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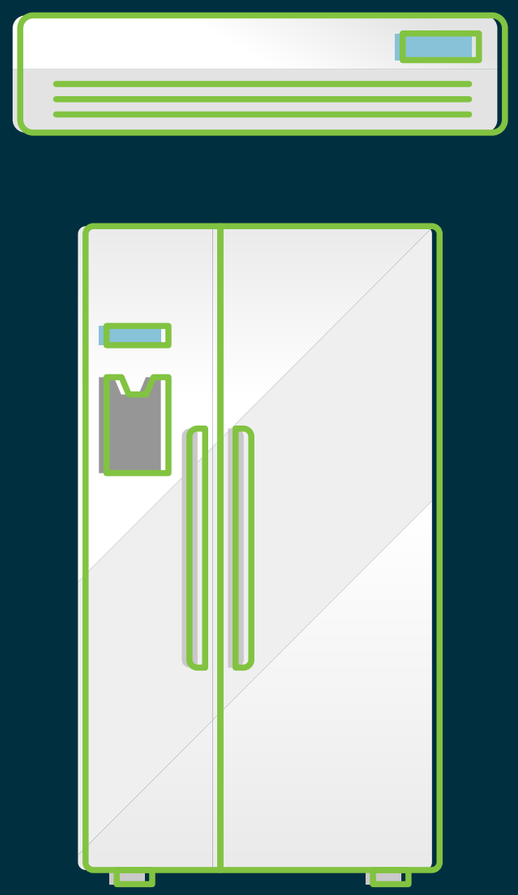
How could more efficient refrigerators and air conditioners help the government to spend less?



How could more efficient refrigerators and air conditioners help the government to spend less?

Study idealized by Instituto Escolhas

General Coordination

Larissa Rodrigues and Stella Pieve

(Instituto Escolhas)

Technical Coordination

Carlos Alberto Manso, economist

and researcher at the Federal University of Ceará

Instituto Escolhas

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The Instituto Escolhas develops economic and environmental studies and analyses that aim to achieve sustainable development.

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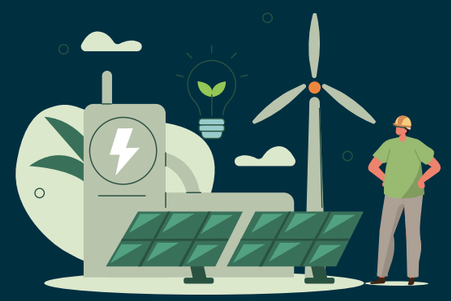
The impact of energy efficiency in public procurement

Federal Government



108 GWh

of electricity would no longer be consumed by the Federal Government over the coming decade.

55,000 households

could be powered with electricity for a year[1].

R$ 84 million

in electricity bills would be saved for the public coffers over the coming decade.

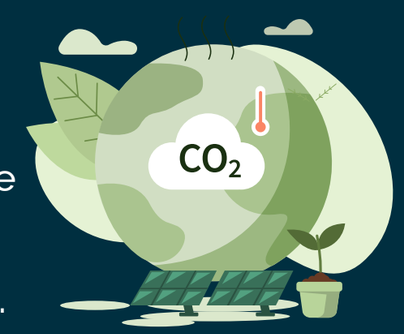
If refrigerators and air conditioners purchased in Brazil through public procurement complied with the highest energy efficiency standards:

723,000 people

could be vaccinated against COVID-19 with the amount of money saved.[2]

46 thousand tons of CO_2

would no longer be released into the atmosphere over the coming decade, the same as removing about 16,000 vehicles from circulation for a year[3].



84%

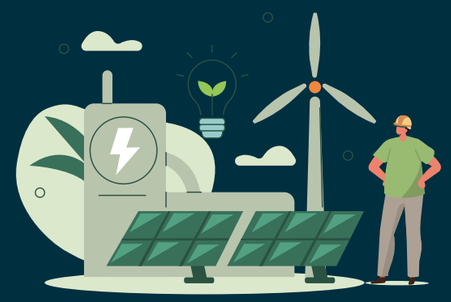
of the amount invested in the purchase of appliances would be recovered just by saving electricity.

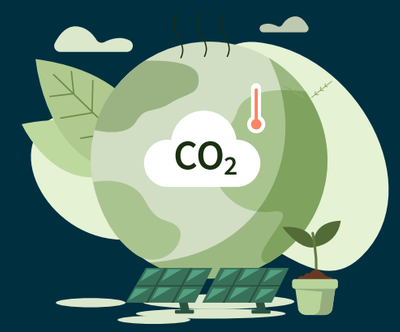
R$ 100 million

is the average amount spent per year by the federal government on purchasing air conditioners and refrigerators.

[1] The number of households that could be served is based on the average consumption of Brazilian households in 2020, which was 165.1 kWh/month, according to EPE (Empresa de Pesquisa Energética).
[2] Considering two doses of the CoronaVac vaccine, at a cost of R$ 58.20 per dose.
[3] The number of vehicles is based on estimates from the National Program for Conservation of Electric Energy (Programa Nacional de Conservação de Energia Elétrica - PROCEL), available at: http://www.procelinfo.com.br/resultadosprocel2019/Procel_rel_2019_web.pdf

São Paulo State Government





17 GWh

of electricity would no longer be consumed by the state of São Paulo over the coming decade, enough to power 8,500 homes for a year.

7,000 tons of CO_2

would no longer be released into the atmosphere over the coming decade, the same as removing about 2,500 vehicles from circulation for a year.

R$ 13 million

would be saved by the São Paulo state government in electricity bills over the coming decade.

92%

of the amount invested in the purchase of appliances would be recovered just by saving electricity.

11.5 milhões

snacks could be offered in the state's regular school network[4].

R$ 14 million

is the estimated annual expenditure on the purchase of air conditioners and refrigerators by the São Paulo state government.

[4] Considering the value per meal at R$ 1.14.

Presentation

The Instituto Escolhas has developed a brand-new study that shows how purchasing air conditioners and refrigerators that comply with international energy efficiency standards could bring significant savings for federal and São Paulo state[5] public spending. As the results presented in the opening section of this document demonstrate, when financial resources expenditure respects the principles of sustainability, significant environmental and social gains can ensue.

The Brazilian public procurement market moves billions of reais, making the federal government the country's largest buyer of products and services[6]. If directed strategically, this resource is capable of influencing socioeconomic scenarios, helping to boost specific sectors and contributing to the development of new goods and services, among many other benefits.

In order to reach these conclusions, the study estimated how much the federal government and the São Paulo state government have spent, as well as the quantity of appliances purchased annually and, on this basis, determined how much energy could be saved and how many tons of CO_2 would no longer be released into the atmosphere over the next ten years - a period equivalent to the products' life cycle - if the highest energy efficiency class were adopted as the purchase criteria for these appliances.

In addition, the study delved into the legal framework of sustainable public procurement, revealing the good news that Brazilian legislation already allows for sustainability to be incorporated as a priority criterion in bidding processes. However, there is still a gap between the country's regulation on sustainable public procurement and its energy efficiency policies.

This regulation must incorporate the highest energy efficiency criteria for the purchase of appliances, as well as ensure that they are periodically updated according to international standards, so that governments can benefit more fully from technological innovations and the quality of products available on the market. In this way, public resources invested could go beyond the logic of lowest price bidding, and would also be used to promote positive and consistent socioeconomic and environmental change, as this study shows is possible.

[5] The Instituto Escolhas also launched studies focused on the domestic use of these two particular appliances: "The economy is in the air: what does Brazil gain with more efficient air conditioning?", in August 2020, and "What do you stand to gain with a refrigerator that consumes less energy?", published in May 2021. Both are available in English at: https://www.escolhas.org/en/biblioteca/estudos-instituto-escolhas/

[6] Federal government procurement reached the R$ 109 billion mark in 2020, an amount leveraged by the COVID-19 pandemic, according to data from the federal government's Procurement Portal, available in Portuguese at: <https://www.gov.br/compras>. The state of São Paulo, on the other hand, negotiated around R$86 billion between 2016 and 2021, according to the São Paulo State Electronic Purchasing Exchange Platform (BEC), available in Portuguese at: < https://www.bec.sp.gov.br>.

Sustainable Public Procurement: conscious consumption in the governmental sphere

The road to sustainable public procurement - whereby sustainability criteria are incorporated into bidding processes - has already begun and is properly outlined in regulations.

Despite this, sustainable procurement represents less than 1% of all government procurement[7], a sign that sustainability principles have not yet been properly integrated into the organizational culture of public management. This is mainly due to the absence of clear environmental, social and governance (ESG) criteria for suppliers and products.

This situation should change with the so-called New Bidding Law - (Law no. 14,133/2021), which establishes sustainable development as the explicit objective of bidding, a key first step towards overturning the paradigm of the lowest price at any cost in the acquisition of goods and services. The new law also creates the National Public Procurement Portal (PNCP), where electronic catalogs for standardizing procurement will be hosted.

Such structures should facilitate the identification and monitoring of the presence of sustainability criteria in bidding processes. However, they will be insufficient to generate all the potential socioeconomic benefits unless they are properly aligned with energy efficiency policies. In practice, this means purchasing appliances (such as refrigerators and air conditioners) according to the highest energy efficiency criteria; and these must be periodically reviewed in order to ensure the proper incorporation of the technological innovations that are available on the market[8].

What is needed?

- **Ensure the proper alignment of the guidelines for sustainable public procurement and energy efficiency policies**
- **Incorporate high energy efficiency criteria for the procurement of refrigerators and air conditioners**
- **Ensure that high energy efficiency standards are periodically reviewed**

[7] COSTA, R. E., HOLLNAGEL, H. C., BUENO, R. L. P. "Compras governamentais: panorama atual e desafios" [Public procurement: an overview of current challenges] -. Revista Científica Hermes, vol. 23, pp. 51-75, 2019. *Portuguese language publication

[8] Energy efficiency labels for refrigerators, for example, have not been updated by INMETRO since 2006 and are out of step with international standards, as shown by Instituto Escolhas in the study "What do you stand to gain with a refrigerator that consumes less energy?", available in English at: https://www.escolhas.org/en/biblioteca/estudos-instituto-escolhas/

The methodology behind the results

To arrive at the results of this study, the following approach was taken[9]:

Federal Government

1. Verification of the average annual spending on the purchase of refrigerators and air conditioners between 2018 and 2020 using information available on the federal government's procurement portal.
2. The estimates considered one model to represent air conditioners (Split 12,000 BTUs) and three categories to represent refrigerators (refrigerator and mini-fridge, duplex refrigerator, freezer).
3. Verification of the median prices of this equipment via the price records on the Purchasing Portal.
4. Estimation of the quantities of air conditioners and refrigerators purchased, based on the amounts spent and the median prices.
5. Finally, the energy consumption of these appliances was calculated and compared, following both current energy efficiency levels and those indicated by the most efficient international standards [10].

São Paulo State Government

1. The analysis was based on public procurement data for air conditioners and refrigerators in 2019.
2. In the case of air conditioners, initially the total amount spent on purchases was taken into account, obtained from the Electronic Purchasing Exchange Portal (BEC).
3. In the case of refrigerators, the estimates were based on the quantity of items purchased, according to State Revenue Services.
4. The estimates considered one model to represent air conditioners (12,000 BTU Split) and one model to represent refrigerators (frost-free combined refrigerator).
5. The median prices of this equipment were checked from BEC records.
6. The quantity of air conditioners purchased was then estimated, based on the amount spent and the median price. The amount spent on the acquisition of refrigerators was also estimated, based on the quantity purchased and the median price.
7. Finally, the energy consumption of these appliances was calculated and compared, along the same lines as the analysis performed for the federal government, with current energy efficiency levels and with more efficient standards.

[9] The details of the results and the methodology used can be found in the study's technical report, available in Portuguese at: <www.escolhas.org/biblioteca>.
[10] In the case of air conditioning, the high efficiency class is equivalent to a Cooling Seasonal Performance Factor (CSPF) equal to or greater than 7.00 (a value that will be required in Brazil starting in 2026, according to Ordinance No. 234/2020, from Inmetro). For refrigerators, the simulations considered the consumption levels defined in the U4E (United for Efficiency) Guide.

Photo: richardjohnson

See the complete study, available in Portuguese at:

http://escolhas.org/biblioteca/estudos-instituto-escolhas/

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