EDNA6

Wireless Charging Energy Use

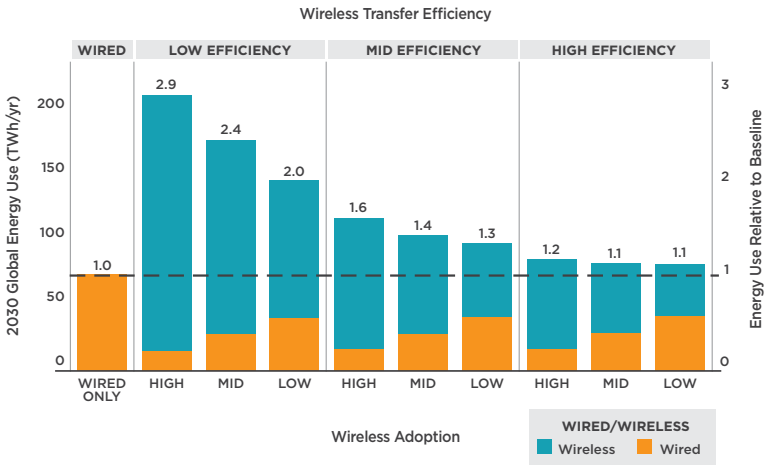
The 4E Electronic Devices and Networks Annex (EDNA) provides policy guidance to members and other governments aimed at improving the energy efficiency of *connected* devices and the *systems* in which they operate. EDNA is focused on the increased energy consumption that results from devices becoming connected to the internet, and on the optimal operation of systems of devices to save energy.

This briefing summarises the key findings of the EDNA report *Global Forecast of Energy Use for Wireless Charging.* Wireless charging "pads" can charge a device's batteries without the use of electrical connectors. The report estimates the additional global energy that would be consumed if wireless charging is adopted for a wide range of small consumer devices, and provides recommendations for policy development.

Observations for Policy Makers

- No policies currently exist which address the energy used for wireless charging, and a dedicated test procedure is urgently needed.
- The popularity of wireless chargers is increasing.
- Wireless chargers currently utilise inductive, magnetic resonant or radio frequency technologies.
- Wireless charging is inherently less efficient than wired charging, due to a "gap" between the charger and the device, although wireless chargers exhibit a range of efficiencies.
- It is estimated that, without further policy intervention, up to an additional 125 TWh per year could be consumed globally by 2030, compared to a wired-only charging scenario. This is equivalent to half the annual electricity consumption of Australia.

Global 2030 Battery Charger Enregy Use (TWh/yr) Across Wireless Transfer Efficiency and Adoption Scenarios



More Information

The EDNA report and further information is available from **https://edna.iea-4e.org/tasks/task13** and by contacting the EDNA operating agent at **info@edna.iea-4e.org**

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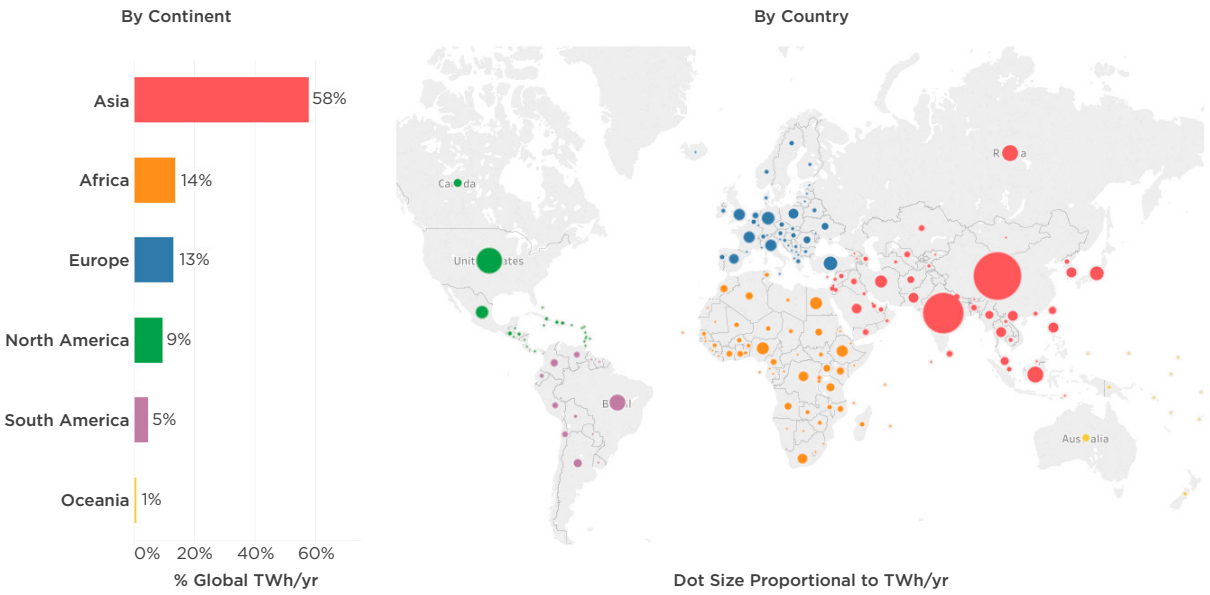
ENERGY EFFICIENCY POLICY BRIEF

Key Findings

Wireless charging would impact many countries

21% of the additional energy use from wireless charging would occur in China, 15% in India, 13% in the EU, and 6% in the USA.

Global Distribution of 2030 Battery Charger Energy Use (TWh/yr)



Wireless chargers comprise 2 main elements

The total efficiency of a wireless charger depends on the transfer efficiency of the wireless components as well as the efficiency of the other conventional "wired" electrical components.

Next step: develop an international test procedure

Developing a test procedure to accurately measure the performance of wireless chargers is important, as no internationally recognised method exists (although several efforts are underway). **However** this is challenging because:

- Many different devices can be charged using a single model of charger.
- Device positioning on the charging pad can have a substantial impact on transfer efficiency.
- The charger's standby losses (when the device's battery is fully charged) can be high and should be part of the test procedure to encourage chargers to automatically power down once the device is fully charged.