

Importance of data collection for benchmarking analysis in industry:

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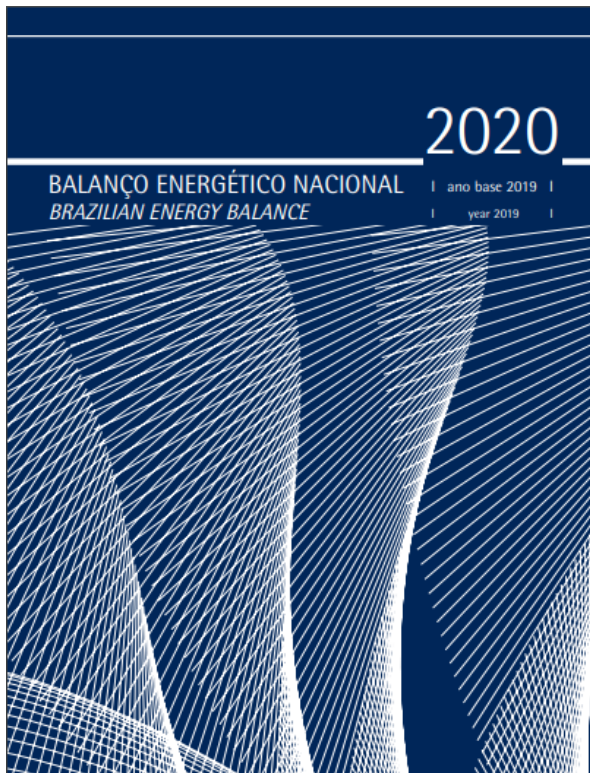
AGENDA

- *National Energy Statistics, data collection and validation*
- *Benchmarking in industry*
- *Main Challenges*

NATIONAL ENERGY STATISTICS DATA COLLECTION AND VALIDATION

Brazilian Energy Statistics

Institutional role of EPE includes to **implement** and **keep National Energy Statistics** as well as to **publish the Brazilian Energy Balance** (Law 10.847/2004)



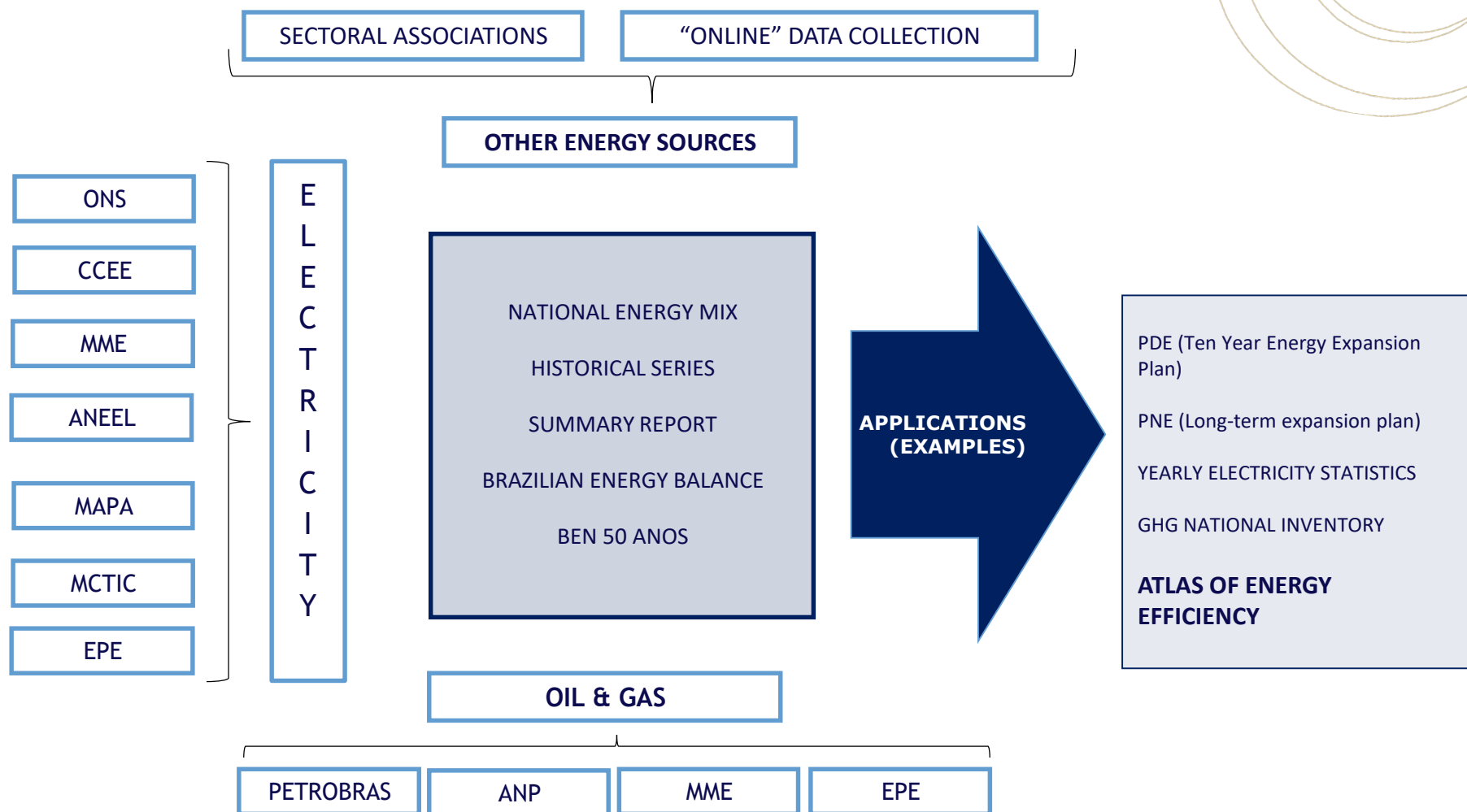
National Statistics on:

- Energy Supply and consumption by source and sector
 - International energy trades;
 - Transformation centers;
 - Energy Resources and Reserves;
 - Energy Statistics by State;
 - Total Primary Energy Supply (TPES).
-
- Historical data from 1970
 - Yearly permanent methodological updates

Brazilian Energy Balance as an important tool to monitor effects of energy policies in Brazil

Website: <http://www.epe.gov.br/pt/publicacoes-dados-abertos/publicacoes/balanco-energetico-nacional-ben/>

Data Collection and Validation Process: Institutional Framework



BENCHMARKING IN INDUSTRY

Importance of benchmarking in industry

- Benchmarking provides perspectives that can inform policymakers on which countries are most similar in terms of structure;
- Identify energy efficiency opportunities by showing how Brazil compares in terms of energy intensity and GHG emissions;
- Assists in the development of energy planning.

Challenges and good practices identified in Brazil in industrial benchmarking

- Engage and keep Brazilian Institutions that provide data engaged with this work.
- Seek direct communication/contact with industrial associations and plants to discuss data, indicators, technology and policies related to energy consumption and efficiency. In this way, the industry feels represented by the adopted policies.
- Encourage the development of Energy Management Systems.

Publications developed by EPE with benchmarking analysis:

- Atlas of Energy Efficiency in Brazil 2020 – Indicators Report

<https://www.epe.gov.br/en/press-room/news/epe-publishes-the-atlas-of-energy-efficiency-in-brazil-2020-indicators-report->

- Atlas of Energy Efficiency in Brazil 2019 – Indicators Report

<https://www.epe.gov.br/en/publications/publications/atlas-of-energy-efficiency-in-brazil-indicators-report>

- Análise da Eficiência Energética em Segmentos Industriais Seleccionados (only in Portuguese)

<https://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-314/topico-407/Apresenta%C3%A7%C3%A3o%20TR17%20SiteEPE.pdf#search=meta>

- Roadmap de Ações de Eficiência Energética: Propostas de Medidas no Setor Industrial Brasileiro (only in Portuguese)

<https://www.epe.gov.br/pt/publicacoes-dados-abertos/publicacoes/caderno-sobre-acoes-de-eficiencia-energetica-em-industrias-brasileiras>



Roadmap de Ações de Eficiência Energética

Propostas de Medidas no Setor Industrial Brasileiro

Superintendência de Estudos Econômicos e Energéticos
Diretoria de Estudos Econômico-Energéticos e Ambientais
Novembro de 2020



Atlas of Energy Efficiency in Brazil 2019 - Indicators Report

	National energy use or efficiency target	Mandatory policies							Other measures		
		Appliance standards	Industrial equipment standards	Residential building energy codes	Commercial building energy codes	Car fuel efficiency standards	Truck fuel efficiency standards	Mandatory industrial firm/sector actions	Market-based instruments	Financial or fiscal incentives	Information and capacity building
Argentina											
Australia											
Brazil											
Canada											
China											
France											
Germany											
India											
Indonesia											
Italy											
Japan											
Korea											
Mexico											
Russia											
Saudi Arabia											
South Africa											
Turkey											
United Kingdom											
United States											
European Union											

Present in some form

Not identified or not implemented

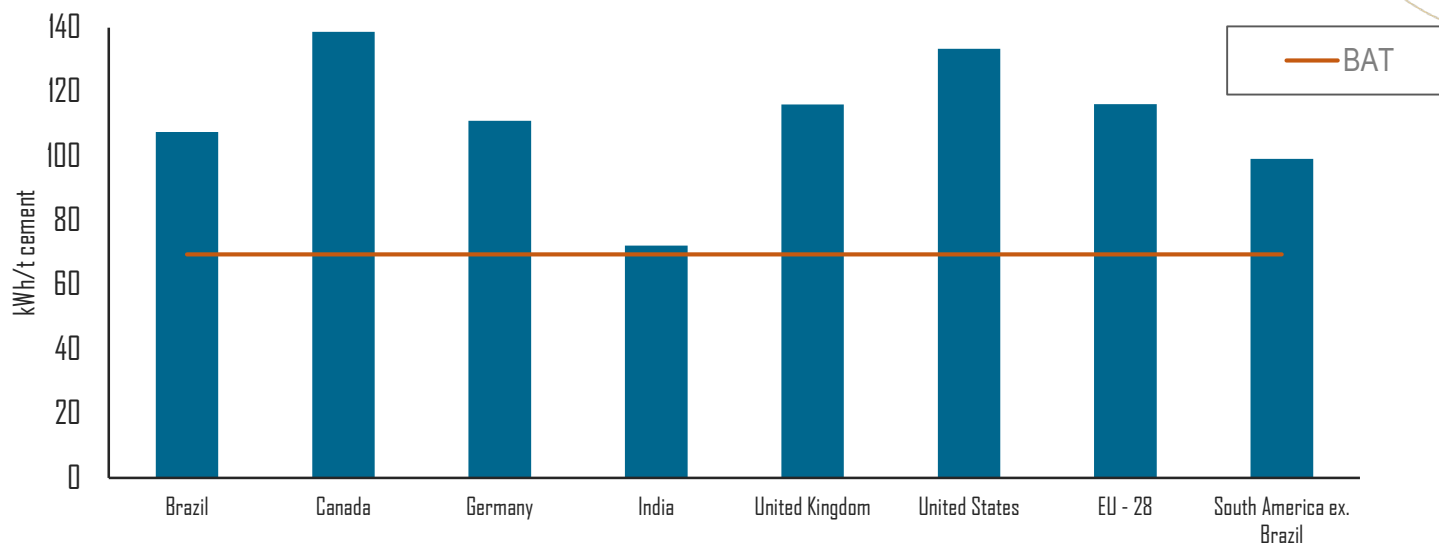
Source: IEA, Policies Database

- ABNT - Brazilian Association of Technical Standards;
- Labelling of three-phase electric motors up to 250 hp and centrifugal pumps up to 25 hp.

Atlas of Energy Efficiency in Brazil 2020 Indicators Report

Specific consumption for electricity, 2018

Source: CSI (2019)



Strategies to improve specific consumption of electricity include switching to more efficient grinding technologies, such as from replacing or selecting ball mills to high-pressure grinding rolls and vertical roller mills, as well as using excess heat recovered from the kiln for power generation. These improvements are part of a package of measures to reduce emissions in the sector, many of which Brazil is already implementing partially or totally. However, one technology with the potential to dramatically reduce electricity consumption in the sector is Waste Heat Recovery (WHR). According to SNIC analyses, this technology can achieve the same levels of savings as all other electrical efficiency measures together, achieving a 25-30% reduction in the plant's electrical consumption.

This is a reality in countries like China and India, where this technology is present. Meanwhile, there is only one unit with WHR in Brazil, which was designed already integrating this equipment.

Atlas of Energy Efficiency in Brazil 2020 Indicators Report

Examples of programmes to improve energy efficiency of cement sector

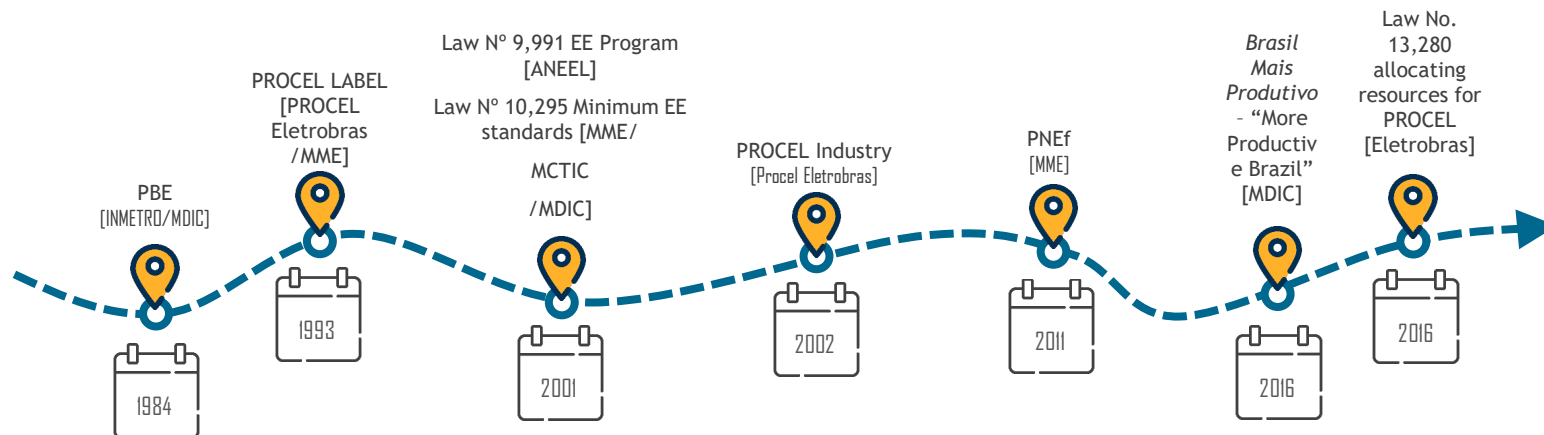
Source: IEA (2020a)

Country or region	Energy efficiency policies	Regulatory	Incentives	Information
China	Top 100 / 1 000 / 10 000 enterprises Programme ^[9]	Under these programmes consumption targets are set for each enterprise. Compliance with the targets is part of the evaluation of the overall performance of the provincial governments, which is linked to annual evaluation awards and promotions for government officials. Enterprises are expected to carry out: energy audits, training, reporting, action plans, and investments, among other measures.	Companies benefit from financial incentives.	Companies must report quarterly on their progress to the National Bureau of Statistics (NBS)."
	As part of its 13th Five-Year Plan (2016-20), China aims to reduce the thermal energy intensity of clinker production to 3.07 GJ/t clinker on average by 2020, which would shrink the gap between the current level and best available technology thermal energy performance by two-thirds.			
India	Perform, Achieve, Trade (PAT) Scheme	PAT sets mandatory energy intensity improvement targets for designated consumers (DCs) in energy-intensive sectors.	PAT provides an incentive for DCs to exceed targets by allowing them to generate energy saving certificates (ESCerts) and sell them to other underperforming DCs. Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE) covers 50% of the value of loans to participating financial institutions (PFIs) on energy efficiency projects.	A very thorough data reporting system allows the Government to collect production and energy use from DCs to re-evaluate targets of the PAT every 2 years.
	Between 2011 and 2015, 85 cement plants in India participated in the first cycle of Perform, Achieve, Trade (PAT), a market-based mechanism to improve energy efficiency. They achieved energy demand reductions equivalent to 9% of India's 2014 cement sector energy consumption, and the cement sector is now involved in the second PAT cycle, with higher targets and coverage.			
Global	In 2015 in the private sector, 18 key cement companies developed the shared objective to reduce their CO ₂ emissions by 20-25% from the business-as-usual level by 2030, equivalent to 1 GtCO ₂ . This initiative, dubbed the Low carbon Technology Partnership Initiative (LTCPI) is very good example of collaborations that could be built on to promote energy efficiency improvements ^[10] .			
Europe	In Europe, the mandate to develop cement standards within the European Committee for Standardisation was recently widened to allow possible low-carbon alternatives to OPC clinker that rely on different raw materials or mixes. This is an example of regional approaches that could be widened to include energy efficiency across sectors.			

Timeline: current energy efficiency policies

Main highlights of energy efficiency policies related to the industrial sector

Source: EPE. Images; Icons made with [Freepik](https://www.freepik.com) - www.flaticon.com



For the industrial sector, important policies have boosted gains in technological innovation, both in the use and in the production of products related to the energy efficiency market. These policies have driven the penetration of more efficient equipment and processes and also take advantage of energy efficiency opportunities, besides representing a driver for gains in competitiveness.

MAIN CHALLENGES

Main Challenges

- ✓ *Keep Brazilian Institutions that provide data engaged with this work*
- ✓ *Obtain more disaggregated end-use data to update or develop EPE's models.*
- ✓ *Improve online data collection in industry.*
- ✓ *Promote best link between energy efficiency policies and indicators evaluation*

Glossary



- EPE – Energy Research Office
- MME – Ministry of Mines and Energy
- Aneel – Brazilian Electricity Regulatory Agency
- CCEE – Chamber of Commercialization of Electric Energy
- ONS – National System Operator (electricity)
- MAPA – Ministry of Agriculture and Livestock
- MCTIC – Ministry of Science, Technology, Innovation and Communications
- ANP – National Agency of Petroleum, Gas and Biofuels

Thank you!



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