Empresa de Pesquisa Energética

Center for Strategic Studies and Management
Science, Technology and Innovation

International Energy Agency

CEM12 / MI·6
CHILE 2021

Webinar

Working Together to Enhance Public RD&D Data Collection:
The Brazilian case

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Some topics for discussion…

- Part 1: Strategic overview of the Brazillian energy RD&D data tracking effort

- Part 2: Methodological reflections and next steps

It all starts with a synergy of motivations...

Energy and Technology Ministers at MI-3, the third Mission Innovation Ministerial

MI-3: Third MI Ministerial – May 2018, Malmö, Sweden

Event organized by IEA and European Commission:
Enhancing Data Collection on Government and Private Sector Spending for Clean Energy Research and Innovation

The **Brazilian delegation** identified **great opportunities...**

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THE BIG PUSH FOR SUSTAINABILITY

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THE BIG PUSH FOR SUSTAINABILITY in BRAZIL

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...building a solid base for a Pioneer initiative

Energy Planning & Mission Innovation

Big Push for Sustainability

Clean Energy Transitions Program

Positive Agenda for Climate Change and Sustainable Development

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...which has already demonstrated effective results

Axes 1: Investment data

Axes 2: Indicators de performance

Axes 3: incentive mechanisms

Synthesis Report

23 Oct 2020
15:00—17:00

Energy Big Push: Accelerating Clean Energy Innovation in Brazil

Fonte: https://www.cepal.org/en/publications/46007-big-push-sustainability-brazils-energy-sector-input-and-evidence-policy

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Within the development of Axes 1 of EBP project....

Guiding questions

- What is the **total value** of investments in RD&D in the energy sector?
- What is the **distribution** of these investments in the different energy technology categories?
- What is the share of these **low carbon** investments?

Objective

- To develop a process for the collection, structuring and management of data from **public and publicly oriented investments in research, development and demonstration (RD&D)** in energy.

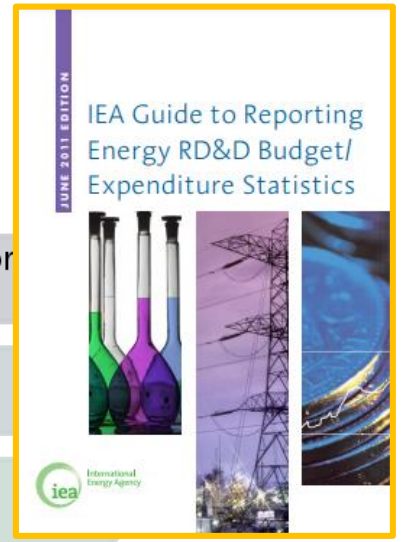
... Many doubts!!!

- Which **concept** of RD&D to use?
- How to **approach**: budget or expenditure perspectives?
- What type of energy technology **classification** to use?
- Should we ask institutions to classify their projects or do we centralize it?
- Should we map only clean energy or fossil fuels too?

... among other questions.

...IEA's partnership was crucial

Use of the Classification developed and applied by the IEA's Guide



Energy Efficiency	• Industry, residential, transpor ...
Fossil Fuels	• Oil, gas, coal, CCS, ...
Renewable Energy	• Solar, wind, biofuels, ...
Nuclear	• Fission, fusion
Hydrogen & Fuel Cells	• Hydrogen, fuel cells
Other Power and Storage Technologies	• Power generation, T&D, storage
Other Cross-Cutting Technologies	• Cross-cutting and others, basic research

Reference: IEA (2011), **IEA Guide to Reporting Energy RD&D Budget/Expenditure Statistics, IEA/OECD, Paris, June.**

RD&D investments data sources

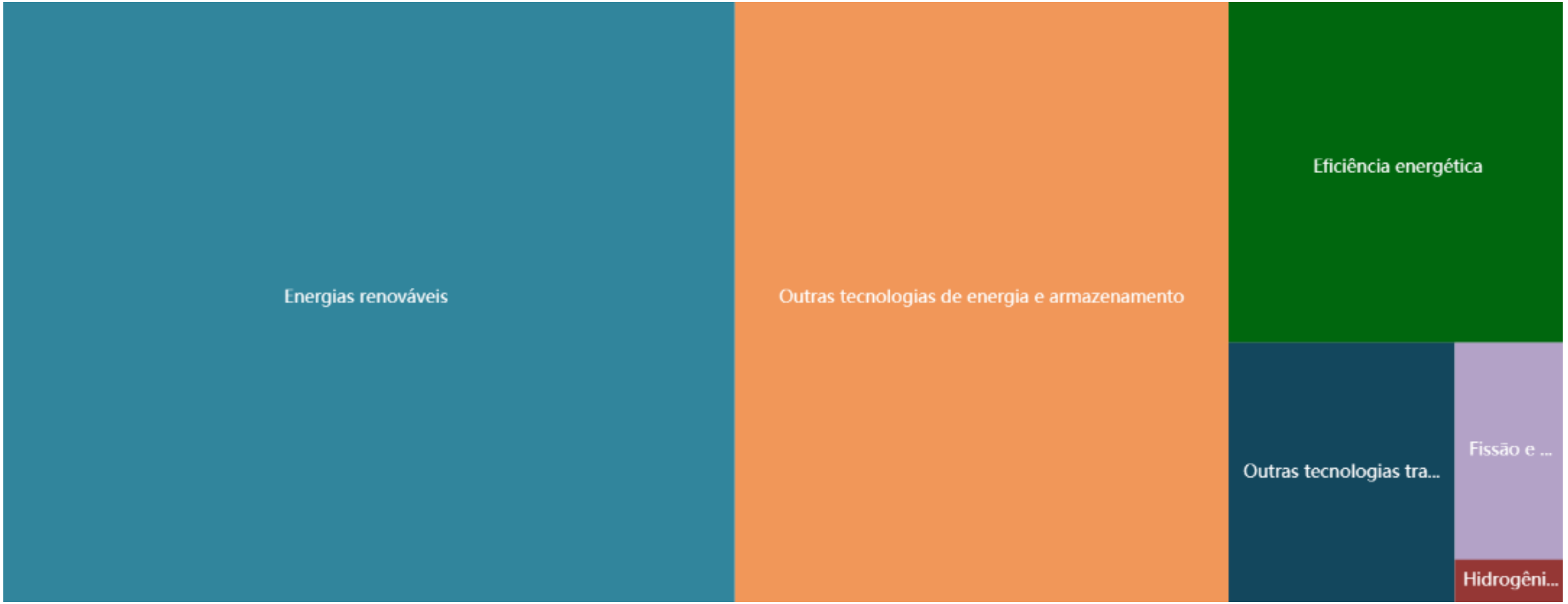
- **Total:** 8 institutions
- **Public:** MCTI/FNDCT, BNDES, FINEP, MCTI/CNPq, FAPESP and Siga-Brasil (for the CNEN data) e FAPESP.
- **Public oriended:** ANEEL, ANP

Overall result:

- Production of **unprecedented statistics on energy R&D investments in Brazil, from 2013 to 2018**
- Creation of a **process** - governance between different institutions
- Recommendations for improvement

Energy RD&D data overview

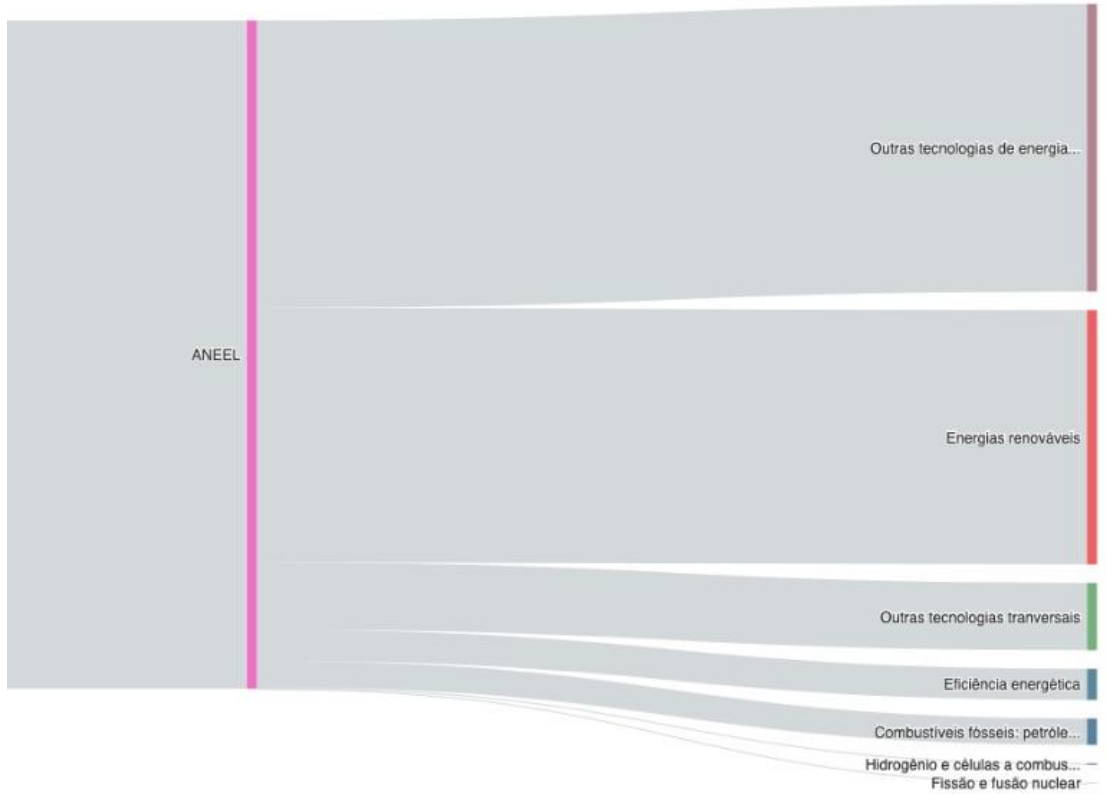
Clean Energy Technologies 2018



Energy RD&D overview

Energy Efficiency: digit 1 and digit 2

Energy Technology Portfolios by Institution



How are these results being internalized by policy making?

- The **development the inova-e Platform**, with the support of MME, UK government and EBP's partners

- The recent **Resolution launched by the Brazilian National Council for Energy Policy** that prioritizes **strategic areas for RD&D investments**

- **Strengthening the governance for energy innovation**, involving both ministries (MME and MCTI) and many other institutions

Part 2: Methodological reflections and next steps

It is important to understand the Brazilian context...

Lei nº 12.527 / 2011 - **Access to Information Law aka LAI - Lei de Acesso à Informação (LAI)**

Complex National Innovation System & Energy Sector

anp Agência Nacional do Petróleo, Gás Natural e Biocombustíveis

ANEEL Agência Nacional de Energia Elétrica

CNEN

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BNDES

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Finep INOVAÇÃO E PESQUISA EMPRESA PÚBLICA DO MCTI

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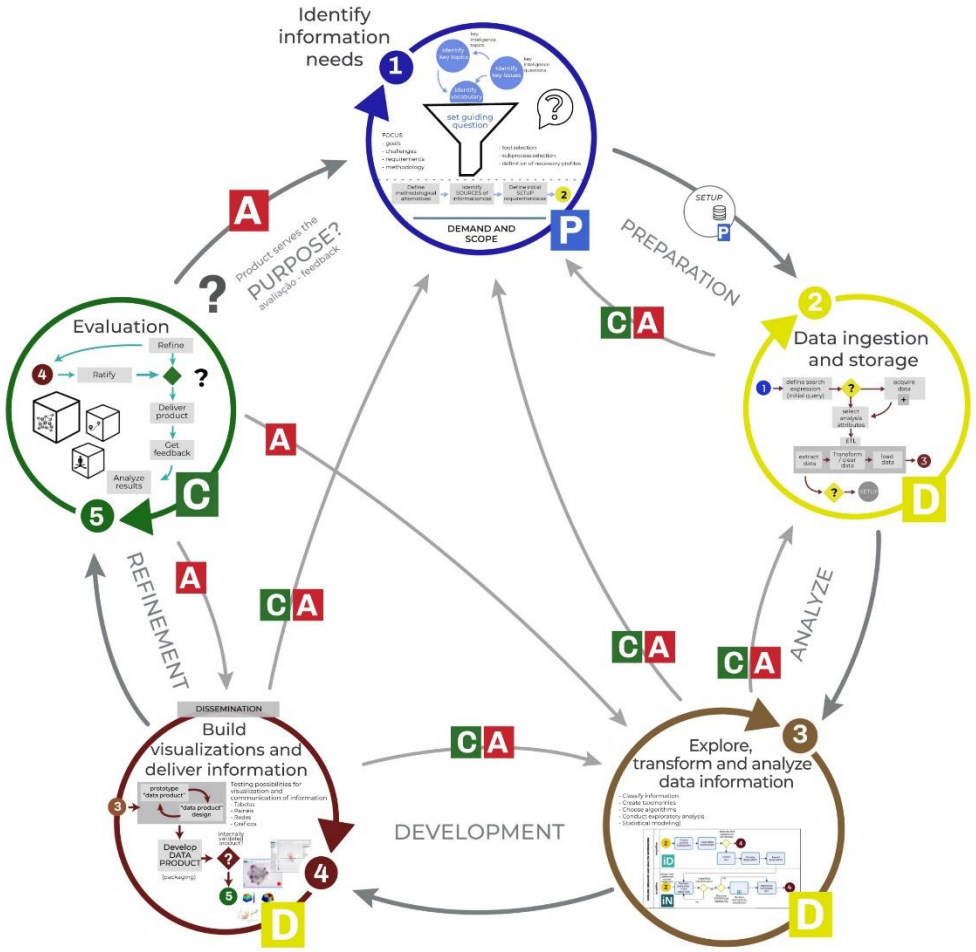
...that led us to choose the appropriate methodology

1. Identify information needs
2. Gather, extract, transform, clean and load the data
3. Explore and analyze data information
4. Build visualizations and deliver information
5. Feedback and lessons learnt



Challenges are always there...

- Diverse data sources
- Diverse type and formats of data

Minimum needed criteria:

- Data Origin;
- Project title and / or description;
- Amount contracted and / or executed;
- Date of contraction and / or start date and end date.
- Available data between 2013 and 2018

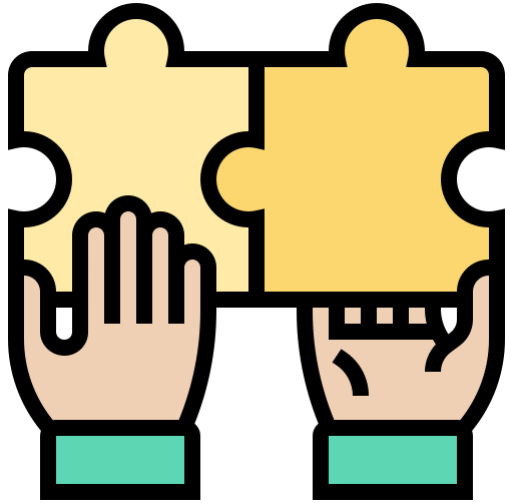
Desirable criteria (other):

- Destination institution or executing agent;
- Support type: refundable or non-refundable;
- Technology Readiness Level (TRL_: Research & Development or Demonstration;
- Origin of the resource; and Federation unity.

...and colaboration is fundamental to overcome challenges

Working groups were set during the process and all **data providers** became **partners**

IEA not only with technical expertise and advise but also with **building international connections and cooperation**



A lot of learning on the way...

- The national context is very important
- Perfection is your enemy
- Partners experiences are fundamental

...and now we are ready to move on to the next step!

- **Inova-e** launch and continue improvement

- **Automation** and **improvement** of the Energy RDD Data tracking processes:
  - Greater granularity (digit 3 and 4), methodological improvements, greater harmonization, insertion of new data sources

- Consider **more indicators**
  - Patents, scientific production, human resources and Infrastructure in STI, cooperation relations, innovation and entrepreneurship, production chains, policies and regulation, among others

Obrigada

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