Energy efficiency and benchmarking analysis for G20 countries and beyond

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Context

• New analysis was prepared at the request of Japan for its G20 presidency looking at efficiency trends and opportunities for gains.

• All G20 countries have made notable progress on energy efficiency, but potential remains for considerable further gains.

• Analysis seeks to highlight the potential that exists to improve energy efficiency.

• Preliminary benchmarking analysis prepared to highlight the potential benefits of such analysis and the importance of data collection.
Potential for efficiency gains in G20 countries
Greater efforts on efficiency and renewable energy, as described by the IEA’s Sustainable Development Scenario (SDS), could see primary energy demand in G20 countries follow a different path.
All G20 countries have the opportunity to continue to improve energy intensity, extracting more value from each unit of energy.
There is significant cost-effective savings potential in every sector

Only one third of the potential cumulative energy savings from efficiency gains by 2040 are realised in the NPS. Better analysis can help prioritise policy action in key sub-sectors and for key technologies.
Preliminary benchmarking analysis
Industrial efficiency varies depending on a range of factors.

The energy intensity of steel production varies across all G20 countries, as a result of different production routes. Efficiency gains can come from technology, recycling and energy management.
Variation is also observed in the cement industry.

Thermal energy intensity of cement production varies across countries depending on the raw materials and the quality of data available.
Air conditioning is a growing source of efficiency gains

Energy savings of nearly 40% are possible in most G20 countries through pushing markets towards more efficient ACs that are already available.
Electrification of vehicles, coupled with decarbonisation of electricity supply, will improve the efficiency and reduce the environmental impact of transport.
Transport energy savings are driven by different vehicle types

Adoption of hybrid, plug-in hybrid and battery electric vehicles are driving transport energy savings. Data reveals which electric vehicles are most prevalent in G20 countries and the impact they are having.
Why benchmarking

- The preliminary analysis performed by the IEA shows that benchmarking, when developed and used properly, can be beneficial.

- Discussion amongst G20 countries during year revealed that countries were interested in benchmarking analysis to understand current levels of energy efficiency and opportunities for gain.

- However, it was also acknowledged that there remain issues with both data availability and sensitivity, which are currently limiting the scope and level of detail in benchmarking analysis.

- Therefore, to be effective and meaningful, benchmarking analysis requires data collection and analysis to be improved and expanded.

- The IEA is continuing to work with Japan on benchmarking, following today’s workshop:
  - A discussion on benchmarking to be held with specialists in data collection and reporting
  - Planned in November during G20 energy end-use data and energy efficiency metric initiative
Closing remarks

• G20 has made strong progress on energy efficiency, while there remains considerable cost-effective potential to improve energy efficiency

• Detailed data analysis can help identify this potential and best policy opportunities, and this can apply well beyond the G20 group

• We encourage collaboration among countries on energy efficiency data collection and sharing

• One very important emerging aspect is the opportunities created by digitalisation, and the policy responses governments may consider

• IEA is working with Japan and with countries to more fully analyse efficiency opportunities in key sectors