



Study of the tax burden and charges of the Brazilian energy industry

Base period: 2019

Introduction



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The study of the tax burden and charges of the Brazilian energy industry for 2019, which we present herein together with Instituto Acende Brasil, consolidates the burden effectively paid by 35 companies of the Brazilian energy industry, which represent, approximately, 70% of the market of generation, transmission and distribution companies. Its content shows the need for an attentive analysis of the high levels of taxation on the energy industry seeking higher efficiency of allocation in an economic sector that is the foundation for all the chains of production and consumption in our country. It is even more significant now that the tax reform is being discussed, which is a priority agenda of the Congress and the Federal Government.



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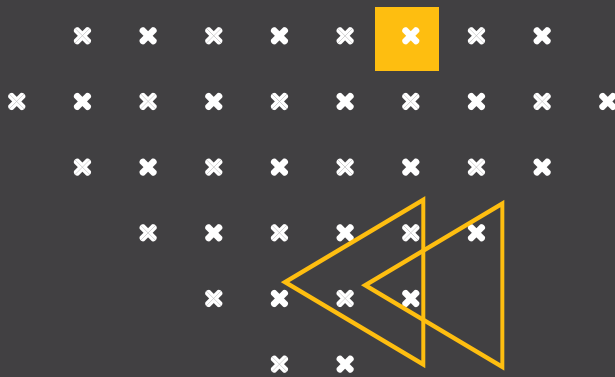
Over 100 years in Brazil, PwC Brazil has nearly 4 thousand professionals in 15 offices across all Brazilian regions. Our multidisciplinary teams, working on a collaborative basis, undergo constant training for improvement and use the most innovative digital solutions of the market to search for fast and efficient answers to our clients' problems. The main strategic aspect of this dispersed and connected structure is to ensure that our talents remain our greatest resources, and that they may have a broad knowledge of the culture and economic context of each region. There is a PwC for each challenge faced by our clients and the communities in which we operate.



Sarah Maia
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The tax area of PwC Brazil, which is highly supported by technology, works on a multidisciplinary and innovative basis in the search for solutions in the context of the Brazilian tax system. The operation focused on the energy industry seeks to bring specialized knowledge, experience, synergies and important insights to our clients. Due to our global experience and the knowledge of over 4 thousand experts in energy and utilities throughout the world, 200 only in Brazil, we are prepared to meet the specific needs of this important industry for the country. Our focus on the energy and utilities industry allows for the development of solutions from strategy to execution.





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**Eduardo Müller
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Executive Director
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Instituto Acende Brasil (www.acendebrasil.com.br) is a Think Tank directed to the development of actions and projects to increase the level of transparency and sustainability of the Brazilian energy industry. Based on numbers and facts, we prepare long-term analyses, seeking to assist companies in identifying the main vectors and economic, political and institutional pressures that shape the industry.

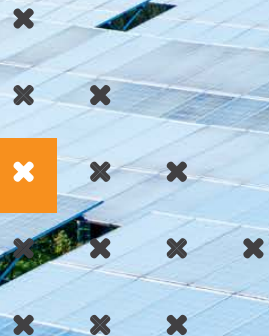
Based on the principles above, a team of executives and researchers of the Institute provides the following professional services: (a) Courses based on an architecture that covers the main subjects and dimensions of the Brazilian energy industry; (b) studies and analyses combining deep industry knowledge with well-known analytical techniques, including Scenario Planning for the making of decisions, industry studies, analysis and monitoring of legislative, regulatory, and tariff matters; (c) research and development projects regulated by the Brazilian Electricity Regulatory Agency (ANEEL) in several academic lines, especially regulation, social and environmental subjects, technological frontiers of the GTDC value chain; (d) Sustainable Energy Seal, an instrument for the assessment of the social and environmental performance of electric power generation, transmission and distribution companies; (e) daily Industry clipping; and (f) weekly Political and Regulation Communication, reporting the activities that affect the Brazilian energy industry in Congress (bills, public hearings, etc.), the executive branch and ANEEL (ordinances, minutes of CMSE – Electric Sector Monitoring Committee, resolutions, court orders, etc.) and industry institutions (ONS – National Electric System Operator, CCEE – Electric Energy Trade Chamber, EPE – Energy Research Company, environmental agencies), with analyses of the energy balance and flows between subsystems, weekly Difference Settlement Prices (PLD), auctions, readjustments, and tariff reviews.



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Executive summary

This study was developed based on the tax burden and industry charges effectively collected by **35** companies of the Brazilian energy industry, which represent, approximately, **70%** of the GTD market (generation, transmission and distribution companies), as detailed in [section 3](#).

For calendar year **2019**, the consolidated burden of taxes (36.5%) and industry charges (10.8%) represent **47.3%** of the total gross operating revenue of the companies that comprise the sample.

In comparison, the most significant variation occurred in the **industry charges**, directed by the decrease in the Energy Development Account (CDE), whose collection and allocation budget is defined by Aneel – Brazilian Electricity Regulatory Agency. The tax burden was stable in the sample analyzed.

In the 2019 study, in the calculation of the federal taxes, we did not include extraordinary and temporary items, according to [section 6](#) of this study.

As analyzed in [section 9](#) of this study, the most significant variation for 2019 occurred in the industry charges, especially CDE.

| Period | Burden on revenue | | Variation |
|------------------|-------------------|--------------|------------------|
| | 2018 | 2019 | |
| Federal taxes | 15,9% | 15,3% | -0,6 p.p. |
| State taxes | 21,2% | 21,2% | 0 p.p. |
| Municipal taxes | 0,02% | 0,02% | 0 p.p. |
| Industry charges | 12,9% | 10,8% | -2,1 p.p. |
| Total | 50,0% | 47,3% | -2,7 p.p. |

1. The industry

The energy industry production chain is divided into three segments:



Generation

It is the segment responsible for producing the electric power and inserting it in the transportation systems (transmission). In Brazil, the generation segment is very dispersed, comprising **8,803⁽ⁱ⁾** electric power generation plants (from different power sources: hydroelectric, thermoelectric, wind and solar).



Transmission

The transmission segment is responsible for the transportation of the energy arising from the generation plants. In Brazil, this segment had **144** agents and **226** concessions up to December 2019.⁽ⁱⁱ⁾



Distribution

This segment distributes the energy to the end consumers, currently comprising **109⁽ⁱⁱⁱ⁾** agents in Brazil: 53 concessionaires, 43 permittees and 13 authorized entities.

Source: data extracted from the websites below in December 2019:

⁽ⁱ⁾ <http://www.mme.gov.br/web/guest/secretarias/energia-eletrica/publicacoes/boletim-de-monitoramento-do-sistema-eletrico>

⁽ⁱⁱ⁾ http://www.ons.org.br/AcervoDigitalDocumentosEPublicacoes/SEAMSE_201912.pdf

⁽ⁱⁱⁱ⁾ <http://www.aneel.gov.br/distribuicao2>

2. Universe of taxes and charges analyzed



Federal, state and municipal taxes:

1. **IRPJ:** Corporate Income Tax (25%);
2. **CSLL:** Corporate Income Tax (9%);
3. **ICMS:** State Value-added Tax;
4. **ISS:** Services Tax;
5. **PIS/Pasep:** Gross Revenue Tax (Federal VAT);
6. **COFINS:** Gross Revenue Tax (Federal VAT);
7. **Encargos trabalhistas:** INSS (contribution to the INSS due by the employer), FGTS (Government Severance Indemnity Fund for Employees) and other social security charges.



Energy industry charges:

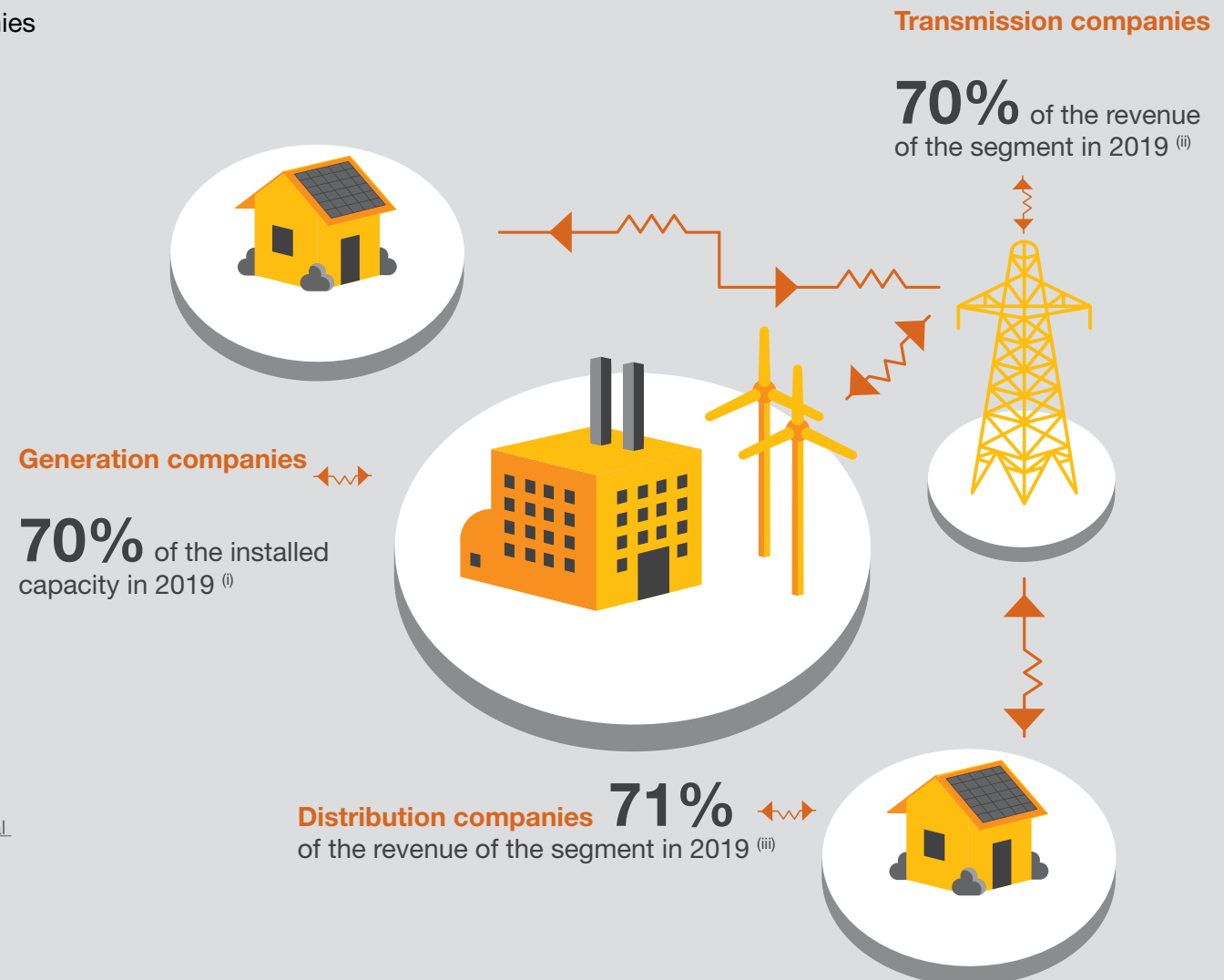
1. **CFURH:** Financial Compensation for Use of Water Resources;
2. **CDE:** Energy Development Account (CDE)^(*);
3. **RGR:** Global Reserve for Reversion;
4. **TFSEE:** Electric Power Service Inspection Fee;
5. **ESS:** System Service Charges;
6. **ONS:** National Electric System Operator;
7. **Proinfa:** Incentive Program for Alternative Sources of Electric Power;
8. **P&D:** Research and Development;
9. **PEE:** Energy Efficiency Program;
10. **EPE:** Energy Research Company;
11. **FNDCT:** National Fund for Scientific and Technological Development.

(*) Pursuant to art. 4º of Decree 9,022/2017, CDE groups the CCC (Fuel Consumption Account) and CCEE charges.

3. Sample of companies considered in the study

The study included the analysis of **35** companies of the energy industry with operating activities in the generation, transmission and distribution segments.

This sample represents the Brazilian energy industry as follows:



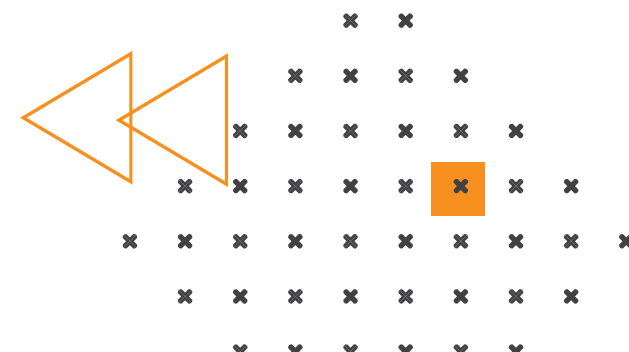
⁽ⁱ⁾ Source: data extracted in June 2020 from the audited financial statements and the Energy System Monitoring Report of December 2019, of the Ministry of Mines and Energy.

⁽ⁱⁱ⁾ Source: data extracted from ONS website and the audited financial statements (extracted from June 2020).

⁽ⁱⁱⁱ⁾ Source: data extracted from Aneel's website in June 2020.

4. Study limitations

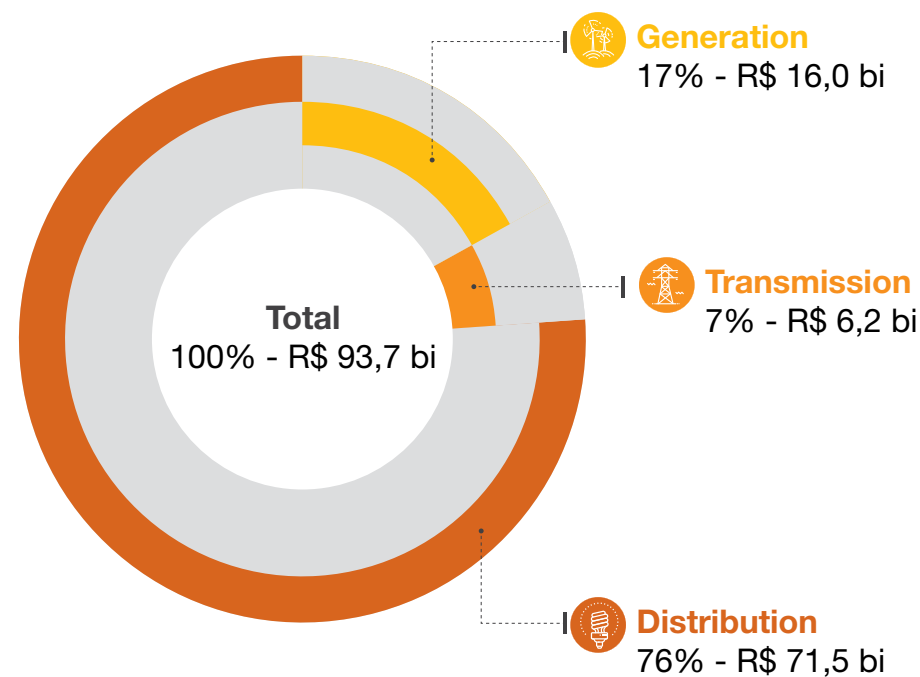
- Our work comprised the preparation of informative statements regarding the impact of the tax burden and charges on the Brazilian energy industry, in its three segments (generation, transmission and distribution), based on information made available by the electric power companies, and information obtained directly from the financial statements made available in the website of the Brazilian Electricity Regulatory Agency (Aneel) or filed in the website of the Brazilian Securities Commission (CVM) and in the respective websites of each one of the energy industry agents included in this study.
- Therefore, our analysis is limited to information on taxes and industry charges that were disclosed by the companies in the aforementioned financial statements, without the analysis of the procedures of each company to calculate and disclose each of these amounts related to taxes and industry charges included in the study.




5. Methodology for the calculation of the tax burden

The total collection of taxes and industry charges of the companies selected for the study in the GTD segments in 2019 was approximately R\$ 93.7 billion, distributed among the segments as follows:

2019





**Total burden percentage
(taxes and charges)**

=

Sum of taxes and charges
Total gross operating revenue ⁽ⁱ⁾

For **calendar year 2019**, we estimated an impact of the tax burden and industry charges of approximately **47.3%** of total gross operating revenue from the sale of energy to the end consumer in Brazil⁽ⁱ⁾.

2019

**Total burden percentage
(taxes and charges)**

=

93.7 billion
198.3 billion

=

47,3%

For comparison purposes, we present below the percentage of the tax burden and industry charges for **calendar year 2018**, of approximately **50.0%**, considering the same methodology. The increase in the total gross operating revenue of the sample analyzed for 2019 is mainly due to the growth in revenue billed by distributors. It was also necessary to increase the number of companies in 2019 to meet the criteria of 70% of significance in the industry.

2018

**Total burden percentage
(taxes and charges)**

=

86.9 billion
173.9 billion

=

50,0%

⁽ⁱ⁾ The total gross operating revenue represents the revenue from the sale of electric power earned by all the companies that deliver energy to the end consumer, both in the Regulated Contracting Environment (ACR) and the Free Contracting Environment (ACL). The other revenues from the Generation and Transmission segments are not considered in the consolidation because they remain within the industry.

6. Analysis of the consolidated tax burden and charges

Analysis of the consolidated tax burden

| | | Burden on revenue | | | | |
|----------------------|-------------|-------------------|-------|-------|-------|-----------|
| Nature of taxes | Taxes | 2018 | | 2019 | | Variation |
| Taxes on income | IRPJ | 3,4% | 2,4% | 3,6% | 2,6% | 0,2 p.p. |
| | CSLL | | 1,0% | | 1,0% | 0 p.p. |
| Taxes on consumption | ICMS | 31,7% | 21,2% | 31,1% | 21,2% | 0 p.p. |
| | PIS | | 1,9% | | 1,8% | -0,1 p.p. |
| | COFINS | | 8,6% | | 8,1% | -0,5 p.p. |
| | ISS | | 0,02% | | 0,02% | 0 p.p. |
| Taxes on payroll | INSS/outros | 2,0% | 2,0% | 1,8% | 1,8% | -0,2 p.p. |
| Total | | 37,1% | | 36,5% | | -0,6 p.p. |

The variations between 2018 and 2019 arise from:

- **Changes in taxes on income (IRPJ/CSLL):** we did not consider the deferred IRPJ and CSLL amounts since they are affected by significant extraordinary items in some of the sample companies in 2019 (we also adjusted 2018 for comparison purposes).
- **Changes in taxes on consumption (PIS/COFINS):** in March 2017, the Brazilian Supreme Court (STF) ruled that the ICMS should not be included in the calculation bases of the taxation of PIS/COFINS. Based on this decision, several companies have already obtained favorable outcomes in their proceedings to recover PIS/COFINS paid on ICMS, and to stop including them in the tax base of these two taxes. We observed that some distributors have already deducted the ICMS from the PIS/COFINS calculation base in customers' billings. In addition, we verified a tendency of increase in revenue subject to the cumulative system in relation to those subject to the non-cumulative system. Such aspects tend to represent a decrease in these taxes in the burden analyzed.
- **Changes in taxes on payroll (INSS/Other/FGTS):** we noted a decrease in the burden mainly due to the drop in the base of charges (direct compensation amounts).

Analysis of the consolidated burden of industry charges

| Charges | Burden on revenue | | Variation |
|--------------|-------------------|--------------|------------------|
| | 2018 | 2019 | |
| CDE | 10,9% | 8,7% | -2,2 p.p. |
| P&D | 0,5% | 0,7% | 0,2 p.p. |
| CFURH | 0,5% | 0,4% | -0,1 p.p. |
| RGR | 0,4% | 0,3% | -0,1 p.p. |
| Proinfa | 0,4% | 0,5% | 0,1 p.p. |
| Others | 0,2% | 0,2% | 0 p.p. |
| Total | 12,9% | 10,8% | -2,1 p.p. |

The most significant variation in the 2019 study is due to the decrease in the CDE budget.

- **CDE variation:** the decrease is due to the reduction in the budget of the revenue from CDE-Energy quotas in 2019, established by Aneel (see [section 10](#) of this study).
- **Other:** TFSEE, ESS, EPE e FNDCT.



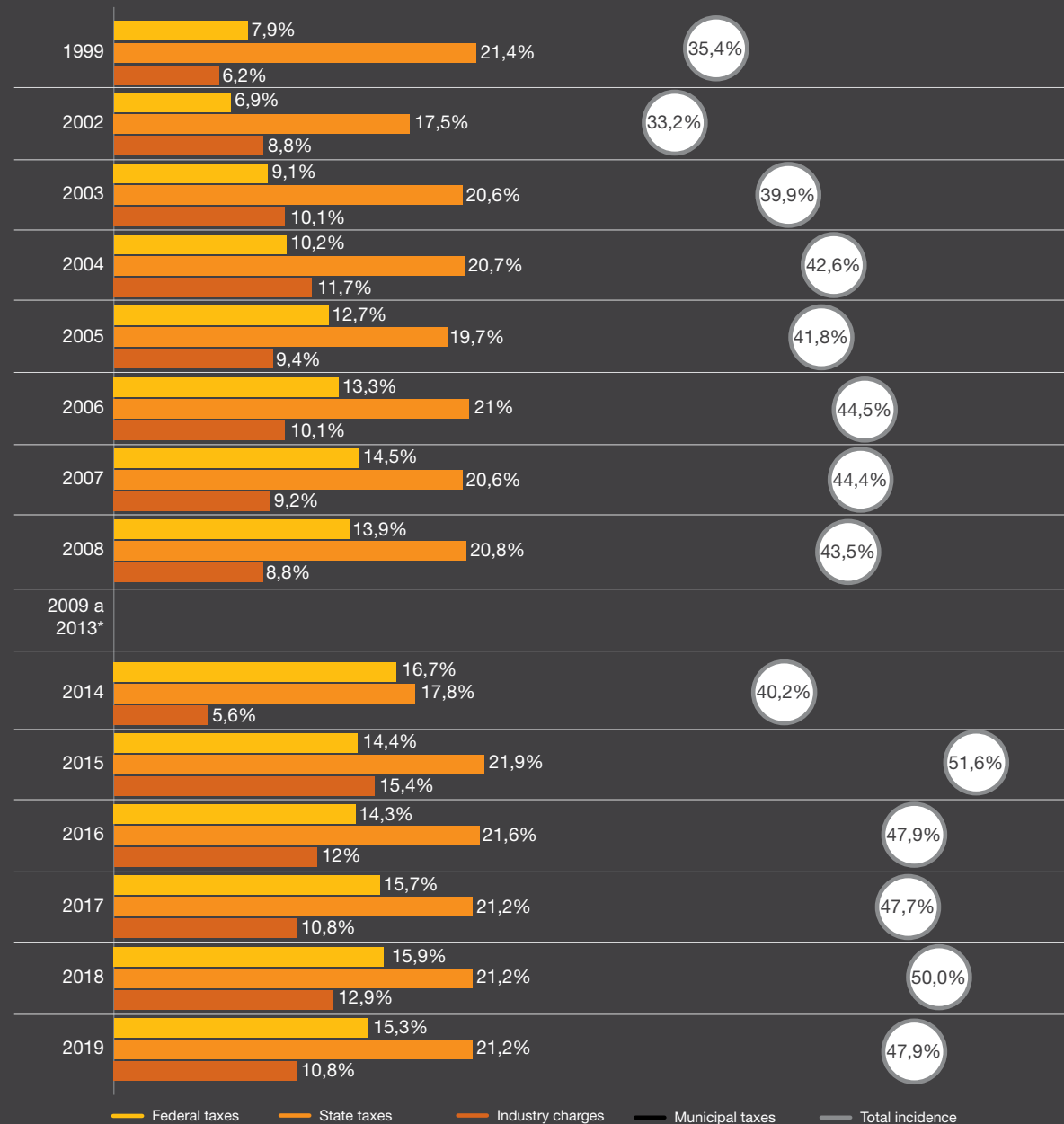
Analysis of the consolidated tax burden and charges

Taxes and charges by segment (R\$ million)

| Period | Taxes | Generation | | Transmission | | Distribution | |
|--------------|-----------------|---------------|--------------|--------------|--------------|---------------|---------------|
| | | 2019 | 2018 | 2019 | 2018 | 2019 | 2018 |
| Federal | IRPJ | 863 | 356 | 334 | 435 | 3.855 | 3.350 |
| | CSLL | 353 | 151 | 137 | 185 | 1.575 | 1.423 |
| | PIS | 597 | 280 | 231 | 342 | 2.664 | 2.632 |
| | COFINS | 2.757 | 1.289 | 1.068 | 1.575 | 12.310 | 12.129 |
| | INSS – FGTS | 606 | 298 | 235 | 364 | 2.708 | 2.806 |
| | Subtotal | 5.176 | 2.374 | 2.005 | 2.901 | 23.112 | 22.340 |
| State | ICMS | 7.165 | 3.165 | 2.776 | 3.867 | 31.990 | 29.780 |
| | Subtotal | 7.165 | 3.165 | 2.776 | 3.867 | 31.990 | 29.780 |
| Municipal | ISS | 9 | 3 | 3 | 4 | 40 | 32 |
| | Subtotal | 9 | 3 | 3 | 4 | 40 | 32 |
| Industry | CDE | 2.939 | 1.629 | 1.139 | 1.990 | 13.122 | 15.324 |
| | P&D / PEE | 220 | 81 | 85 | 99 | 984 | 766 |
| | CFURH | 141 | 68 | 55 | 83 | 631 | 641 |
| | RGR | 105 | 54 | 40 | 66 | 466 | 505 |
| | Proinfa | 151 | 59 | 59 | 72 | 674 | 554 |
| | Outros | 102 | 42 | 40 | 52 | 456 | 400 |
| | Subtotal | 3.658 | 1.933 | 1.418 | 2.362 | 16.333 | 18.190 |
| Total | | 16.008 | 7.475 | 6.202 | 9.134 | 71.475 | 70.342 |

- **Other:** TFSEE, ESS, EPE e FNDCT.
- The amounts comprising the table were obtained through the application of the proportion between the revenues from the respective segments in the companies analyzed and the total revenue presented.

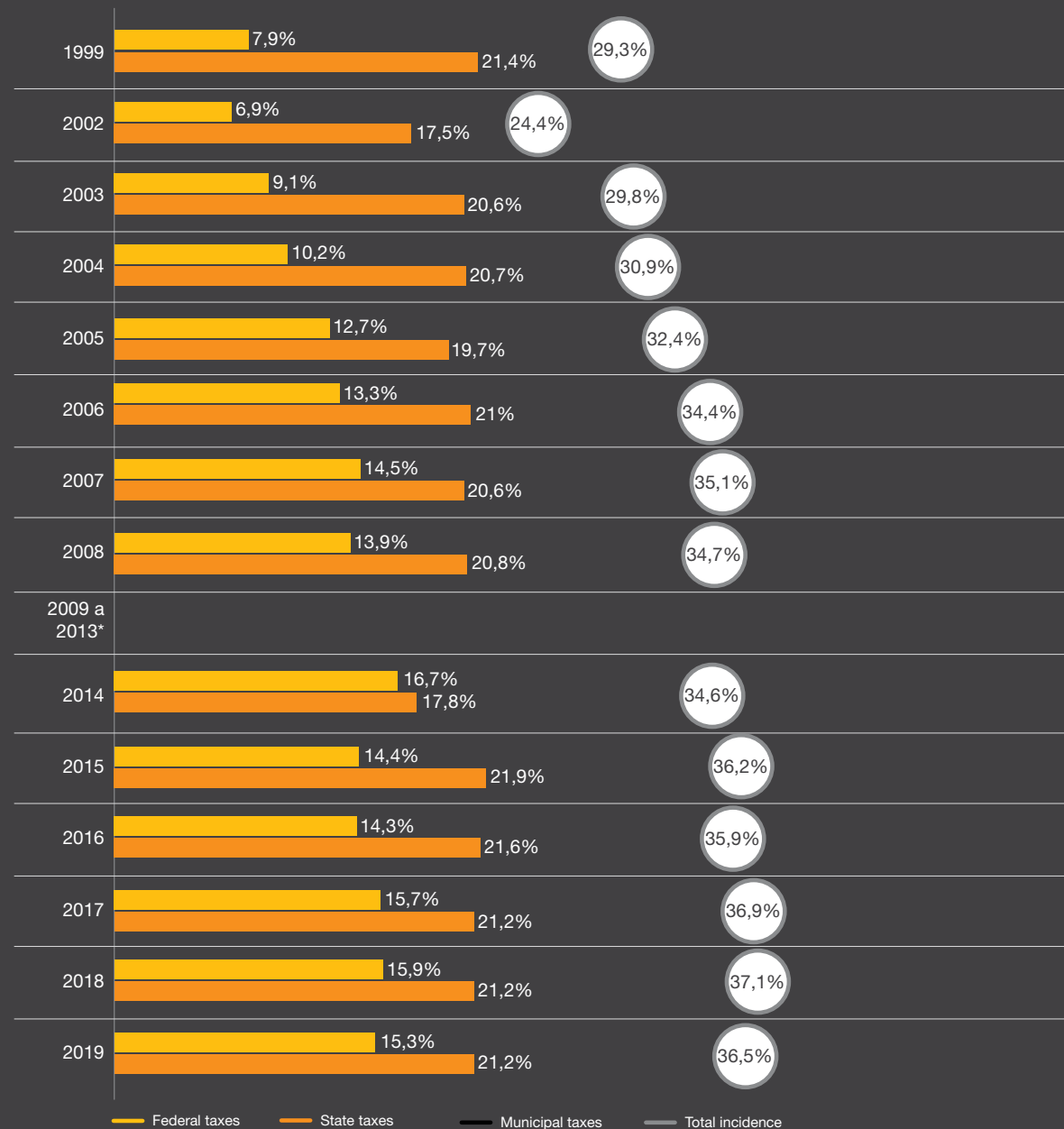
7. Historical series: analysis of the total consolidated burden of taxes and charges in the periods 1999-2008 and 2014-2019



(*) The study for the period between calendar years 2009 and 2013 was not carried out.

Note: Since they were rounded, the sums of percentages are not exact.

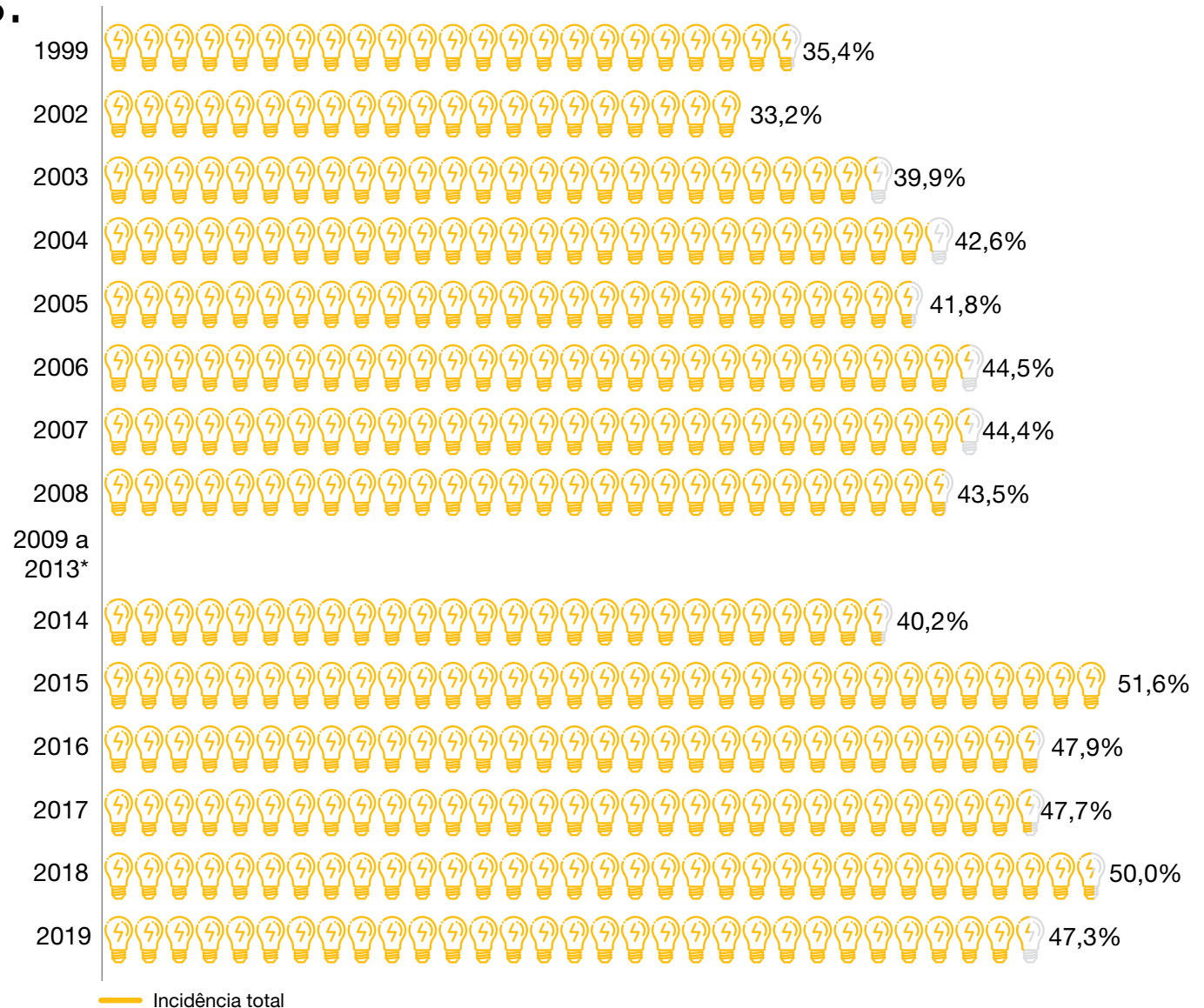
Only taxes



(*) The study for the period between calendar years 2009 and 2013 was not carried out.

Note: Since they were rounded, the sums of percentages are not exact.

8. Historical series: total consolidated burden of taxes and charges in the periods 1999-2008 and 2014-2019



* The study for the period between calendar years 2009 and 2013 was not carried out.

9. Historical series: CDE collection in 2014-2019

The tax burden did not change considerably between 2018 and 2019. We identified a decrease in the collection of the Energy Development Account (CDE) by the end consumer (2.2% in the selected sample).

CDE's payments are defined through Aneel's resolutions. CDE includes the following expenses: concession indemnities, tariff subsidies, subsidy for the balanced tariff reduction, subsidy to low-income consumers, thermal generation with coal and the Fuel Consumption Account (CCC).

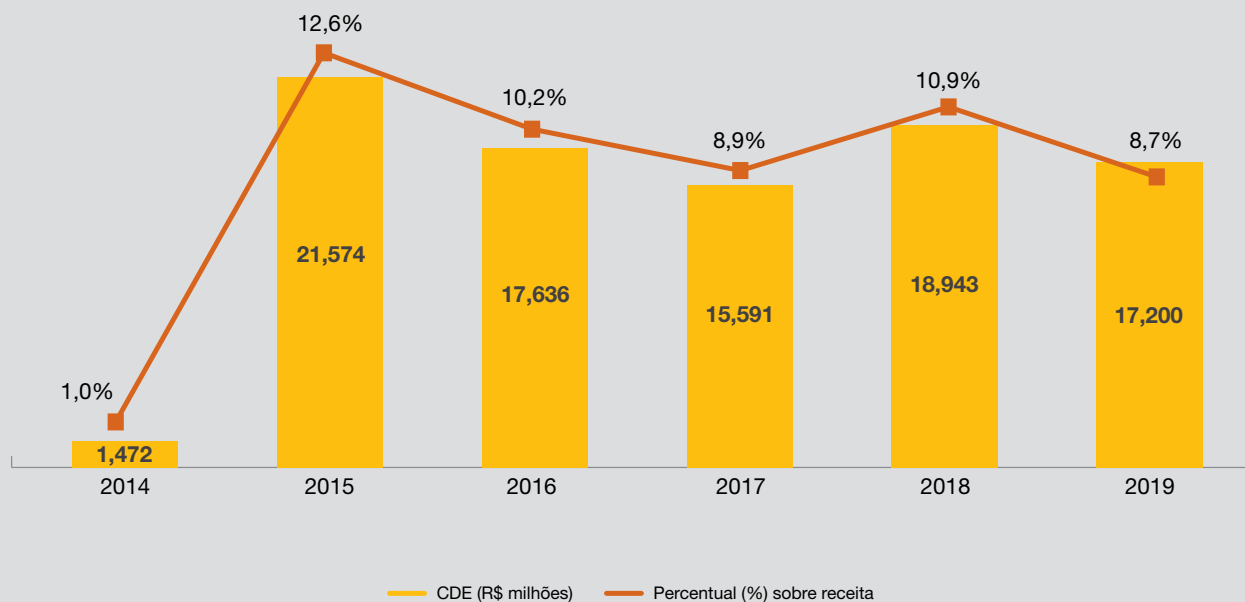
| Sample amounts | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--|-------|--------|--------|--------|--------|--------|
| CDE (R\$ million) | 1.472 | 21.574 | 17.636 | 15.591 | 18.943 | 17.200 |
| Percentage (%) on distribution revenue | 0,96% | 12,63% | 10,15% | 8,87% | 10,89% | 8,67% |

In a historical analysis, we observed that, in 2014, the subsidies policy established by legislation was funded by the Federal Government's budget. In 2015, these funds were not transferred to the CDE budget, resulting in an increase in charges.

Through Ratifying Resolution 1,857/2015, Aneel established CDE's annual charge for CDE for 2015, which was included in tariffs through the annual adjustment of the companies.

There was a slight decrease in the budget in 2016 and 2017 resulting mainly from the decrease in expenses with some items, such as the Fuel Consumption Account (CCC) and the concession indemnities.

After a slight increase in CDE expenses verified in the sample in 2018, due to the increase in expenses and revenue in CDE's budget, we noted a slight decrease due to the reduction in the budget of the revenues from CDE-Energy quotas in 2019.



CDE-Energy quotas were paid by the distributors that received funds in 2013 to cover extraordinary energy expenditures arising from the absence of contractual guarantee and an unfavorable hydrological condition and were transferred to the energy tariffs paid by captive consumers. The reimbursement started in 2015 and ended in March 2019. Considering the expressive change in CDE collection between 2014 and 2015, it is important to monitor any significant changes in collection on a historical basis.

10. Analysis of CDE expense by allocation and collection - 2019

The amounts related to the allocation of expenses and collection of revenue for 2019 were defined by Aneel's Executive Board on 12/18/2018.* There was a slight decrease in revenue from CDE collections mainly due to the CDE-Energy quotas.

CDE's budget (R\$ million)

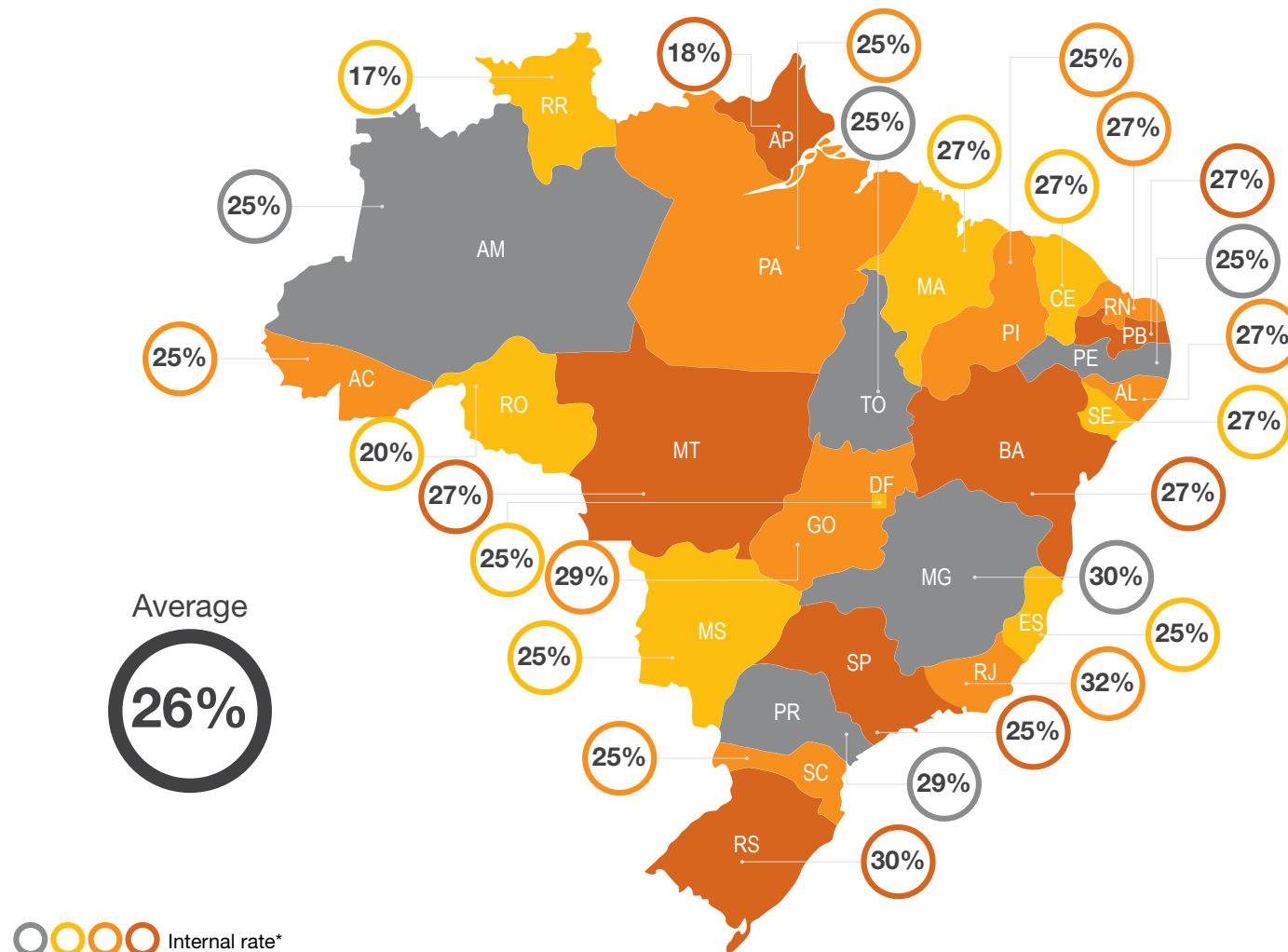
| Expenses (allocation) | 2018 | % | 2019 | % |
|--|---------------|-------------|---------------|-------------|
| Remaining balances payable | 1.061 | 5,3% | - | 0,0% |
| Universalization - Electricity for All Program (Luz Para Todos) + installation kit | 941 | 4,7% | 1.078 | 5,3% |
| Low-income consumers' tariff | 2.440 | 12,2% | 2.380 | 11,8% |
| Brazilian coal | 850 | 4,2% | 690 | 3,4% |
| CCC - Isolated Systems | 5.849 | 29,2% | 6.310 | 31,2% |
| Tariff discount in distribution | 8.362 | 41,7% | 8.528 | 42,2% |
| Tariff discount in transmission | 362 | 1,8% | 914 | 4,5% |
| Cooperative subsidies | 179 | 0,9% | 297 | 1,5% |
| Administrative, Financial and Tax Costs (CAFT) - CCEE | 9 | 0,0% | 11 | 0,1% |
| Technical reserve | - | 0,0% | - | 0,0% |
| Total | 20.053 | 100% | 20.208 | 100% |

| Revenues (collection) | 2018 | % | 2019 | % |
|---------------------------------|---------------|---------------|---------------|---------------|
| Account balance | - | 0,0% | 108 | 0,5% |
| Use of Public Assets (UBP) | 671 | 3,3% | 733 | 3,6% |
| Fines | 214 | 1,1% | 181 | 0,9% |
| Federal Government 's funds | - | 0,0% | - | 0,0% |
| RGR funds | 478 | 2,4% | 1.240 | 6,1% |
| Other cash and cash equivalents | 734 | 3,7% | 760 | 3,8% |
| Quotas - CDE-Energy | 3.796 | 18,9% | 949 | 4,7% |
| Quotas - CDE-Use | 14,160 | 70,6% | 16,238 | 80,4% |
| Total | 20.053 | 100,0% | 20,209 | 100,0% |
| Changes in CDE quotas | 17.956 | 90% | 17.187 | 85% |

(*) According to the evolution of the annual budget for this charge obtained in [Aneel](#).

11. ICMS nominal rates by state

There is a significant tax burden applied by the states and the Federal District as ICMS, as shown in the following table. We highlight that the ICMS is applied on a gross revenue base (which includes the tax itself in the base). Accordingly, the nominal rate is even higher when applied to the net price of electric power.



| State | Internal rate* |
|---------------------|----------------|
| Rio de Janeiro | 32% |
| Minas Gerais | 30% |
| Rio Grande do Sul | 30% |
| Goiás | 29% |
| Paraná | 29% |
| Alagoas | 27% |
| Bahia | 27% |
| Ceará | 27% |
| Maranhão | 27% |
| Mato Grosso | 27% |
| Rio Grande do Norte | 27% |
| Sergipe | 27% |
| Acre | 25% |

| State | Internal rate* |
|--------------------|----------------|
| Amazonas | 25% |
| Distrito Federal | 25% |
| Espírito Santo | 25% |
| Mato Grosso do Sul | 25% |
| Pará | 25% |
| Pernambuco | 25% |
| Piauí | 25% |
| Santa Catarina | 25% |
| São Paulo | 25% |
| Tocantins | 25% |
| Rondônia | 20% |
| Amapá | 18% |
| Roraima | 17% |
| Average | 26% |

(*) Notes:

We confirmed that the rates remain at this level for, at least, four years.

The maximum ICMS rates levied on the residential consumption of electric power (with the inclusion of the allowance of the FECFP – State Fund for Fighting Poverty).

The ICMS rates of each state can vary due to consumption levels (kWh) and categories (such as: residential, industrial, commercial, rural or low-income families).

Examples of ICMS calculation, assuming a tariff without tax (ICMS) in the amount of R\$ 500.00 in the state of Rio de Janeiro: ICMS calculation base = operation price ÷ (1 – rate)

ICMS calculation base = R\$ 500.00 ÷ (1 – 0.32) = R\$ 735.29

ICMS calculation: R\$ 735.29 x 32% = R\$ 235.29

Effective rate of 47.06% (R\$ 235.29/R\$ 500.00)

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