International Energy Agency

Exemplos de recolha de dados em países-membros da AIE

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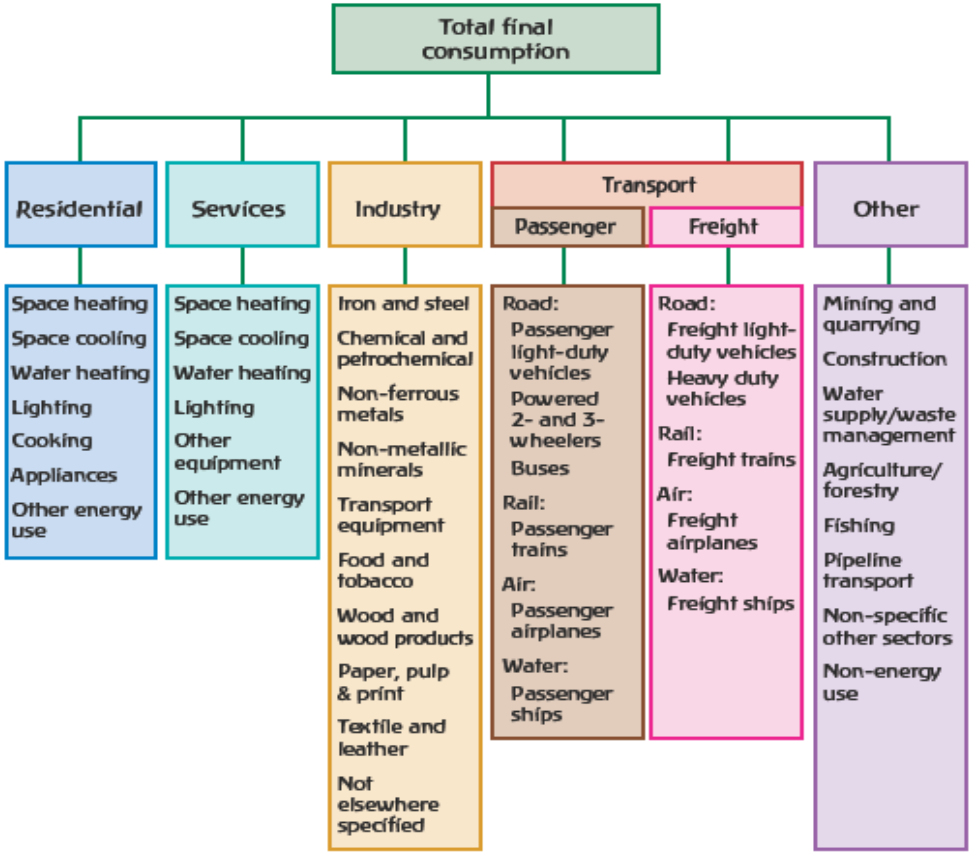
Perceber onde a energia é usada: a importância dos dados de uso-final



Métodos utilizados pelos países para recolher dados para indicadores

Fontes administrativas

- Antes de iniciar nova recolha de dados
- Partilha de dados entre as organizações

Inquéritos

- amostra representativa (custo, tempo, precisão, detalhes)
- possivelmente expandindo pesquisas existentes

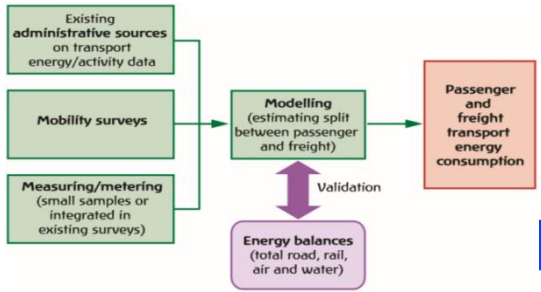
Monitoração e medição

- Pode ser caro mas muito eficaz para monitorar a eficiência de equipamentos específicos
- Contextos específicos (por exemplo, auditorias energéticas, smart meters)

Modelação

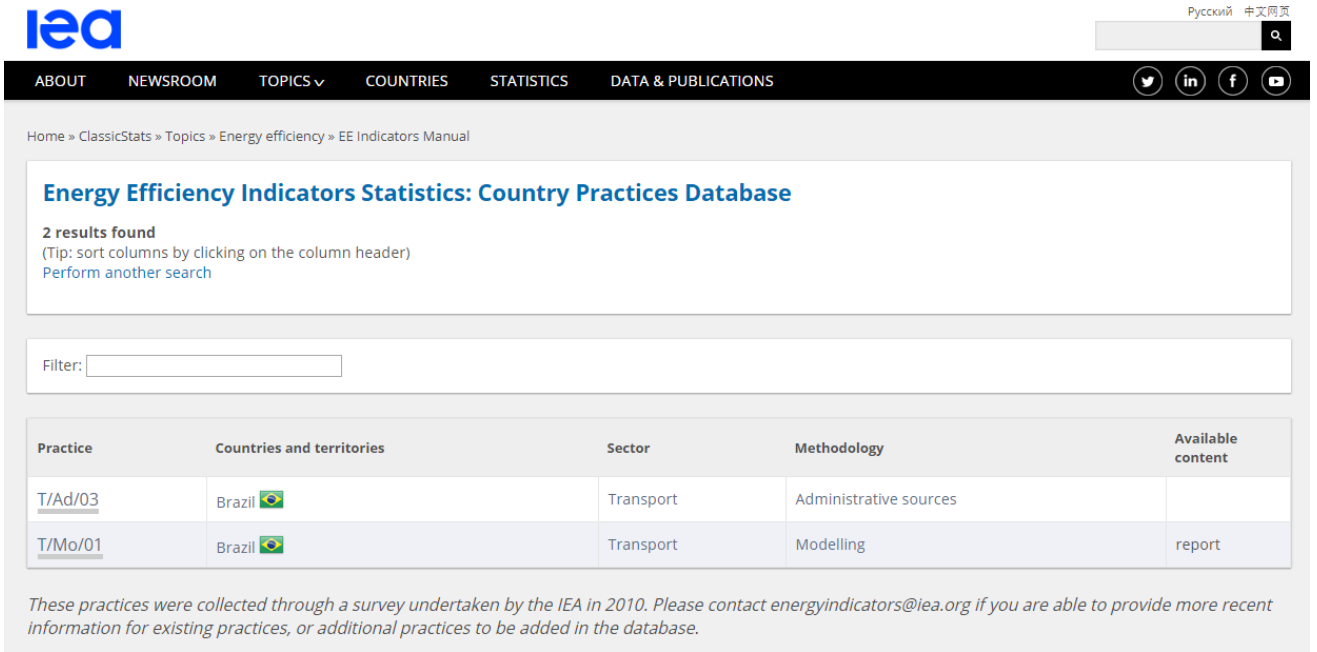
- complementar aos inquéritos ou "stand-alone" para construir um conjunto completo de indicadores disponíveis atempadamente e de forma estável.

Schematics of a transport model: source, output and validation



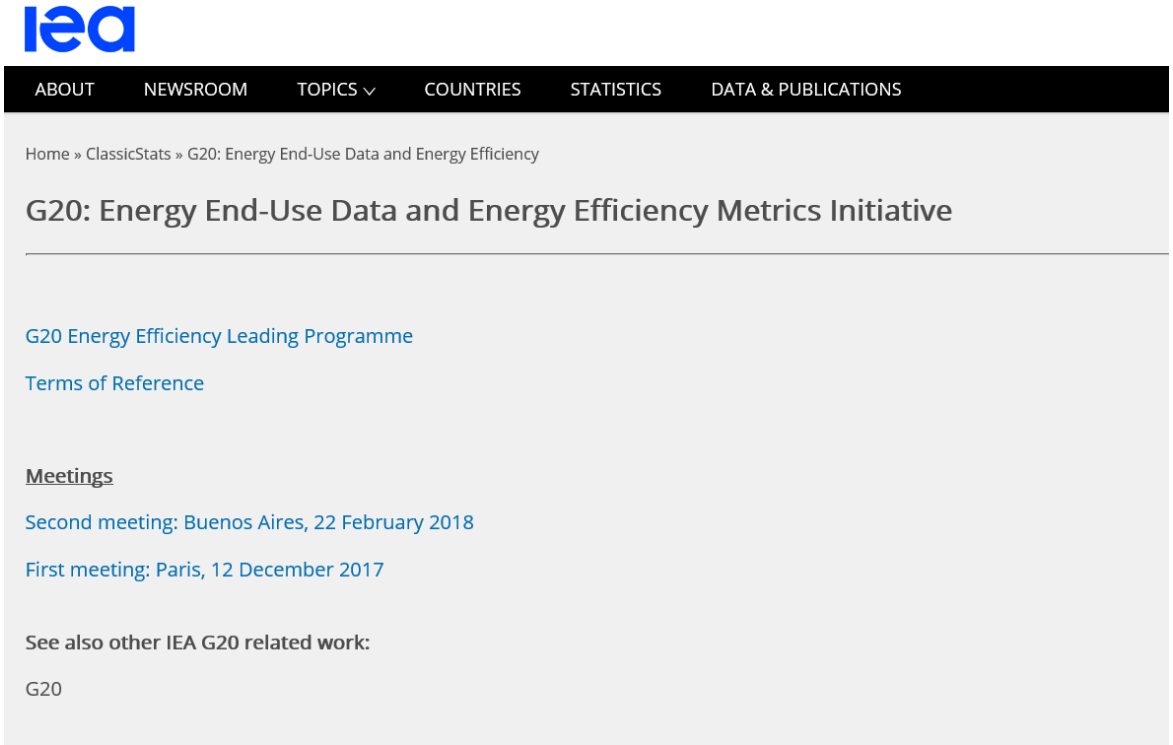
Plataforma da AIE sobre práticas dos países na recolha de dados

- Práticas em inquéritos, fontes administrativas, modelação em todos os sectores
- Questionários e outro material disponível
- Links para o trabalho das várias instituições.



Exemplos de como beneficiar do trabalho dos outros
http://www.iea.org/eeindicatorsmanual/

Novo programa de trabalhos previsto sob a iniciativa do G20 - EEUDEM



https://www.iea.org/classicstats/g20energyend-usedataandenergyefficiency/

Alguns exemplos nos vários setores

Países-membros da AIE

Indústria – business surveys

	France	Austria
Design	facilities >500 employees; Facilities >20 employees where consumption is high	small and medium-sized industry enterprises (as this is complementary to another data collection)
Frequency	Yearly	Every 2 years
Mandatory	Yes	No
Collection method	Internet based	Paper form sent by mail Internet based
Challenges	Incomplete survey Response quality	Low response rate Response quality/ Inconsistent responses
Key best practice		Small and simple questionnaire (only one A4 page) including both quantities and monetary values for a cross-reference; the online version of the questionnaire includes automated checks, and inconsistent and incomplete questionnaires cannot be submitted
Link to resource	https://www.iea.org/eeindicatorsmanual/isu12.php	https://www.iea.org/eeindicatorsmanual/isu02.php

The share of methods for industry in IEA CPD: 13 admin data, 1 measuring, 8 modelling, 35 surveying

Residencial - modelação

- **BRE domestic energy model (BREDEM 2012) – Reino Unido**

Source:
https://www.iea.org/media/statistics/eemanual/UK_BREDEM_model_description.pdf

More information available in:
https://www.bre.co.uk/page.jsp?id=3176

- Objetivo: estimar o consumo de energia das habitações com base nas suas características

- **Model input required**

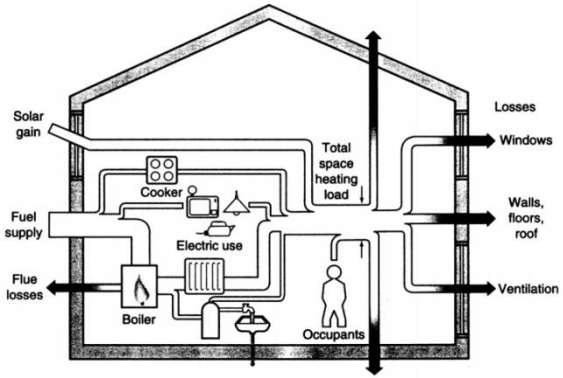
  - Definição do local, tipo de edifício, construção, ventilação, tipo de sistema de aquecimento, tipo de aquecimento de água, sistema de cozimento, as lâmpadas de iluminação, ocupação, ventilação mecânica (se presente)

Model output

  - Estimativa de demanda de utilização final – consumo de energia para aquecimento, DHW, arrefecimento, cozinha, ap. elétricos e iluminação.

  - O uso de energia total é a soma dos requisitos de energia estimados para os vários usos finais – validado em relação aos balanços energéticos

Figure 2.1 Schematic illustration of the energy balance principle used in BREDEM

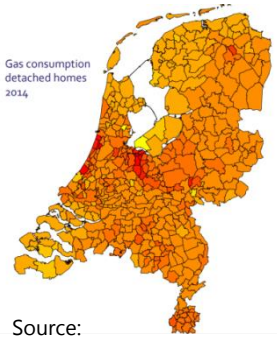


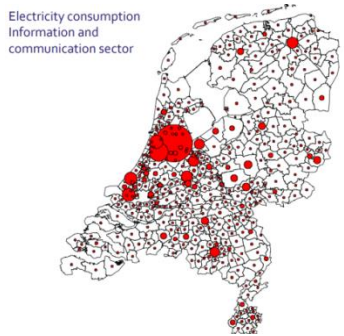
The share of methods for residential in IEA CPD: 20 admin data, 7 measuring, 20 modelling, 36 surveying
https://www.iea.org/eeindicatorsmanual/rmo18.php

Serviços – fontes administrativas

The Netherlands

- **Data sources: a)** grid connection data for electricity and natural gas from public network companies; **b)** building register in the Netherlands, with information on year of construction, surface area and building type; **c)** national business register; **d)** register of services enterprises; **e)** district heating registers
- **Methodology**
  - Linking all of the administrative data using real estate address
  - Distinguishing between residential or business
  - Using spatial coordinates (GIS) to shared central heating
  - Linking to business register and assigning NACE code per address
- **Results:** more than 98% of natural gas and electricity deliveries assigned to relevant NACE code.





Source: https://www.iea.org/media/statistics/eemanual/160617_Using_admin_data_in_energy_statistics_ESWG.pdf

More information available in: https://www.cbs.nl/en-gb/our-services/methods/surveys/korte-onderzoeksbeschrijvingen/supply-of-electricity-and-natural-gas-via-the-national-grid

Indicators developed:

1. Gas consumption per m2 by type of business, floor area size and building period.
2. Electricity consumption per m2 by type of business, floor area size and building period.

The share of methods for services in IEA CPD: 11 admin data, 3 measuring, 11 modelling, 21 surveying
https://www.iea.org/eeindicatorsmanual/sad11.php

Transportes - medição

Canadian Vehicle Use Study (CVUS)

2011 the light vehicle version of the study is the first of its kind in the world. It uses an autonomous, easy to install logger device that collects data directly from engines of light duty vehicles (cars, pick-up trucks, mini-vans and SUVs)

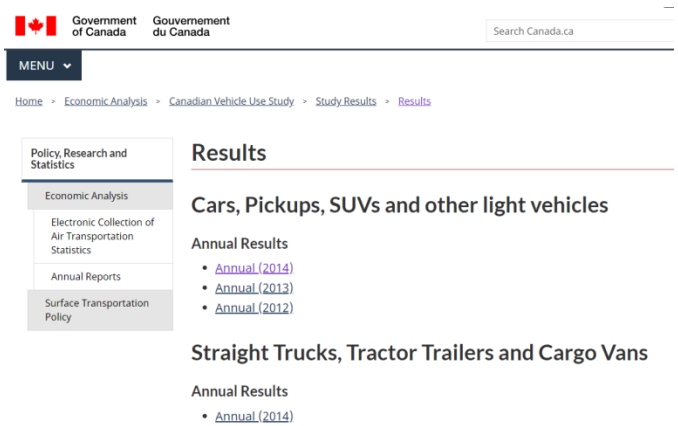
• Over 8,000 vehicles have provided data since the survey began in October 2011 creating a data set with over 500 million observations

• TC shares the results with federal and provincial partners

• Vehicles 1995 or older can have their vehicle usage (vehicle-km, time and speed) recorded using GPS only loggers

Source:
https://www.peelregion.ca/pw/transportation/goodsmovement/art/2013-05/TransportCanada-CVUS-HeavyTrucks.pdf

More information available in Allie, E (2014) Canadian Vehicle Use Study: Electronic Data Collection, Proceedings of Statistics Canada Symposium 2014



The share of methods for transport in IEA CPD: 11 admin data, 1 measuring, 5 modelling, 12 surveying
https://www.iea.org/eeindicatorsmanual/tme01.php

O que sabemos sobre o Brasil

Lacunas identificadas / prioridades para preenchê-las

Sector	Required data for end-use /sub-sector
Industry	**ISIC 16 – Manufacture of wood and of products of wood and cork** ISIC 17 (Manufacture of pulp and paper) and ISIC 18 (printing) separately ISIC 22 – Manufacture of rubber and plastics products ISIC 25-28 – Manufacture of fabricated metal products, machinery and equipment ISIC 29-30 – Manufacture of motor vehicles, trailers, other transport equipment **ISIC 41-43 – Construction**
Macro economic data	Total employment for all years Total dwellings **Total dwellings area (residential floor area)** **Heating degree days / cooling degree days** Total services floor area

- **Bold:** Lacunas de dados prioritárias identificadas

Lacunas identificadas / prioridades para preenchê-las

Sector	Required data for end-use /sub-sector
Residential	Space heating energy consumption – although may be very small Dish washers energy consumption / stocks / and UEC Clothes dryers energy consumption / stocks / and UEC **PCs and information and communication technologies energy consumption / stocks / and UEC**
Services	Energy consumption by end use
Transport	**Pkm of cars**, motorcycles, buses Vkm for all years and all modes **Energy consumption for cars, and motorcycles separately** Energy consumption for Domestic passenger ships for all years Energy consumption for freight airplanes for all years

- **Bold:** Lacunas de dados prioritárias identificadas

Desafios e oportunidades de recolha de dados

Recolher de fontes de dados existentes

- Optimizar dados compartilhamento entre instituições – promover e manter a comunicação institucional, acordos de partilha de dados...
- Maximizar a utilização de dados administrativos governamentais e vindos de programas específicos

- Incluindo dados operacionais de implementação de políticas e programas

Recolher de novas fontes de dados

- Recolha de dados do século XXI (automatização, medidores, sensores, etc.)
- Inquéritos de uso-final (incluindo consumo de energia e atividade)

Recursos e planeamento

- Assegurar capacidade institucional
- Promover alocação de recursos – ausência de dados pode sair mais cara!