

# G20 Energy End-Use Data and Energy Efficiency Metrics initiative:

## Deep-dive into the services sector

“RETHINKING END USE DATA COLLECTION IN THE LIGHT OF THE  
GLOBAL HEALTH CRISIS”

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ENERGY RESEARCH ANALYST

OCTOBER 29<sup>TH</sup>, 2020

# AGENDA

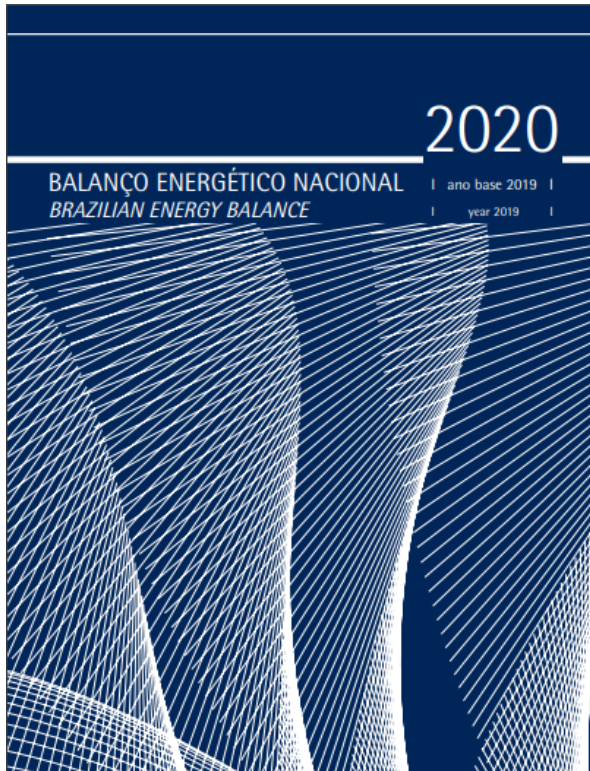
- *Brazilian Energy Statistics*
- *Services Sector*
- *Energy efficiency Indicators database*
- *Main Challenges*



# BRAZILIAN ENERGY STATISTICS

# 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 Energy Supply (TES).

- 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/>

# SERVICES

# Brazilian Energy Balance | Who used energy in Brazil?

2019	259,4 Mtoe
2018	257,4 Mtoe
	0,8%

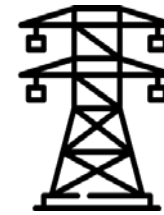
Transport  
32,7%



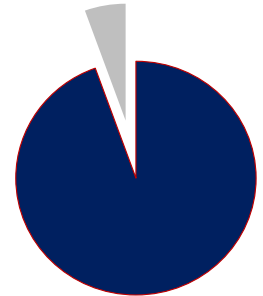
Industries  
30,4%



Energy Sector  
11,2%



Non-energy use  
5,5%



Households  
10,3%



Services  
5,1%



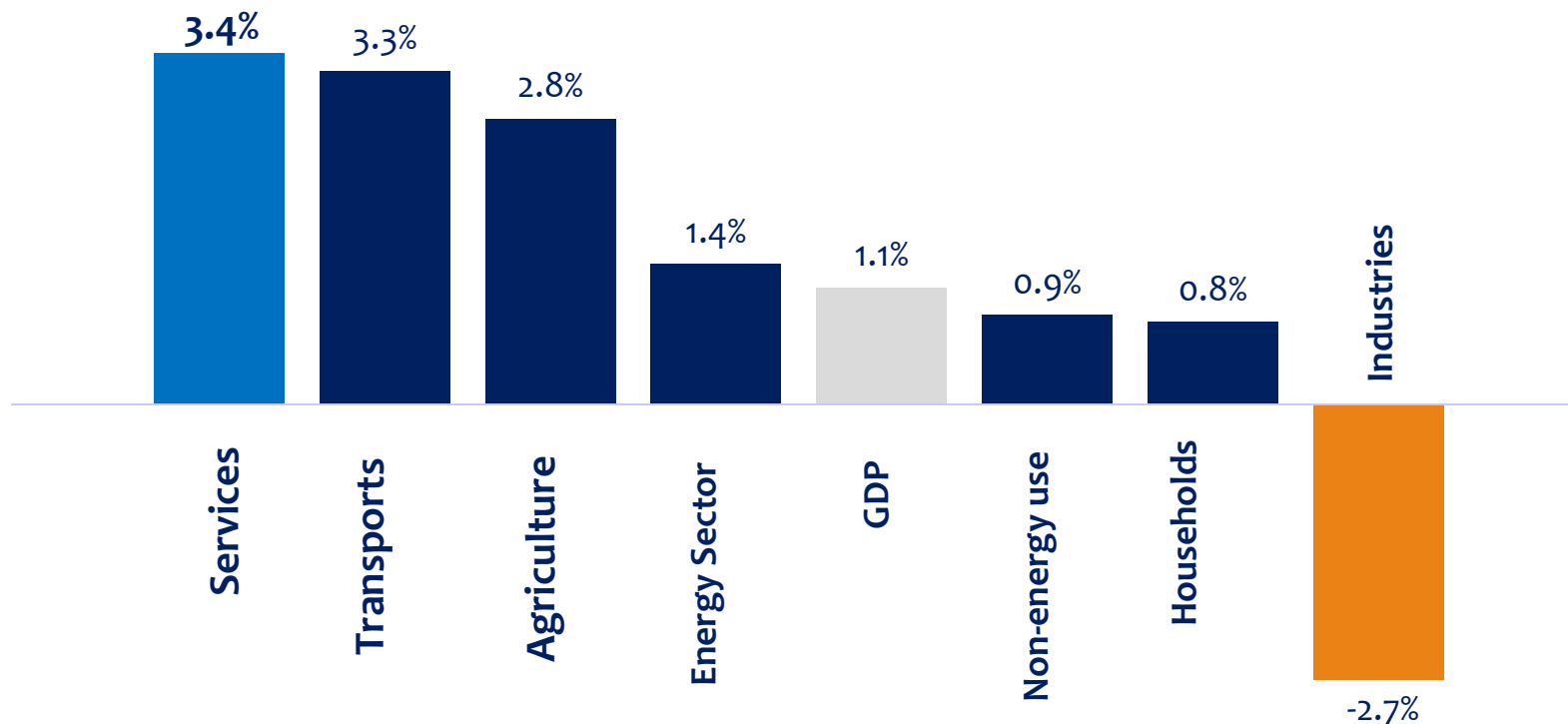
Agriculture  
4,9%



Industrial production and cargo / passenger transportation account for approximately 63% of the country's energy consumption.

# BEB 2020 | How the energy consumption in Brazil varied

*% variation 2019/2018*



# BEB 2020 | Commercial Sector



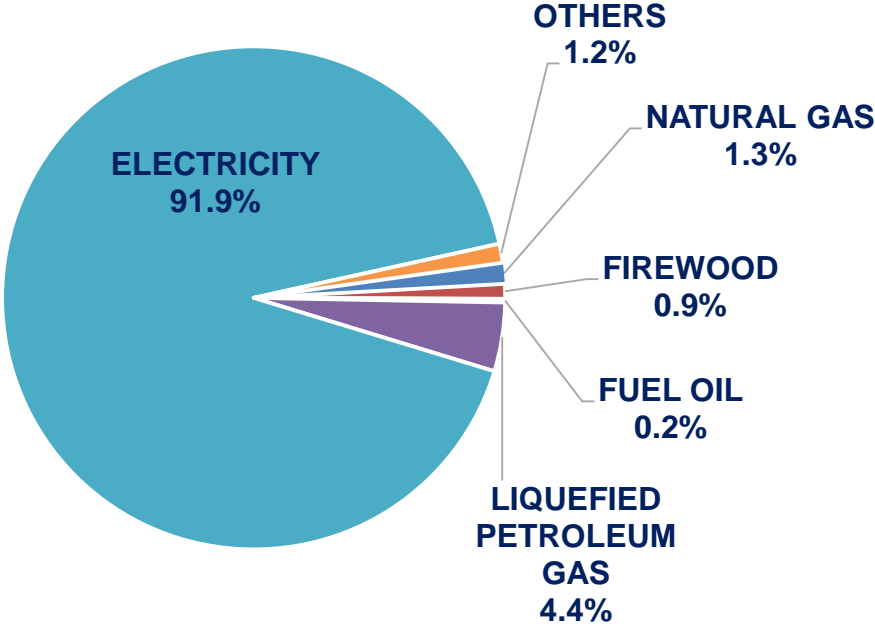
2019	8,9 Mtoe
2018	8,5 Mtoe
	4,3%

### Highlights:

↑ Electricity +4,5%;

↓ LPG -0,7%;


### 2019





# BEB 2020 | Public Sector



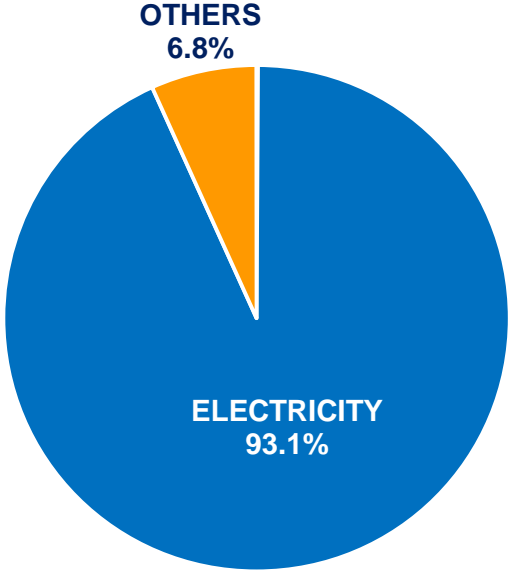
2019	4,3 Mtoe
2018	4,2 Mtoe
	1,7%

## Highlights:

 Electricity +2,1%;

 Others -2,9%;

2019



# Impacts of Covid-19 on Services

Consumption, in GWh, from January to August of:	2019	2020	Δ 20/19
Brazil	319,165	308,580	-3,3%
Residential	94,434	96,787	2,5%
Industrial	111,673	106,761	-4,4%
<b>Commercial</b>	<b>60,941</b>	<b>53,897</b>	<b>-11,6%</b>
<b>Public</b>	<b>31,158</b>	<b>29,712</b>	<b>-4,6%</b>
Others	20,958	21,423	2,2%

For more information, visit: <https://www.epe.gov.br/pt/publicacoes-dados-abertos/publicacoes/resenha-mensal-do-mercado-de-energia-eletrica>

# Impacts of Covid-19 on Services

## Commercial:

Consumption in different geographic regions of Brazil, in GWh, from January to August of:	2019	2020	Δ 20/19
North	3,318	3,181	-4,1%
Northeast	9,918	8,622	-13,1%
Southeast	32,145	27,929	-13,1%
South	10,517	9,638	-8,4%
Center-West	5,043	4,527	-10,2%

## Public:

Consumption in different geographic regions of Brazil, in GWh, from January to August of:	2019	2020	Δ 20/19
North	2,370	2,203	-7,1%
Northeast	7,204	7,027	-2,5%
Southeast	14,335	13,652	-4,8%
South	4,234	4,014	-5,2%
Center-West	3,015	2,817	-6,6%

For more information, visit: <https://www.epe.gov.br/pt/publicacoes-dados-abertos/publicacoes/resenha-mensal-do-mercado-de-energia-eletrica>

# ENERGY EFFICIENCY INDICATORS DATABASE

# Brazilian EEID – Structure Harmonisation with ODYSSEE

Sector	Branches/Sectors/End uses	Technical & Economic Data	Energy Efficiency Indicators		
Macro	<ul style="list-style-type: none"> <li>- Total</li> <li>- Industry</li> <li>- Transport</li> <li>- Residential-Tertiary-Agriculture</li> </ul>	<ul style="list-style-type: none"> <li>- Primary consumption</li> <li>- Final consumption</li> <li>- Demography</li> <li>- GDP, Value added</li> </ul>	<ul style="list-style-type: none"> <li>- Primary energy intensity</li> <li>- Final energy intensity</li> <li>- Energy efficiency index</li> <li>- CO2 emissions</li> <li>- CO2 intensity</li> </ul>		
Industry	<table border="0"> <tr> <td> <ul style="list-style-type: none"> <li>- Chemical industry</li> <li>- Primary metals                             <ul style="list-style-type: none"> <li>- Steel</li> <li>- Non ferrous</li> </ul> </li> <li>- Non metallic mineral                             <ul style="list-style-type: none"> <li>- Cement</li> <li>- Glass *</li> </ul> </li> <li>- Paper &amp; Printing</li> <li>- Food &amp; beverages</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>- Textile</li> <li>- Machinery &amp; Fabricated metals</li> <li>- Transport *</li> <li>- equipment</li> <li>- Wood</li> <li>- Mining</li> <li>- Construction</li> <li>- Misc. Industries</li> </ul> </td> </tr> </table>	<ul style="list-style-type: none"> <li>- Chemical industry</li> <li>- Primary metals                             <ul style="list-style-type: none"> <li>- Steel</li> <li>- Non ferrous</li> </ul> </li> <li>- Non metallic mineral                             <ul style="list-style-type: none"> <li>- Cement</li> <li>- Glass *</li> </ul> </li> <li>- Paper &amp; Printing</li> <li>- Food &amp; beverages</li> </ul>	<ul style="list-style-type: none"> <li>- Textile</li> <li>- Machinery &amp; Fabricated metals</li> <li>- Transport *</li> <li>- equipment</li> <li>- Wood</li> <li>- Mining</li> <li>- Construction</li> <li>- Misc. Industries</li> </ul>	<ul style="list-style-type: none"> <li>- Energy consumption by branch</li> <li>- Production index by branch</li> <li>- Value added by branch</li> <li>- Physical production for intensive products</li> </ul>	<ul style="list-style-type: none"> <li>- Energy efficiency Index</li> <li>- Energy intensity by branch</li> <li>- Energy intensity at adjusted structure</li> <li>- Specific consumption by intensive products (toe/ton)</li> <li>- CO2 intensity by sector</li> </ul>
<ul style="list-style-type: none"> <li>- Chemical industry</li> <li>- Primary metals                             <ul style="list-style-type: none"> <li>- Steel</li> <li>- Non ferrous</li> </ul> </li> <li>- Non metallic mineral                             <ul style="list-style-type: none"> <li>- Cement</li> <li>- Glass *</li> </ul> </li> <li>- Paper &amp; Printing</li> <li>- Food &amp; beverages</li> </ul>	<ul style="list-style-type: none"> <li>- Textile</li> <li>- Machinery &amp; Fabricated metals</li> <li>- Transport *</li> <li>- equipment</li> <li>- Wood</li> <li>- Mining</li> <li>- Construction</li> <li>- Misc. Industries</li> </ul>				

Customization to Brazil: split energy production industry (refining, O&G Production, ethanol distilleries, etc.); some sectors included in misc. industries (\*)

# Brazilian EEID – Structure Harmonisation with ODYSSEE

Sector	Branches/Sectors/End uses		Technical & Economic Data	Energy Efficiency Indicators
Transport	<b>4 Transport modes:</b> <ul style="list-style-type: none"> <li>- Road</li> <li>- Rail</li> <li>- Water</li> <li>- Air</li> </ul>	<b>6 Road vehicles types:</b> <ul style="list-style-type: none"> <li>- Cars</li> <li>- Two-wheels</li> <li>- Bus</li> <li>- Trucks &amp; light vehicles</li> <li>- Light vehicles</li> <li>- Trucks</li> </ul>	<ul style="list-style-type: none"> <li>- Energy consumption by fuel and by mode</li> <li>- Stock of vehicles by fuel</li> <li>- Registrations by type of vehicle</li> <li>- Traffic by mode</li> <li>- Annual distance travelled by type of vehicle</li> </ul>	<ul style="list-style-type: none"> <li>- Energy efficiency index</li> <li>- Specific consumption by vehicle, in liters/100km</li> <li>- Specific emissions of CO2 by mode and vehicle</li> </ul>
Residential	<b>4 end-uses:</b> <ul style="list-style-type: none"> <li>- Space heating</li> <li>- Water heating</li> <li>- Cooking</li> <li>- Electrical appliances</li> </ul>	<b>5 Appliances:</b> <ul style="list-style-type: none"> <li>- Refrigerators</li> <li>- Freezers</li> <li>- Washing machine</li> <li>- Dish washing machine</li> <li>- TV</li> <li>- Lamps</li> </ul>	<ul style="list-style-type: none"> <li>- Energy consumption</li> <li>- Stock of dwellings</li> <li>- New dwellings</li> <li>- Floor area of dwelling</li> <li>- Stock of appliances</li> <li>- Equipment rate</li> <li>- Degree day</li> </ul>	<ul style="list-style-type: none"> <li>- Energy efficiency index</li> <li>- Specific consumption by dwelling, end uses and by equipment</li> <li>- Specific emissions of CO2</li> <li>- CO2 indicators</li> </ul>
Services, agriculture	<b>7 branches:</b> <ul style="list-style-type: none"> <li>- Hotels &amp; Restaurants</li> <li>- Health</li> <li>- Education</li> <li>- Administration</li> <li>- Wholesale &amp; retail trade</li> <li>- Private offices</li> <li>- Agriculture</li> </ul>		<ul style="list-style-type: none"> <li>- Energy consumption</li> <li>- Value added</li> <li>- Floor area</li> <li>- Employment</li> </ul>	<ul style="list-style-type: none"> <li>- Energy intensity</li> <li>- Electric intensity</li> <li>- Specific consumption per employee, floor area</li> <li>- CO2 emissions</li> </ul>

Customization to Brazil: include public and livestock in agriculture

# Energy Efficiency Monitoring: historical summary

- 1st REPORT: 2014

[http://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-251/topico-311/DEA%2010-14%20Consumo%20de%20Energia%20no%20Brasil\[1\].pdf#search=estudos%20setoriais](http://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-251/topico-311/DEA%2010-14%20Consumo%20de%20Energia%20no%20Brasil[1].pdf#search=estudos%20setoriais)

- 2nd REPORT: 2017

<http://www.epe.gov.br/sites-pt/publicacoes-dados-abertos/publicacoes/PublicacoesArquivos/publicacao-251/topico-311/DEA%2025-17%20-%20%20Indicadores%20de%20Efici%C3%Aancia%20Energ%C3%A9tica.pdf#search=monitorando>

- 3rd REPORT 2019

<https://www.epe.gov.br/sites-en/publicacoes-dados-abertos/publicacoes/Paginas/Atlas-of-Energy-Efficiency-in-Brazil---Indicators-Report.aspx>



# MAIN CHALLENGES



# Main Challenges

- ✓ *Keep Brazilian Institutions that provide data engaged with this work*
- ✓ *Improve online data collection in some sectors: Commercial sector is one of them*
- ✓ *Promote best link between energy efficiency policies and indicators evaluation*

# Thank you!



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