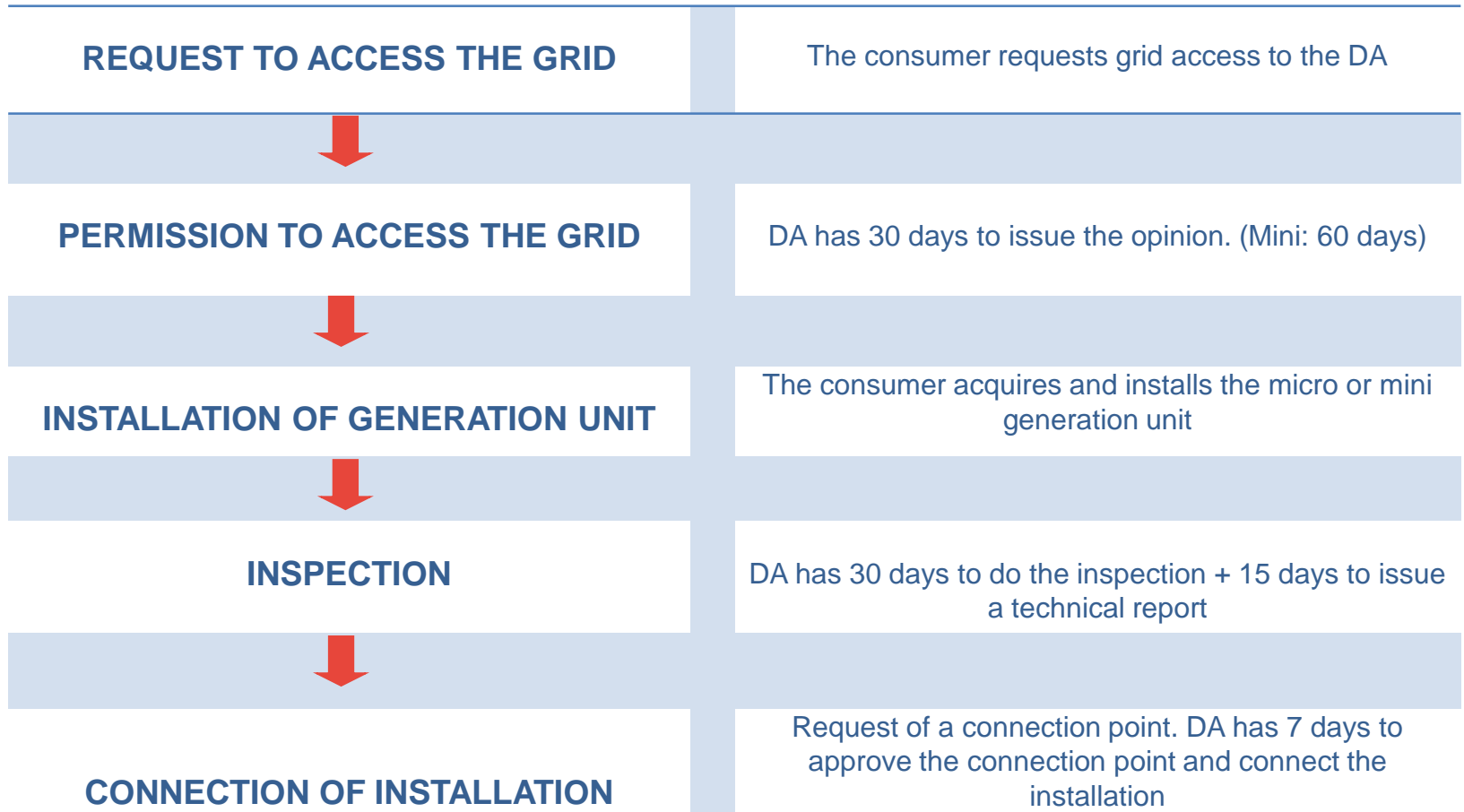
Source: ANEEL

III. Market Projections under ANEEL RN 482/2012



Source: Preiser, Kissel, Krenz, Solarzeitalter 1/2014

IV. Main Steps for Project Development



V. Key Challenges

- **Taxation of Electricity**

→ CONFAZ Agreement 6: “all electricity consumed from distribution companies shall be taxed, even if it is later compensated”

→ ICMS (Tax on Circulation of Merchandise and Services)

→ PIS (Social Integration Program) and COFINS (Contribution to Social Security Financing)

→ State initiatives: Law 20.824/13 from Minas Gerais

First 5 years: ICMS only applies to the difference (if positive)

V. Key Challenges

- **Lack of attractive and specific financing lines for end consumers**

- **Brazilian Development Bank:**

- BNDES offers loans below market rates for RE projects, but larger projects are eligible (e.g. Investments starting at R\$ 20 million)

- Local content requirement

- **Private banks**

- Short financing periods (5 years)
- Need to develop better credit lines for small residential systems

VI. Summary

- Increasing demand for electricity consumption
- Need for diversification of the energy matrix
- High annual solar radiation
- Development of the ANEEL RN 482/2012 (net metering scheme)
- Key Challenges:
 - Taxation
 - Attractive credit lines for end consumers



Obrigada.

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