# Expert Workshop on Industry Energy Efficiency Benchmarking

17 March 2021

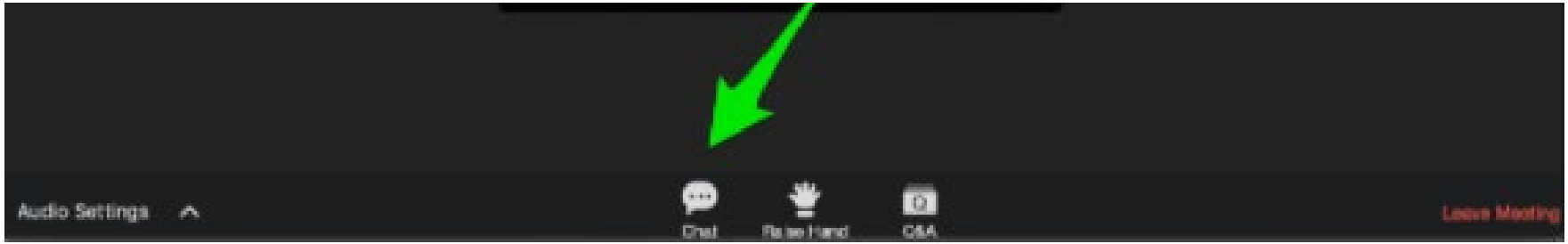
International Energy Agency

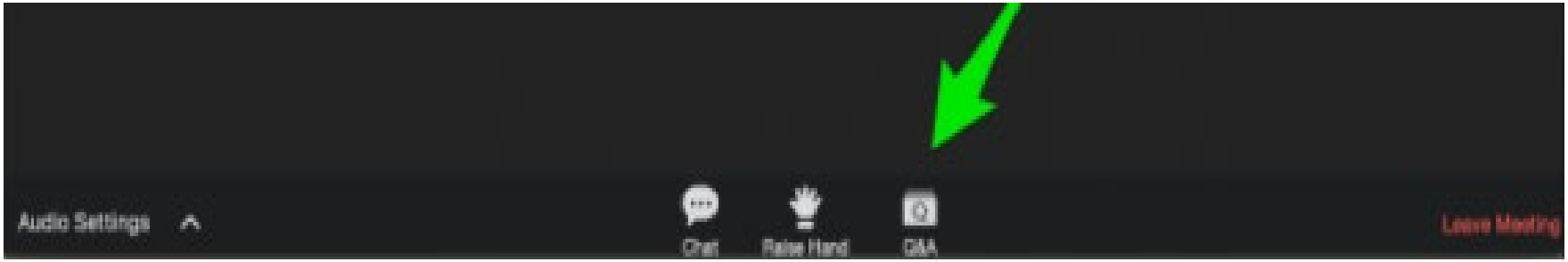
# Agenda

| |
|---|
| **IEA, on key findings of the G20 global benchmarking** |
| **Mr. Masana EZAWA , Director, Energy Efficiency Division, Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry (METI), Japan.** |
| **Dr. Ashok KUMAR, Deputy Director General, Bureau of Energy Efficiency, India.** |
| **Mr. Felipe Klein SOARES, Energy Research Analyst, Empresa de Pesquisa Energética (Energy Research Office), Brazil.** |
| **Mr. Carlos HERCE, Senior Researcher, ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Italy** |
| **Moderated discussion** |

# Please share your questions and comments with us!

Please write your comments and questions using the functions as shown below:



# Welcome remarks

Dr. Brian Motherway

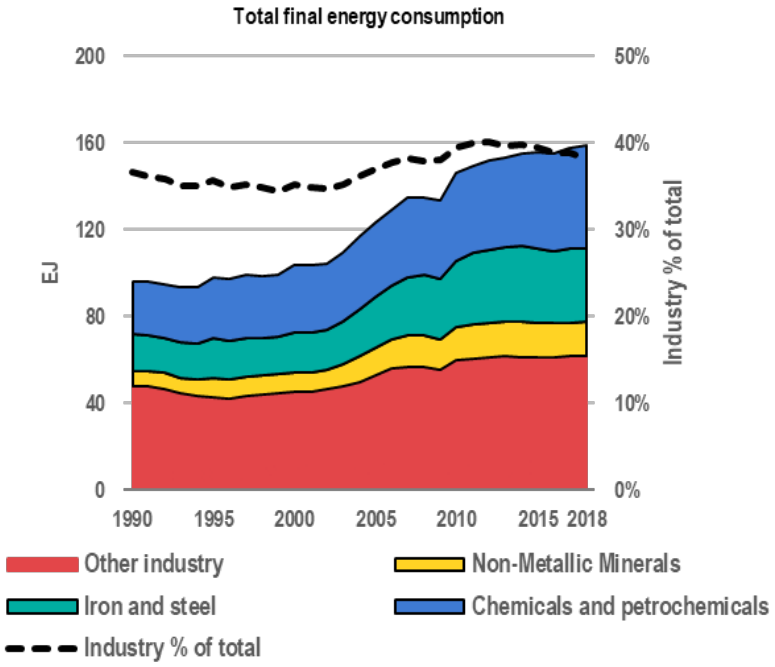
Head of Energy Efficiency, International Energy Agency

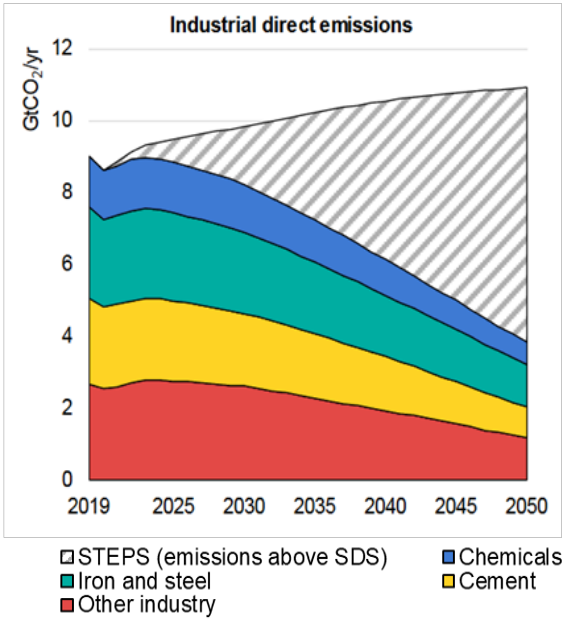
International Energy Agency

# Key findings on industrial energy efficiency benchmarking

Melanie Slade,
Senior Programme Manager, Energy Efficiency Division, IEA

# Industry contributes to a large share of global energy use and CO2 emissions

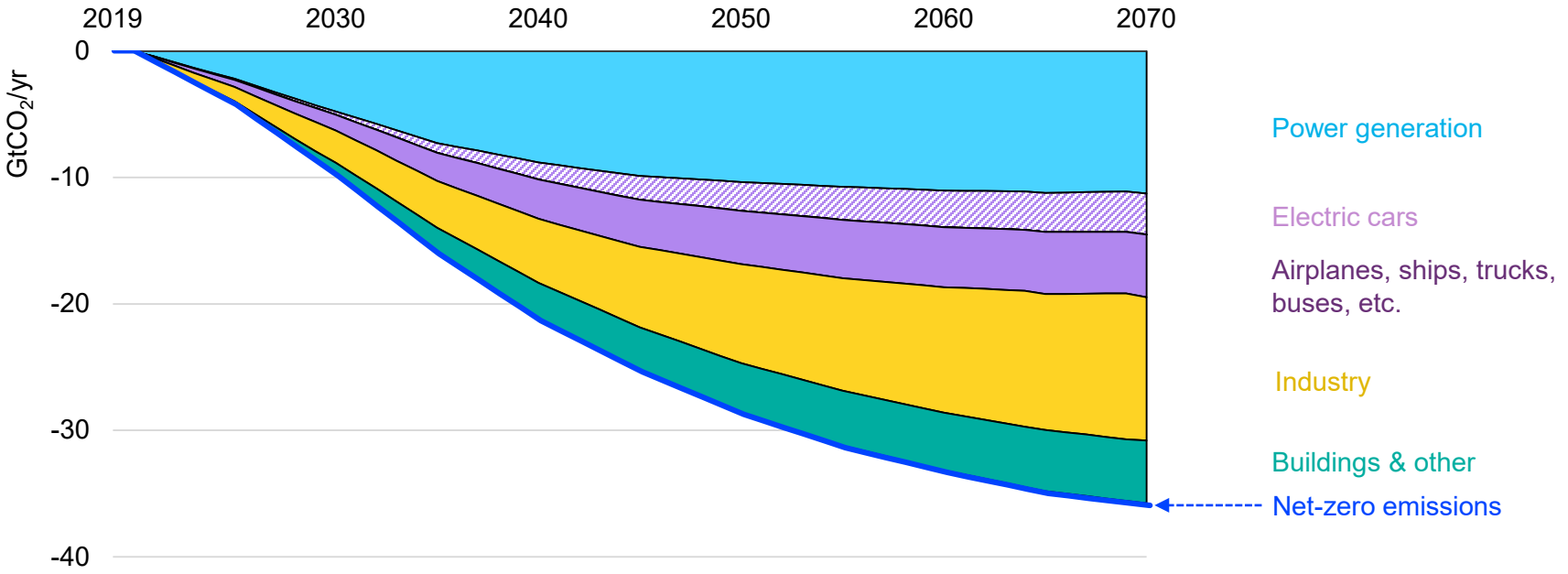



Globally, industry total energy use has grown by almost 70% over the last 30 years.
Without stronger political action industry's emissions will keep rising in the next decades.

# Focusing on the power sector is not enough to reach climate goals

*Global $CO_2$ emissions reductions in the Sustainable Development Scenario, relative to baseline trends*




**Clean energy technology progress in the power sector and with electric cars is encouraging, but alone not sufficient to reach climate goals. About half of all $CO_2$ emissions today are from industry, transport and buildings.**

# Efficiency policy package for industry

- In regular economic times, the ideal policy package for industrial energy efficiency has three pillars:
  - Regulatory: creating a strong push for energy efficiency improvements
  - Information: providing key inputs to support policy development
  - Incentives: creating a market for energy efficiency or a pull dynamic
- With economic stimulus packages focusing on immediate efforts to deliver jobs at scale, incentives will play a more significant role in economic stimulus packages
- Industry, like many sectors, is facing financial challenges during the Covid-19 economic crisis
- Governments have the opportunity to place conditions on grants and funding, which could include implementation of energy management systems, benchmarking, or facility upgrades and process improvements

# Policy package for Industry

**Regulation**

**PUSH**

Sets mandatory requirements for the industry to meet :

- EnMS, energy audits
- Sectoral EE targets
- Company level EE targets
- MEPS for motors

**Information**

**CONTINUITY**

Ensure that policy progress is tracked and to monitor improvements and multiple benefits of EE:

- **Benchmarking work**
- Digitalisation
- Information platforms for businesses on BP
- Capacity building

**Incentives**

**PULL**

Ensures there is an interest of improving EE and allocation of resources:

- White certificates systems
- Technology lists
- Financial incentives (grants, tax reductions, public finance, bulk procurement etc…)

# Tracking Progress in Iron and Steel and Cement

- With economic development and intensifying urbanization, demand for iron and steel and cement is expected to grow significantly in the decades to come. Reducing the energy required for their production is a strategic topic, both in terms of economic gains but also competitiveness advantages.

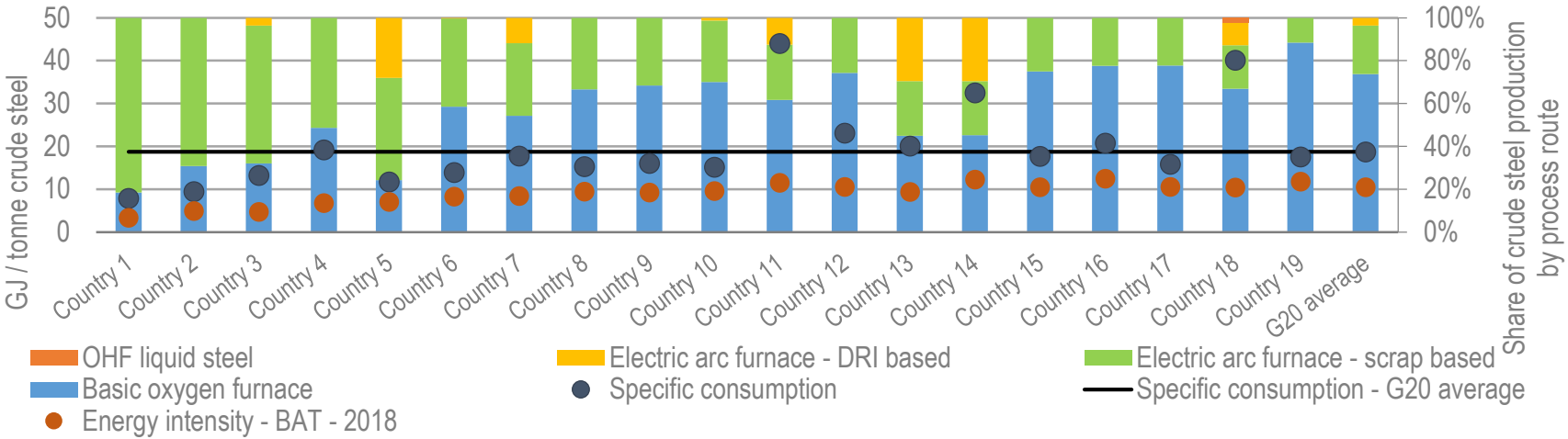
- While the energy intensity of steel has gradually fallen since 2009, expanding production from 2009 to 2014 raised total energy demand and $CO_2$ emissions.

- Globally, the energy intensities of thermal energy and electricity in cement have continued to decline gradually as more efficient equipment has been deployed.

- More than ever, a global approach in necessary to ensure all the benefits of energy efficiency are seized. Sharing best practices, technologies, and data will be essential. The work initiated by Japan on global benchmarking could participate to the creation of a community of best practices among G20 countries and beyond.

# Iron and Steel

Energy use per tonne per of crude steel and share of crude steel production by process route in 2018, G20 countries

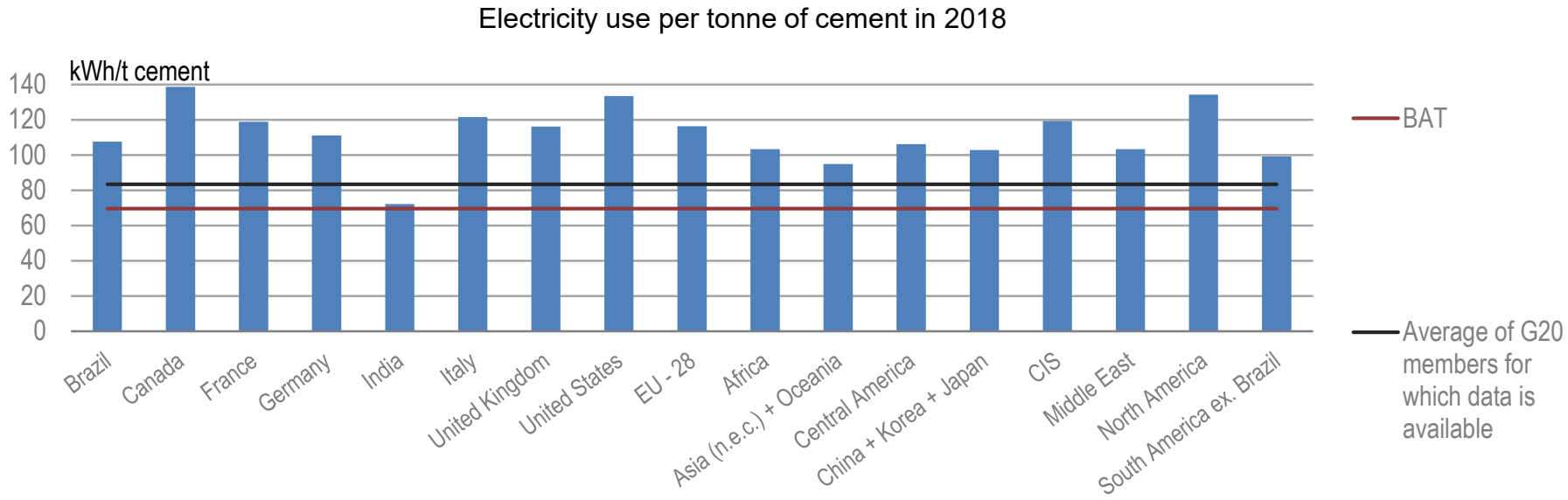



**Sources:** IEA World Energy Balances; Worldsteel Steel Statistical Yearbook, 2020.

**Notes:** Reported energy intensity covers iron and steel manufacture, rolling and casting, including energy consumed in blast furnaces and coke ovens. BAT = best available technology. BAT energy intensity is calculated by applying the BAT energy intensity for each process route to the share produced by that route in each region; it covers until the liquid steel stage, i.e. it does not include energy used in casting and rolling, nor energy used by captive thermal utilities (which *are* included in reported energy intensity).

The energy intensity of steel highly depends on the production routes. Primary production routes being more intensive than and secondary production.

# Cement – Updated to latest available data

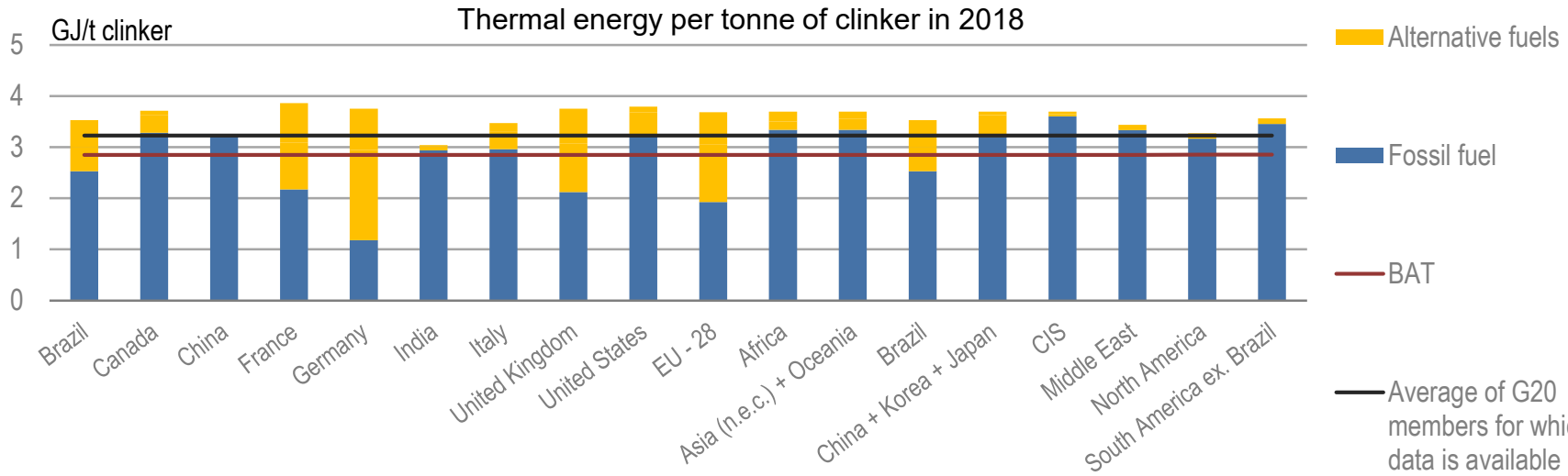



**Sources:** Cement Sustainability Initiative (2018), Getting the Numbers Right Emissions Report 2018;

**Notes:** Regional factors such as product fineness requirements and the hardness of raw materials and fuels affect the electricity intensity of cement. BAT = best available technology. China data is from 2015. Average of displayed G20 members is a weighted average of the G20 members shown above for which data was available.

The electricity intensity of cement highly depends on regional factors such as product fineness requirements and the hardness of raw materials, among others, as well as on the quality of the data reported. .

# Clinker




**Sources:** Cement Sustainability Initiative (2018), Getting the Numbers Right Emissions Report 2017;

**Notes:** Regional factors such as moisture content and burnability of raw materials, typical clinker composition and average capacity of cement plants affect clinker thermal intensity; additionally, thermal energy intensity increases with use of alternative fuels, and clinker substitutes. Alternative fuels include biogenic and non-biogenic wastes and biomass. BAT = best available technology. Average of displayed G20 members is a weighted average of the G20 members shown above for which data was available.

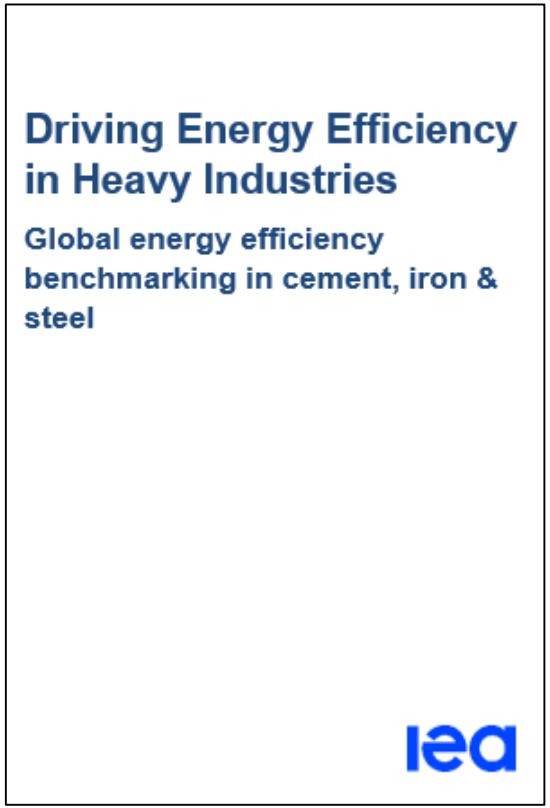
The thermal energy intensity of clinker highly depends on regional factors such as moisture content and burnability of raw materials, among others, as well as on the quality of the data reported.
Wider coverage of publicly available databases would enable a more detailed analysis across countries.

# Global partnerships to advance efficiency gains

- At the request of Japan, the Agency benchmarked efficiency levels in G20 countries, focusing on key industrial sectors- iron, steel and cement.

- Our project report sets out key findings.
  - Untapped efficiency potentials are indicated in many G20 countries.
  - Stronger policy actions can help capture those potentials .
  - Further data can enhance global energy efficiency benchmarking

- Countries are already using the benchmarking approach to design and implement effective efficiency policies.



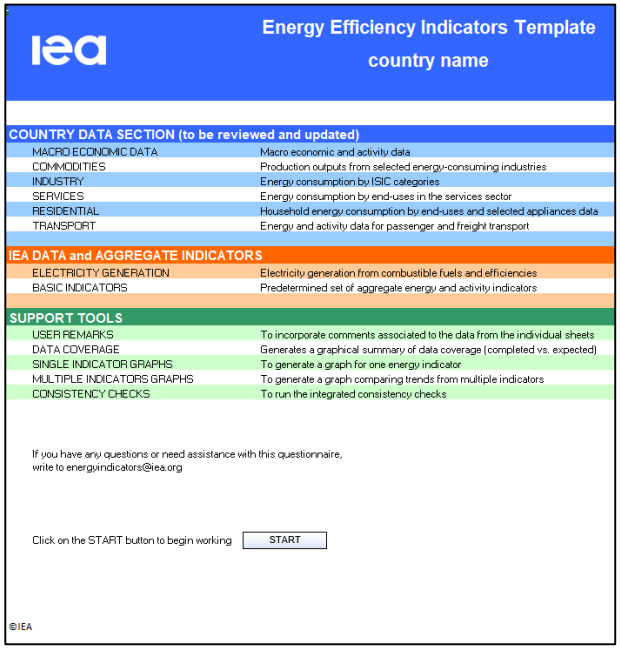
# Limitations to more granular indicators

# Limitations to more granular indicators

- Data on energy consumption by process route could be made publicly available. This data would enable direct regional comparison of the energy efficiency within each process route to identify areas for improvement at the process technology level.

- It will also be important to collect data under unified conditions, such as conversion of electrical energy to primary energy and handling of energy for materials such as cokes.

- Improved country reporting would be needed to provide more accurate data on energy specific consumption in industrys sub-sectors. In particular the questionnaire used by the IEA for establishing energy efficiency indicators would allow such analysis.



# Today's workshop

Key examples from countries leading work on benchmarking and industry energy efficiency to provide case studies and return on experience :

- Mr. Masana EZAWA , Director, Energy Efficiency Division, Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry (METI), Japan
- Dr. Ashok KUMAR, Deputy Director General, Bureau of Energy Efficiency, India.
- Mr. Felipe Klein SOARES, Energy Research Analyst, Empresa de Pesquisa Energética (Energy Research Office), Brazil.
- Mr. Carlos HERCE, Senior Researcher, ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Italy