



BNDES` Experience and Perspectives in Green Finance

September, 2015

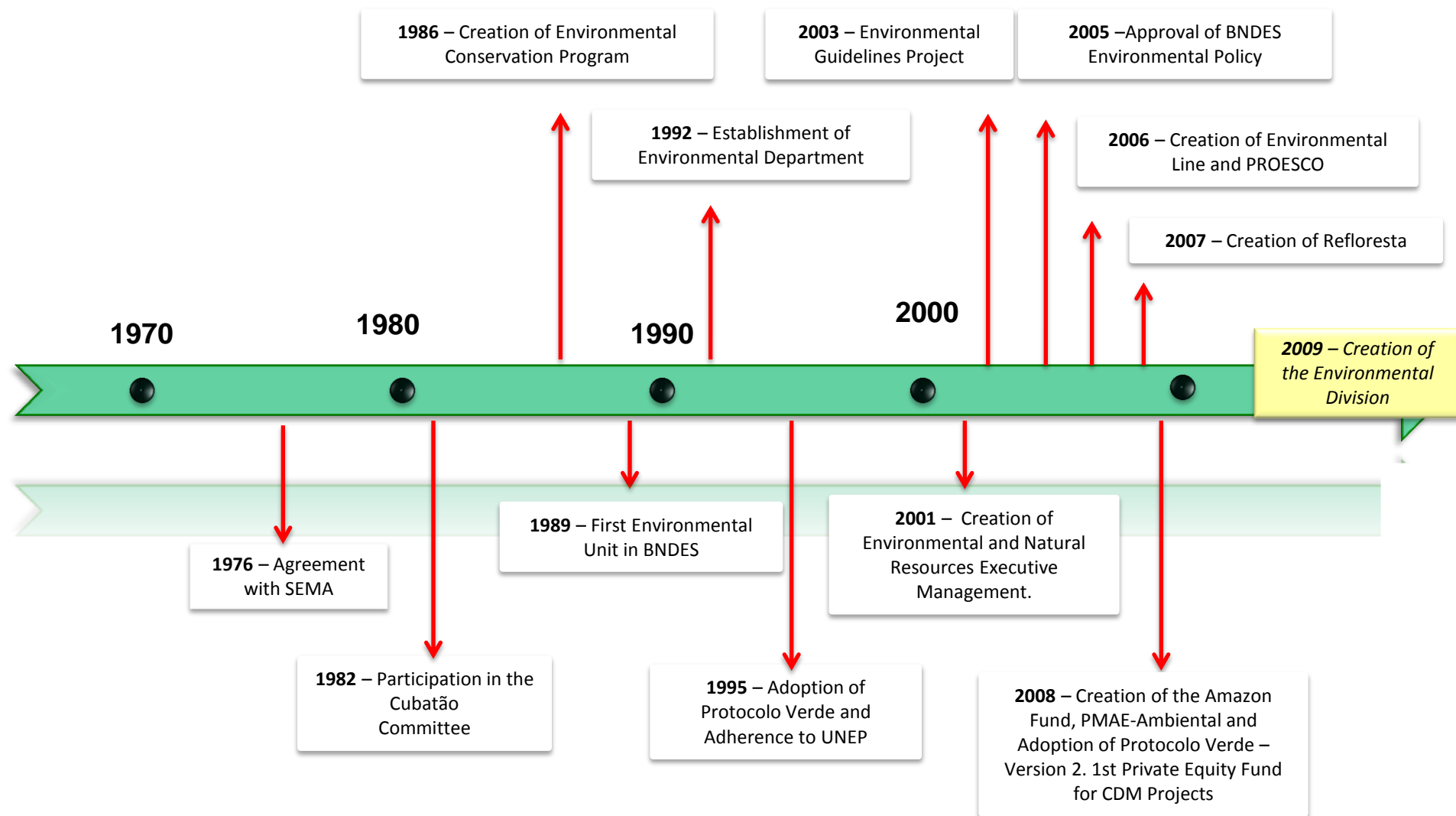
1. BNDES` Enviromental Track Record

- Environmental Timeline
- BNDES' Support to the Green Economy
- Fundraising for Environmental Projects
- Structuring the Demand Side: Wind Power Case

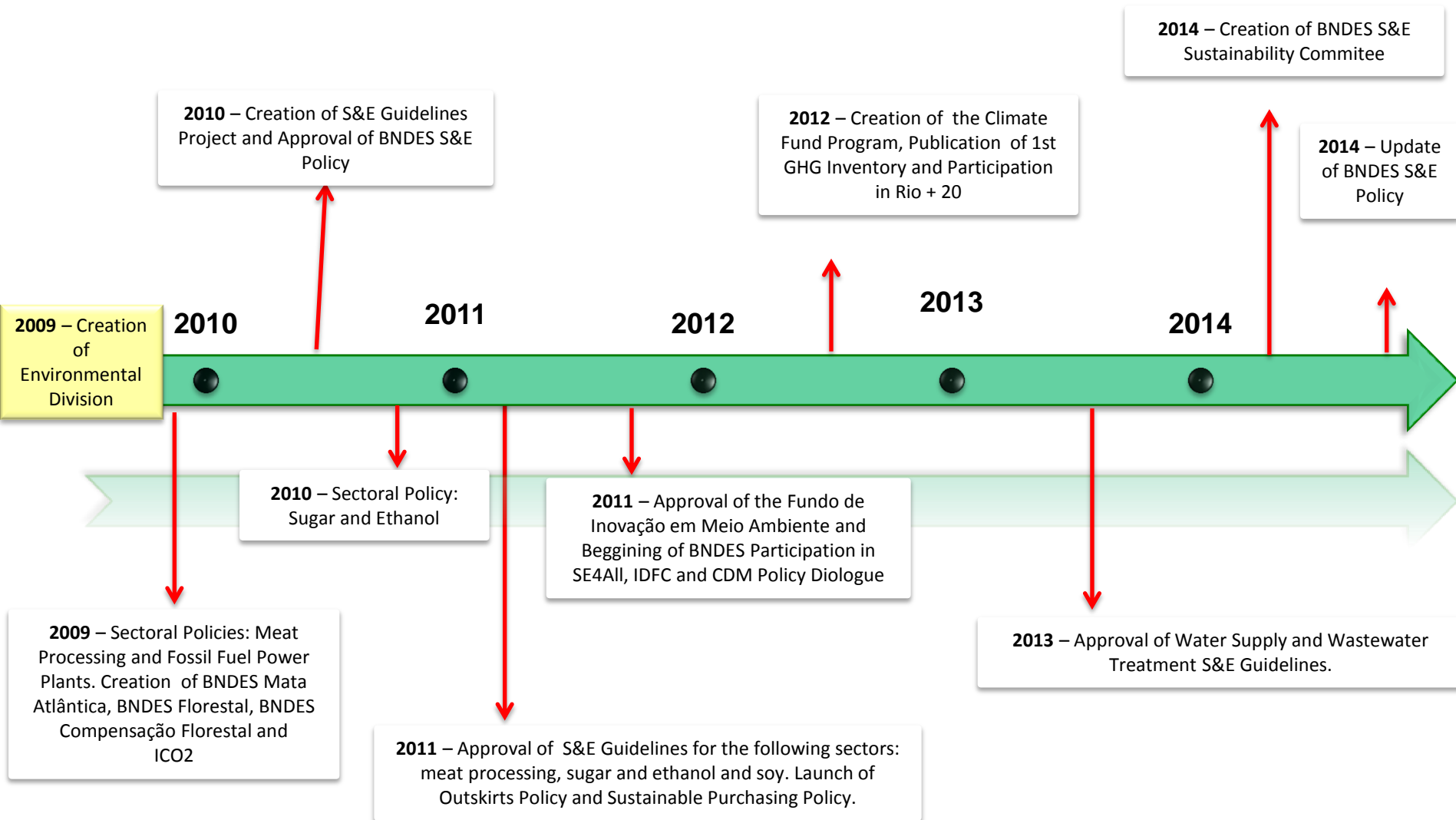
2. Highlights in The Current Agenda

3. Opportunities and Challenges

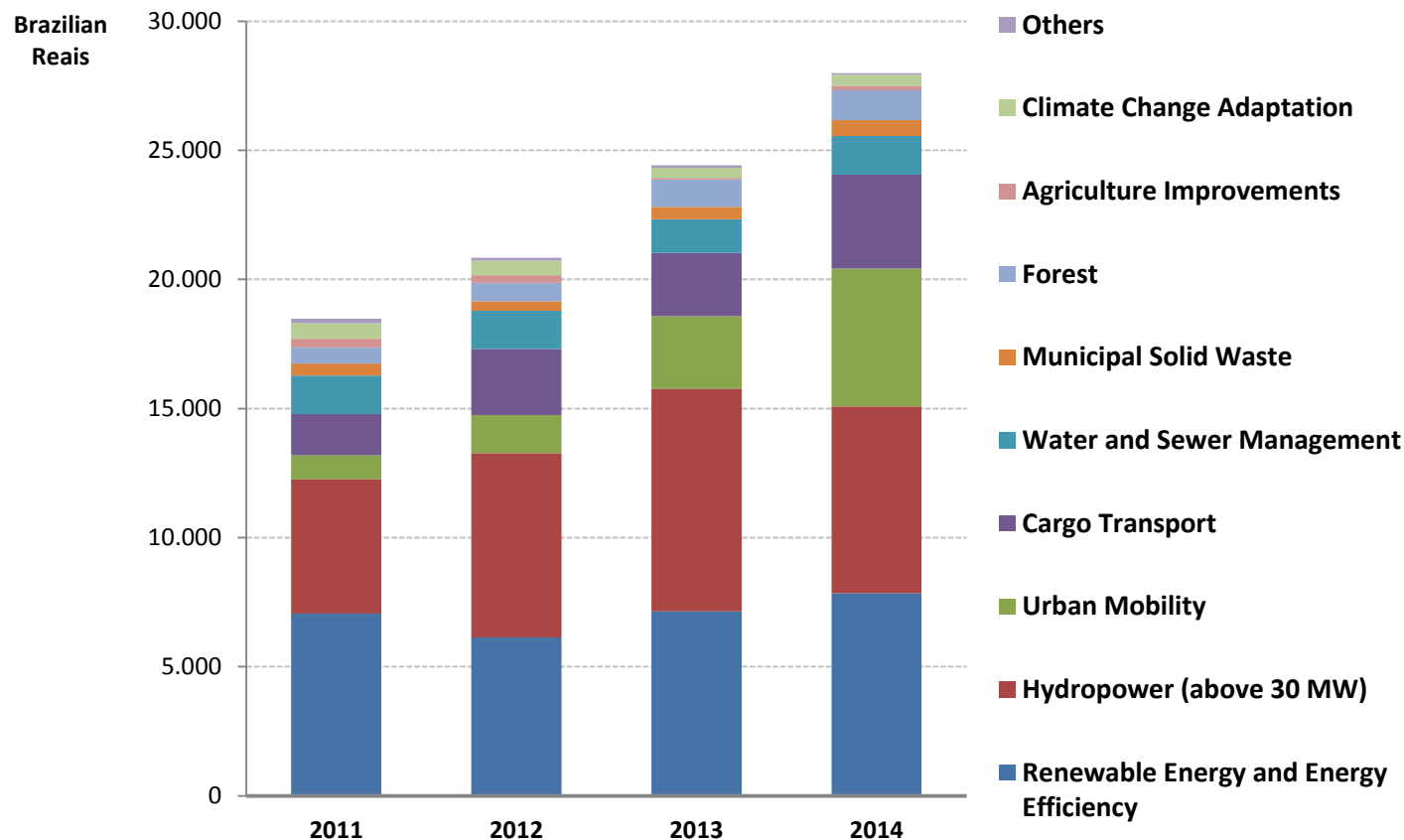
Environmental Agenda Timeline



Environmental Agenda Timeline



BNDES disbursements in green economy and climate financing 2011-2014



BNDES support to green economy and climate finance achieved R\$ 28 billion in disbursements along 2014, an increase of 51% in the last three years.

JBIC I (USD 300 mi)	<ul style="list-style-type: none">• Support of a wind farms with installed capacity of 30 MW each and located in RN.• Biomass Projects (SP): Increase cogeneration capacity to 100 MW and increase crushing capacity to 5.5 million tons per year.• Biomass Projects (GO) - Installation of new equipment in order to increase the crushing capacity to 6 million tons per year and raise the cogeneration capacity to 130 MW.
JBIC II (USD 300 mi)	<ul style="list-style-type: none">• RS - Implementation of ten wind farms with total installed capacity of 258 MW, and the associated transmission line (wind power projects).• BA - Implementation of fifteen wind farms with total installed capacity of 386,1 MW, and the associated transmission line (wind power projects).
KfW (USD 136 mi)	<ul style="list-style-type: none">• Wind farm deployment with an installed capacity of 48 MW in PB, 18 MW in PI, 28 MW in RJ and 26 MW in CE (wind power projects).
KfW (USD 335 mi)	<ul style="list-style-type: none">• RS - Implementation of twelve wind farms - in RS, CE and RN - with installed capacity of 327MW.
KfW (USD 68 mi)	<ul style="list-style-type: none">• Support to four small hydro plants.
NIB (USD 60 mi)	<ul style="list-style-type: none">• Support to four Wind farms.
AFD (EUR 165 mi)	<ul style="list-style-type: none">• Wind farm, energy efficiency and innovative projects.
JBIC III (USD 150 mi)	<ul style="list-style-type: none">• Loan agreement signed in 2015 aiming at supporting renewable energy projects.

Structuring the Demand: Wind Power Case

The Energy Ministry establishes two feed-in-tariff programs to boost wind energy. BNDDES launches a specific credit line to foster alternative renewable sources.

BNDDES supports wind projects through structured financial operations (combining bridge loans, PF and bonds), contributing to generate a pipeline of projects of 13 GW in installed capacity by 2018.

BNDDES designs a program to foster the production of wind turbines in Brazil, attracting more than 10 suppliers and resulting in a drop in the energy price.

Despite an identified potential of 143 GW (updated in 2010 to 300GW), Brazil had no relevant installed capacity of wind power.

First auctions where wind farms beat other sources.

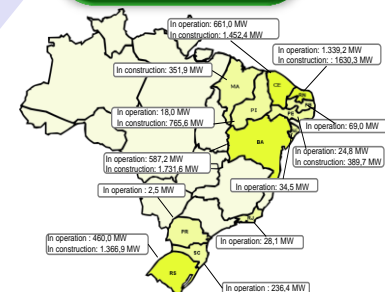
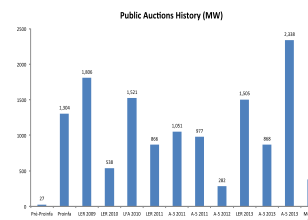
2001

2001-03

2008

2009

Today



1. BNDES` Enviromental Track Record

2. Highlights in The Current Agenda

- Amazon Fund
- Brazilian Climate Fund
- Project Development Facilities

3. Opportunities and Challenges



**R\$ 2.06 billion
(US\$ 917 MM)**

96%



Plus an announced € 100 million from Germany

3%



The Federal Government

KFW

Bank aus Verantwortung

giz

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

1%

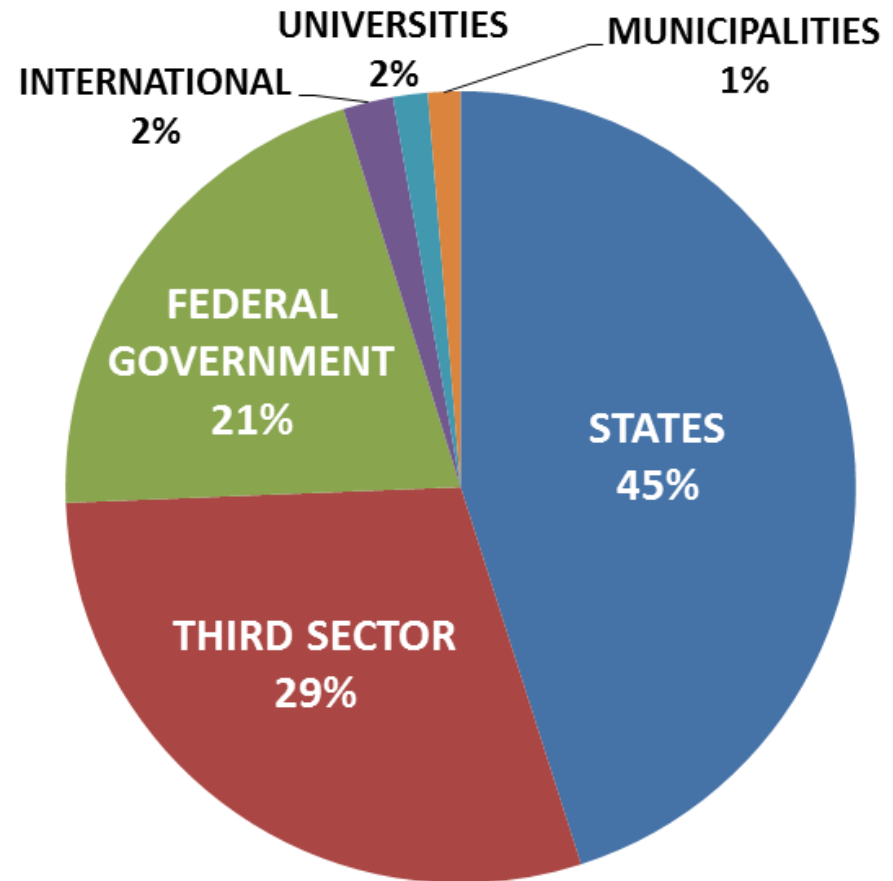


PETROBRAS

75 supported projects



R\$ 1,158 MM
(US\$ 546 MM)





**Indigenous
People**



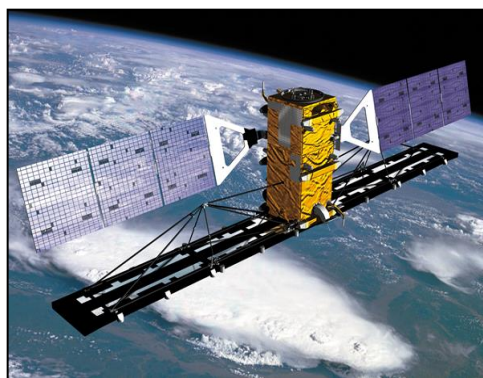
**Environmental
Rural Registry**



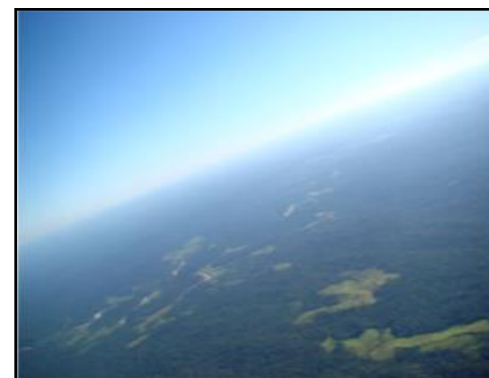
**Sustainable Production
Activities**



**Federal Government
Projects**

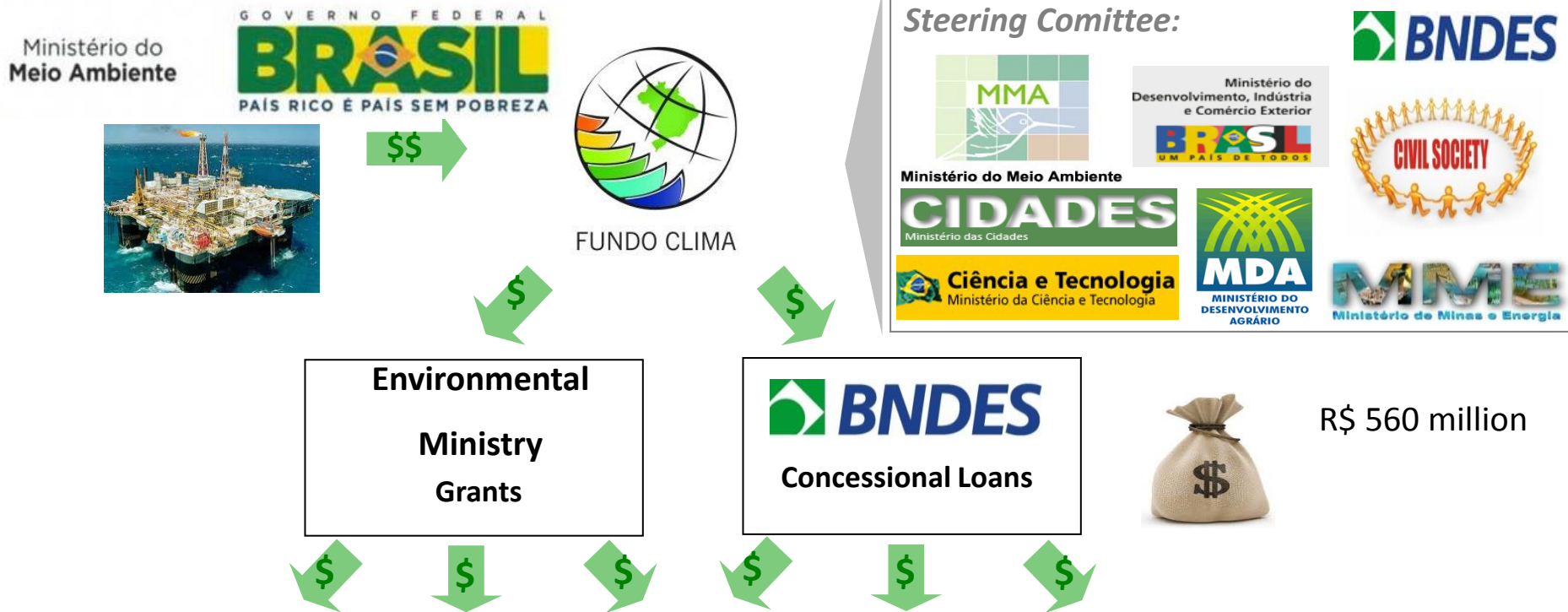


**Environmental
Satellite Monitoring**



**International
Projects**

The Brazilian Climate Fund



Objective of the Fund: ensure funds to support projects or studies aimed at promoting climate change mitigation and adaptation to its effects.

Examples of Supported Sectors:



Renewable Energy



Sustainable Production Activities: native wood production, fruit and fiber





The Climate Fund Program supports projects in nine sectors:



Renewable Energy



Efficient Machinery and Equipment



Carbon Management and Services



Waste Management



Efficient Charcoal Production



Sustainable Cities and Climate Change



Efficient Transport System



Combating Desertification



Native Forestry



Project Structuring Fund (FEP)

Brazilian PSP Development Program

Brazilian Project Structuring Company



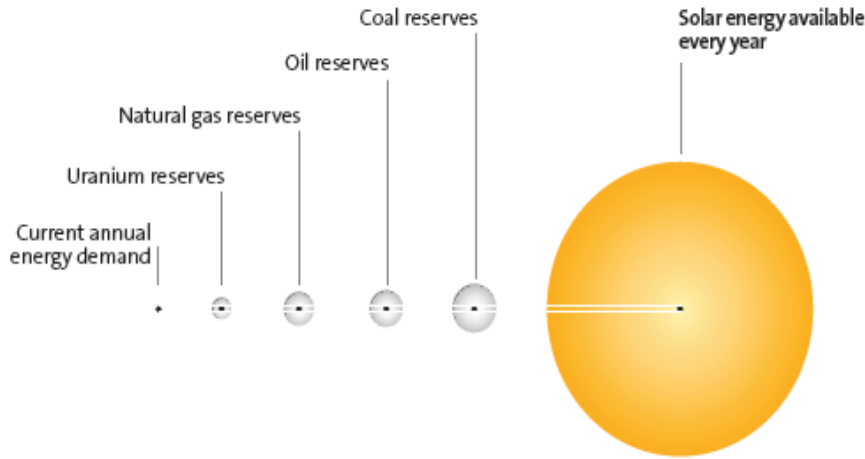
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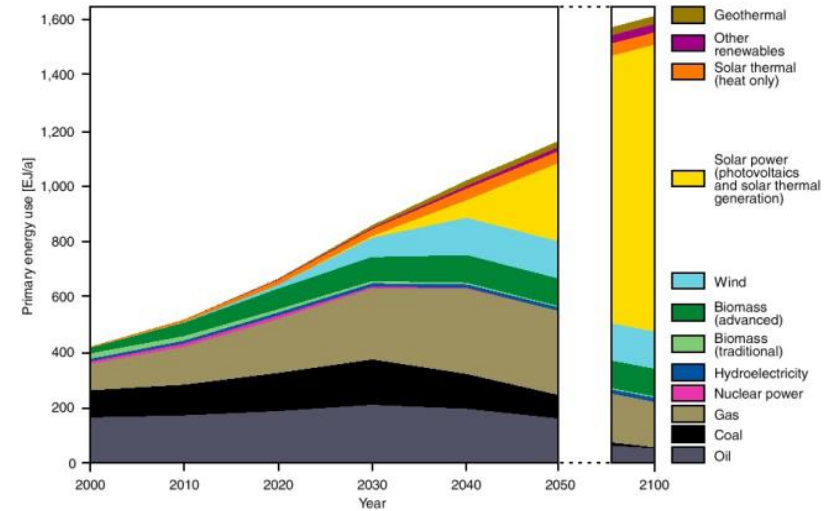
- Solar Energy
- MSW Concessions
- Forest Restoration

Solar Energy Potential

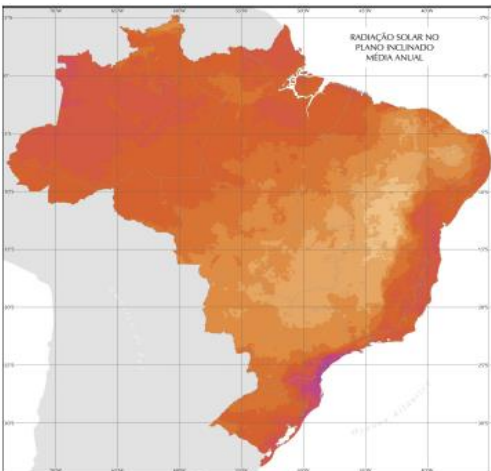


Source: SOLARWORLD

Solar Energy Forecast



Source: The German Advisory Council on Global Change (WBGU)



Source: Atlas Solar INPE

Solar Radiation

Brazil: 1650 to 2400

(4 to 6 KWh/m²/day)

Germany: 900 to 1250

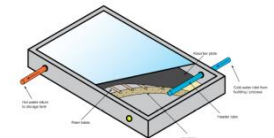
(máx: 3,4 KWh/m²/day)

France: 900 a 1650

Spain: 1200 a 1850

Solar Energy Storage:

- Heating
- Electricity Generation (FV and CSP)



Market Potential

- The cumulative global installed capacity at the end of 2013 was 138.9 GW. In Brazil, it was 0,045 GW, accounting for only 0.0003% of world capacity¹.
- In 2013 nearly 38 GW of solar systems have been installed worldwide. **Brazil represented only 0.0004% of this market, with 0,015 GW installed¹;**

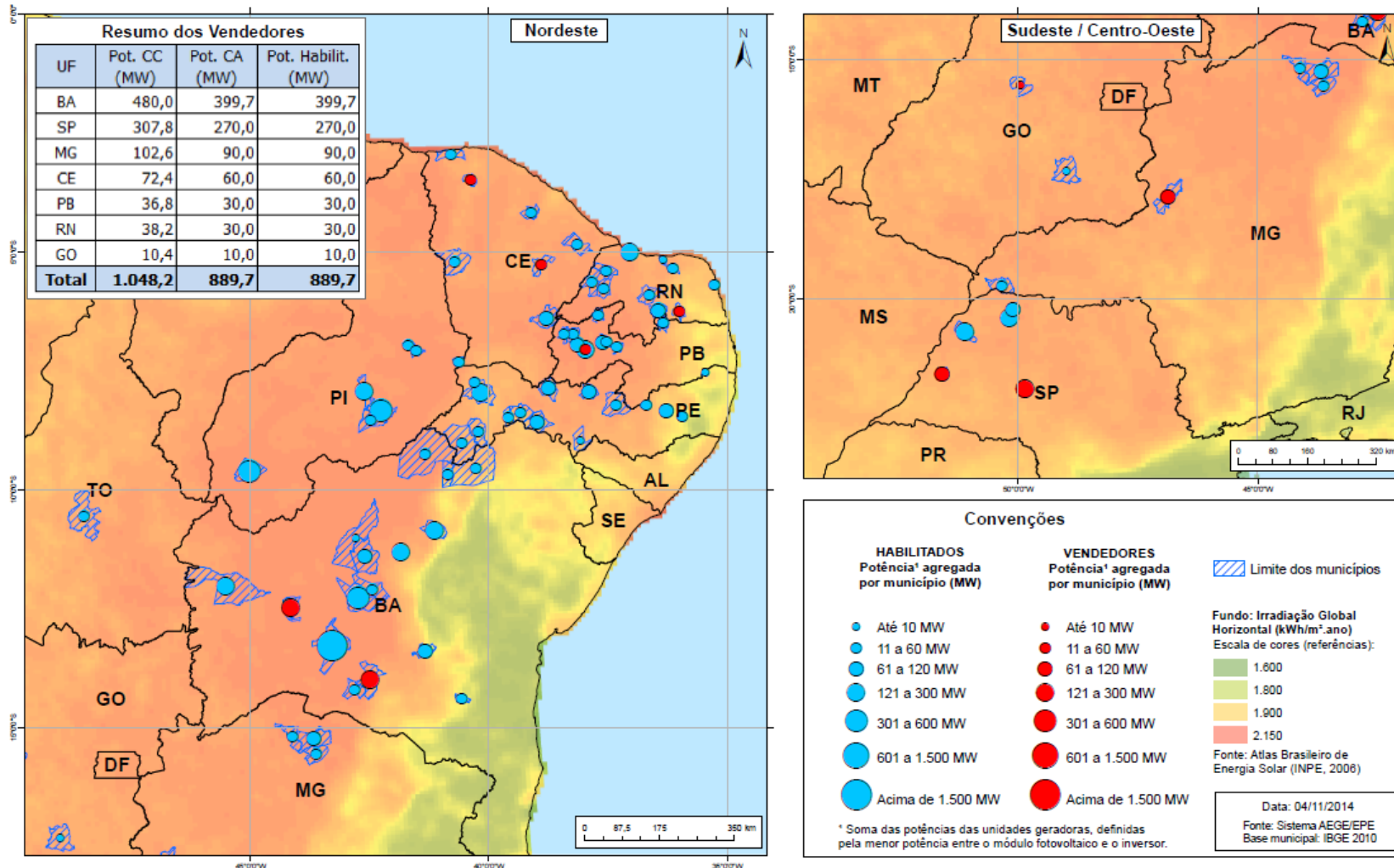
Cumulative global installed capacity in 2013 - 138,856 MW	
Country	Participation
Germany	26%
China	13%
Italy	13%
Japan	10%
USA	9%
Spain	4%
France	3%
United Kingdom	2%
India	2%
Greece	2%
Czech Republic	2%
Belgium	2%
Australia	2%
Rest of the world	10%
Brazil	-

Installed capacity added in 2013 - 38,352MW	
Country	Participation
China	31%
Japan	18%
USA	13%
Germany	9%
United Kingdom	4%
Italy	4%
India	3%
Greece	3%
Australia	2%
France	2%
Belgium	1%
Spain	0,3%
Czech Republic	0,2%
Rest of the world	12%
Brazil	-

¹Data EPIA; 2014

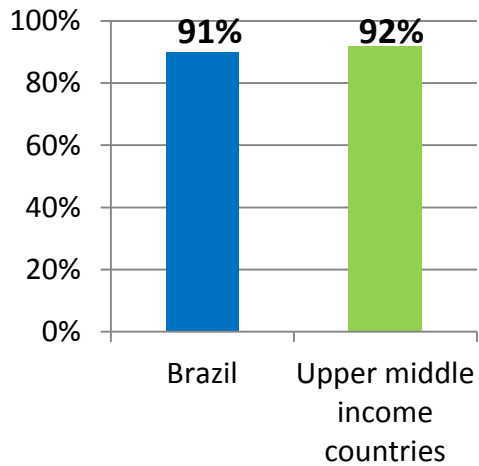
² Data EPE; 2014

2014 Renewable Energy Auction: Sellers and Enabled Enterprises (source: EPE site)

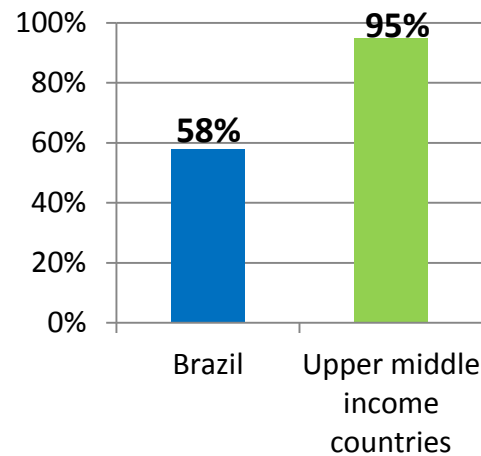




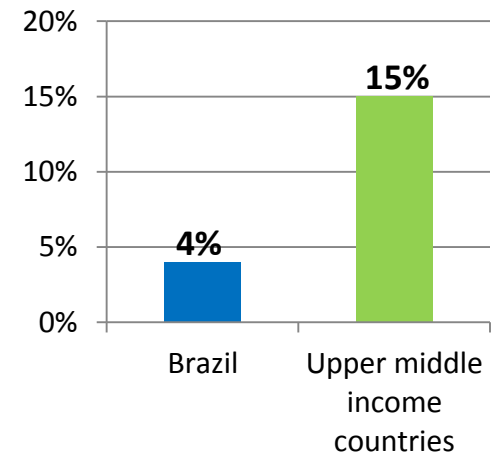
MSW collected



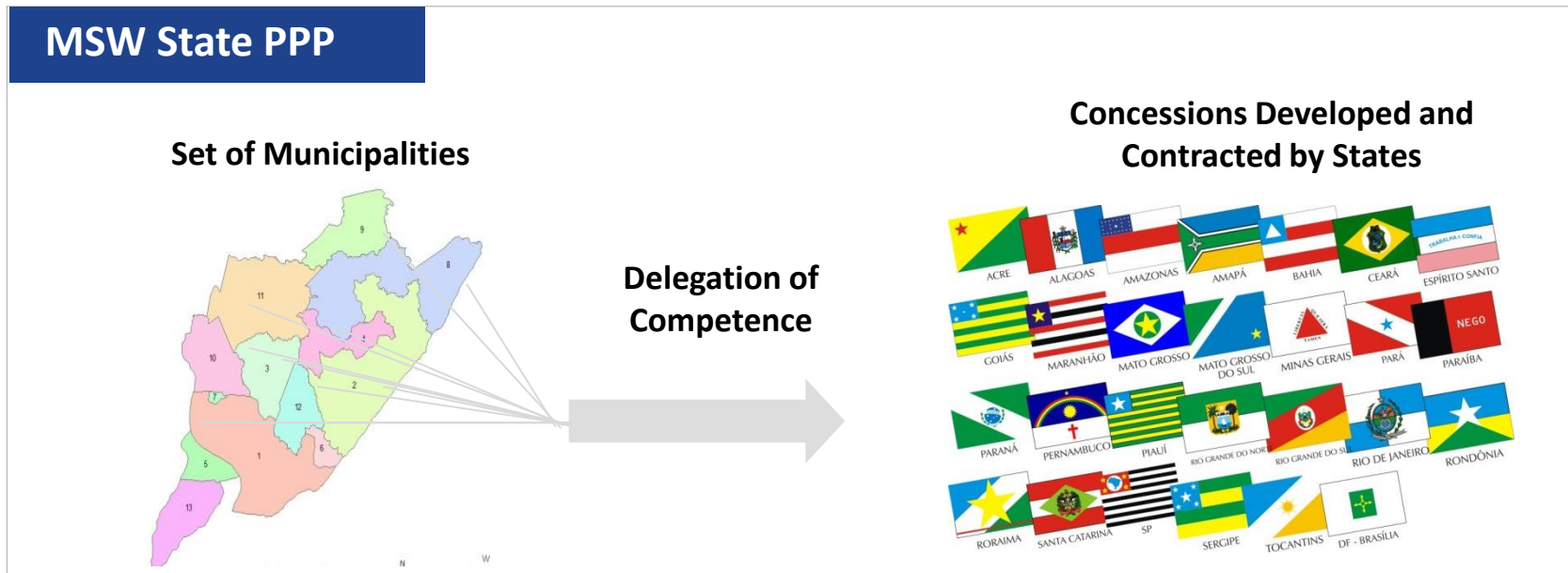
Adequate Disposal



Recycling



- The current scenario of MSW in Brazil lacks investment due to: i) limited developments on Concessions; ii) constrains on municipal budgets; and iii) lack of coordination among small/medium municipalities.
- In this context, BNDES aims to use its existing Project Development Facilities to foster MSW Concessions led by states (spreading a case of success of the MG state).
- In addition, BNDES plans to establish guidelines and legal/technical models for MSW concessions in Brazil, enabling replication of such initiatives through a robust model.



Grants

Loans



BNDES Atlantic
Forest Initiative



BNDES
Ecological
Restoration

- 
- BNDES Forestry
 - Climate Fund

15 projects
R\$ 42 million

Focus 01/2015:
Max. 7 projects
R\$ 20 million

3 projects
R\$ 218 million

Under study: BNDES Environmental Fund

Expected growing demand from
New Forest Law

- In the coming years, there will be a **significant increase in the demand for restoration** in the country, especially due to the requirements of the **new Forest Code, Law 12651/2012**.
- According to a study (Soares-Filho et al. 2014, published in *Science*), from 20 to 22 million hectares can be restored , of which 78% is in **Legal Reserves** and 22% in **Permanent Preservation Areas (PPA)**.
- The compensation mechanism using the **Environmental Reserve Quotes (CRA)** has the potential to fulfill part of the Legal Reserves' deficit, thus reducing restoration demands.
- The restoration goals presented in **The National Plan for the Recovery of Native Vegetation (Planaveg)** account for 12.5 million hectares in 20 years, and 0.39 million hectares in the first 5 years.





BNDES

*Brazilian
development bank*

Thank you!