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The time is now – smart charging of electric vehicles

ERRA Renewable Energy Committee Meeting

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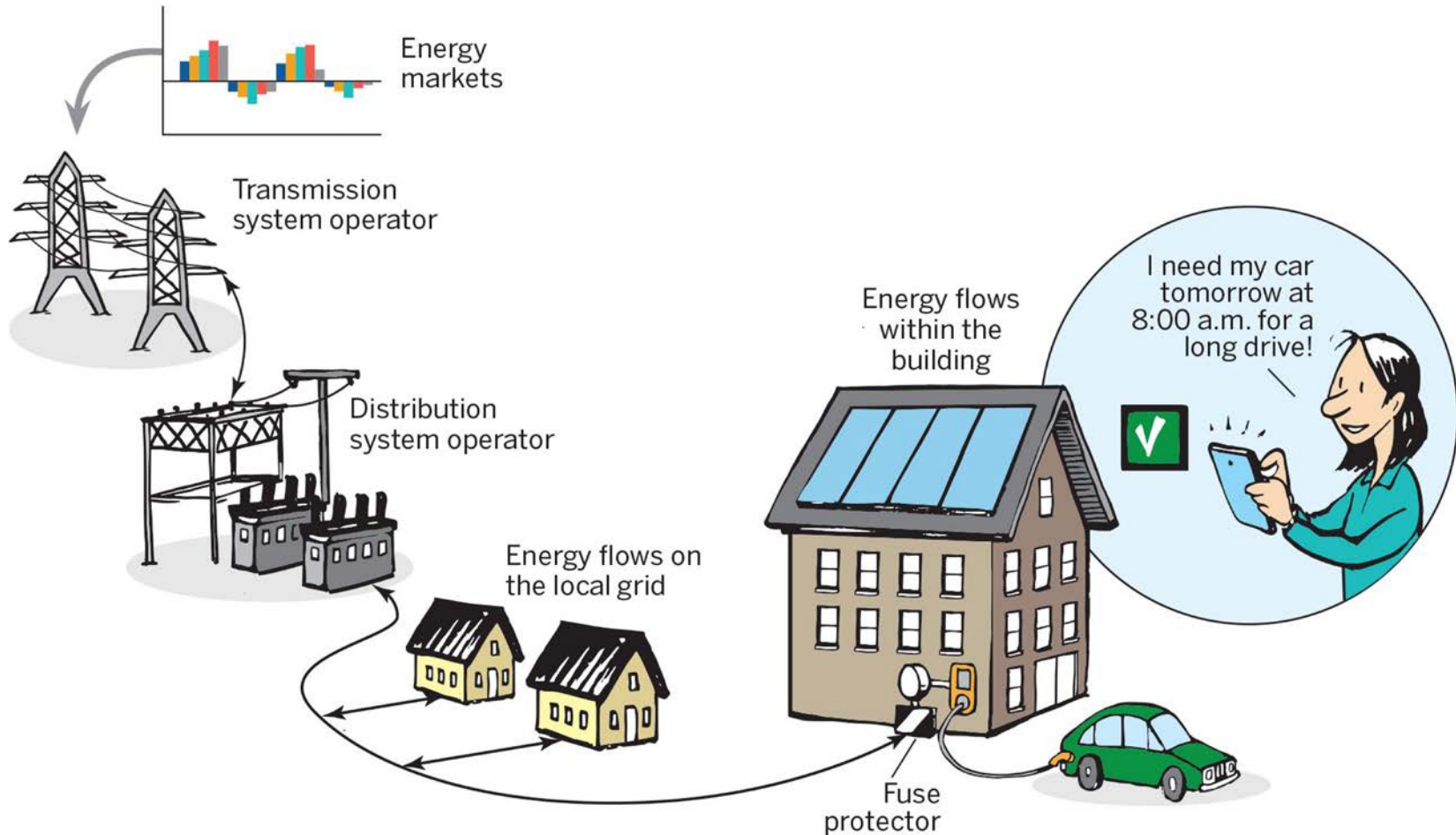
Overview

1. What is smart charging?
2. Tariffs for smart EV charging – Key findings
3. Policy recommendations

1 Smart charging



What is smart charging?

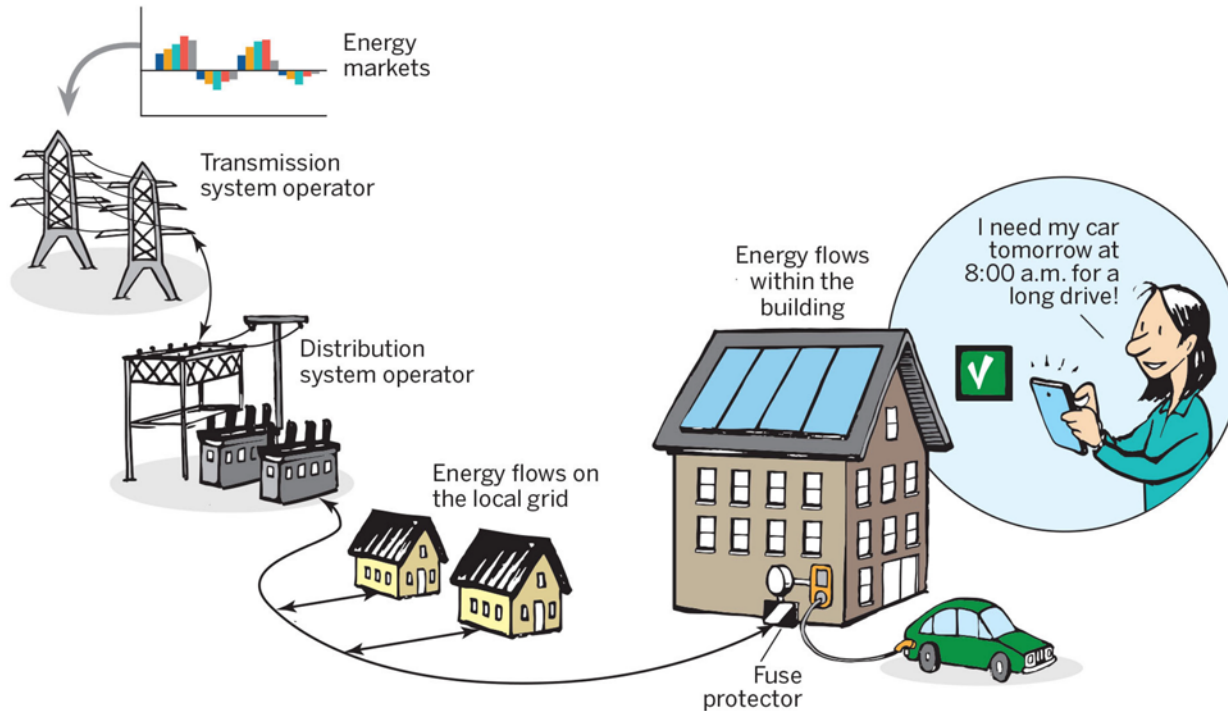


2

Smart tariffs & services

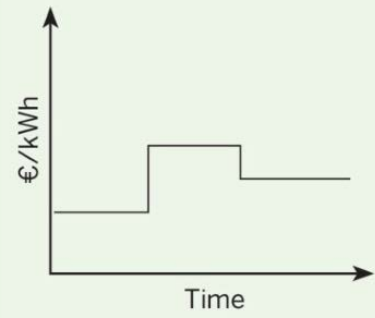
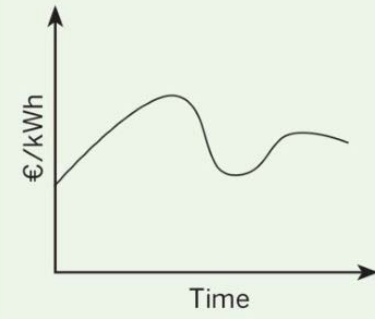


Smart tariffs and services



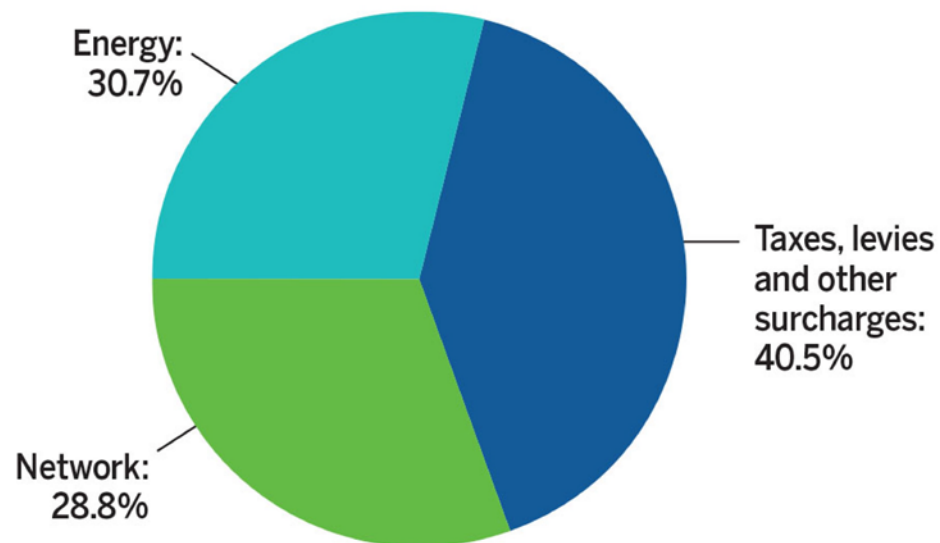


Tariffs

Type of tariff	Nature of pricing	Illustrative graphical representation
Static TOU pricing	Static	 <p>The graph shows a step function representing price over time. The vertical axis is labeled '€/kWh' and the horizontal axis is labeled 'Time'. The price starts at a low level, then jumps to a higher level for a period, and then jumps back to a level lower than the first high level.</p>
Real-time pricing	Dynamic	 <p>The graph shows a smooth, fluctuating curve representing price over time. The vertical axis is labeled '€/kWh' and the horizontal axis is labeled 'Time'. The price starts at a low level, rises to a peak, falls to a trough, and then rises again to a level higher than the trough.</p>

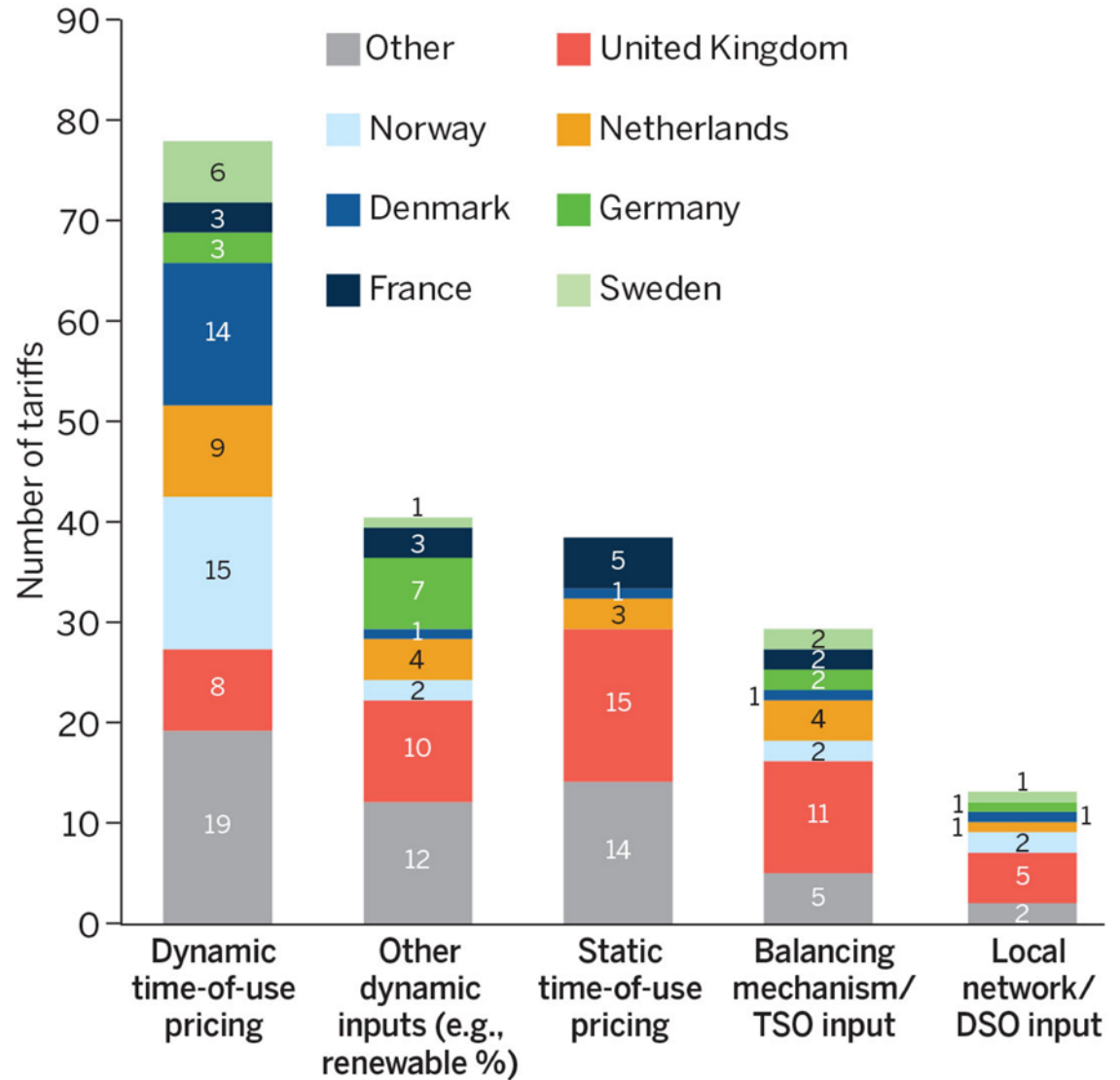
Source: IRENA 2019

Tariffs

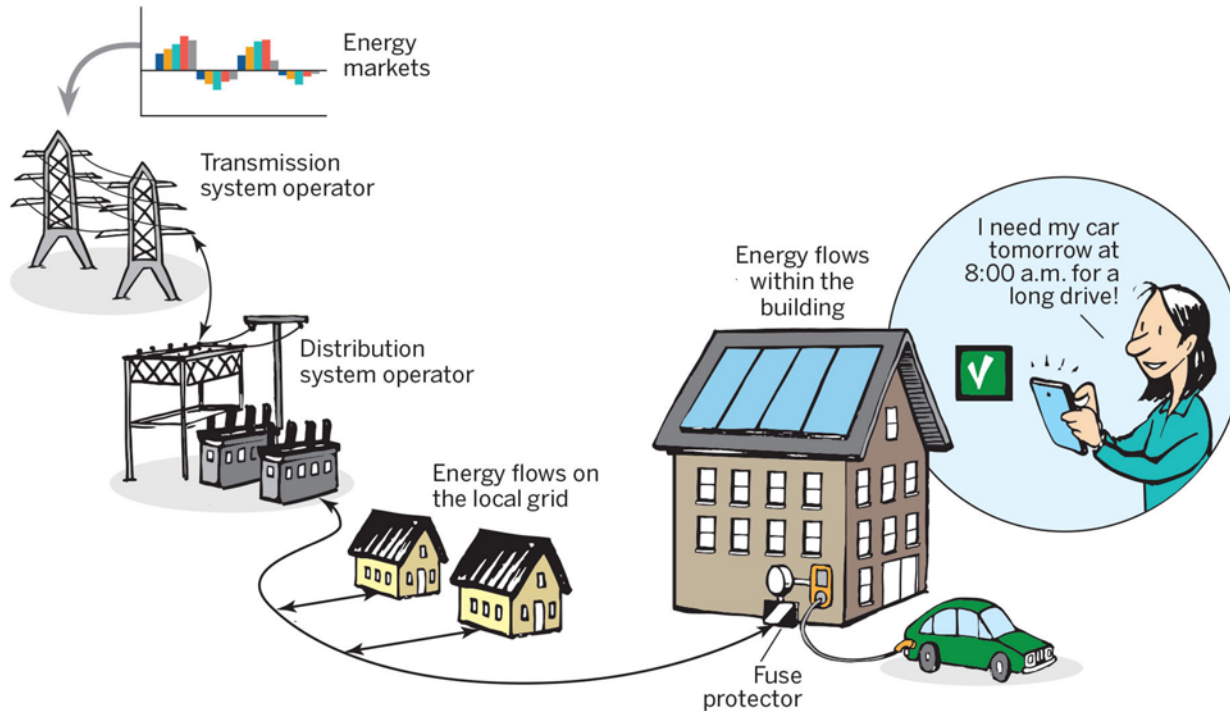


Source: Agency for the Cooperation of Energy Regulators and Council of European Energy Regulators. (2021). *Annual report on the results of monitoring the internal electricity and natural gas markets in 2020.*

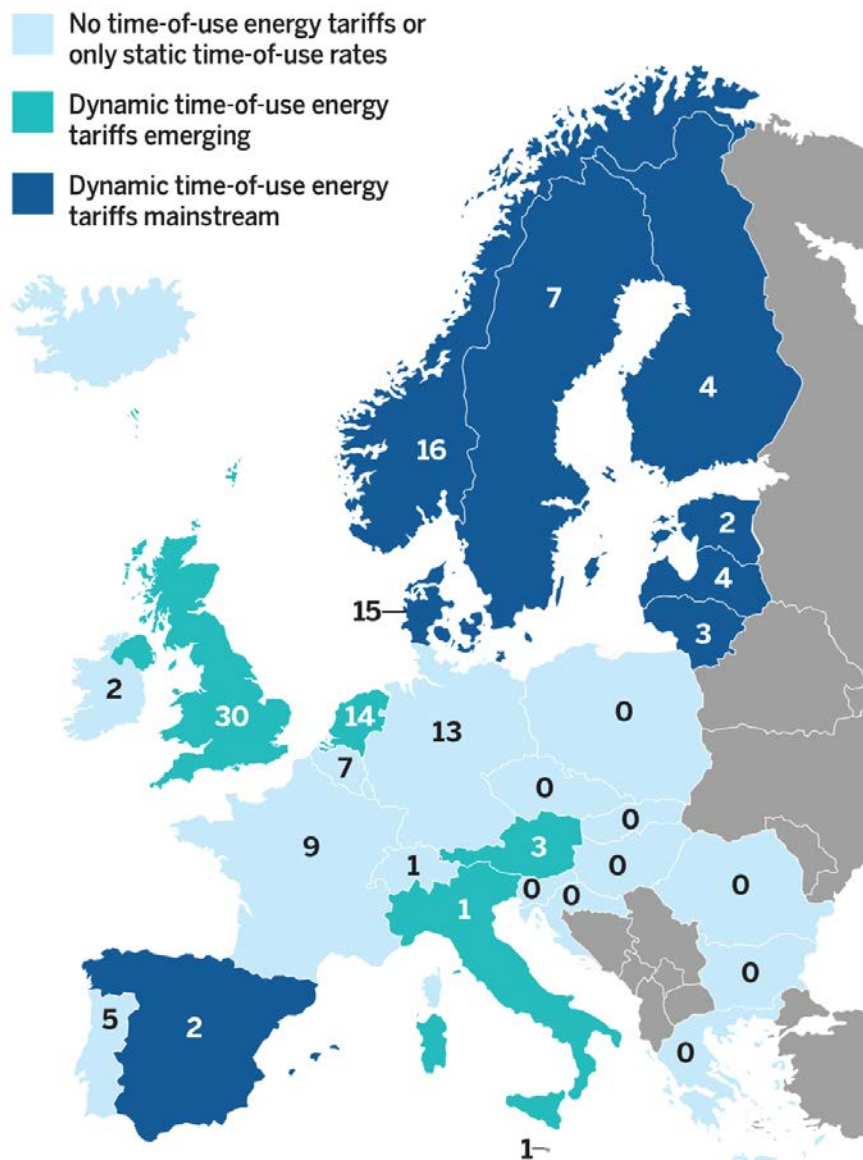
139 smart tariffs and services found across Europe



Smart tariffs and services

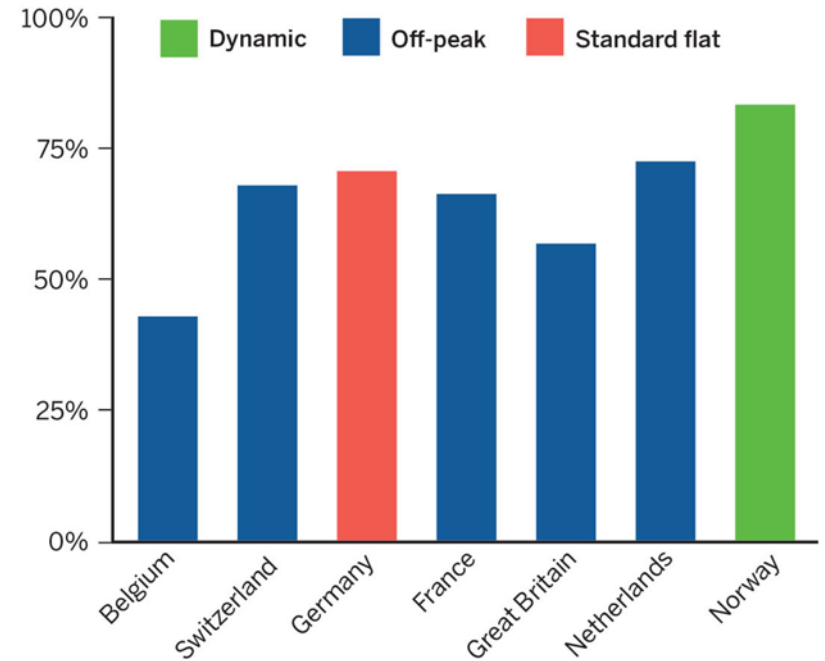


Tariffs and services distributed unevenly across Europe



This depiction of Kosovo is without prejudice to positions on status.

Tariffs and services distributed unevenly across Europe



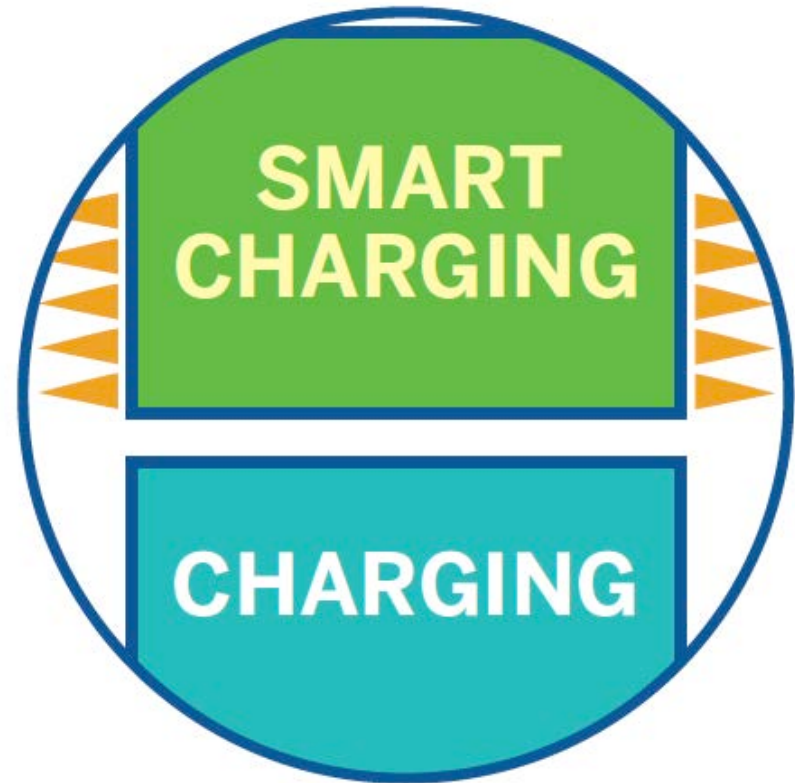
Jedlix. (2022). A sneak peek into tariff rates across countries.

3 How to accelerate smart charging



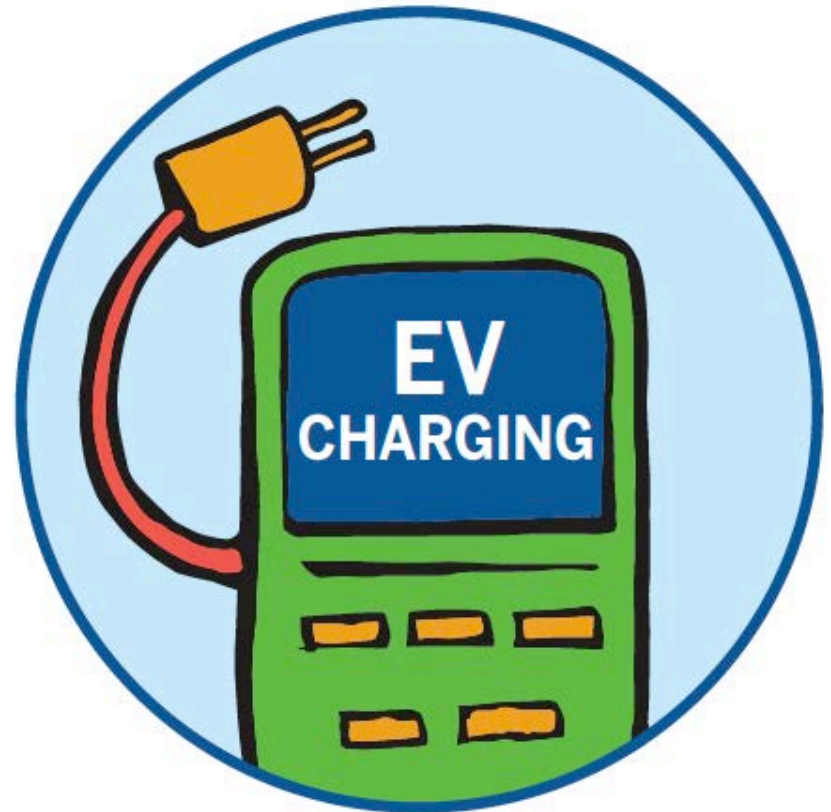
Make smart charging default

- smartness requirements for home & work charging
- smart charging as default charging mode



Make public charging smart, too

- Ensure benefits for all EV users (and grids!)
- set smart charging requirements on all public chargers
- Plan charging infrastructure considering the grid



Inform and empower consumers

- Incentivize drivers and communicate benefits
- Design easy-to-use apps and chargers
- Require transparency and information



Improve consumer rewards

- Enable residential flexibility in advance
- Remove barriers for EVs to participate in flexibility markets
- Tariffs rewarding residential flexibility as default



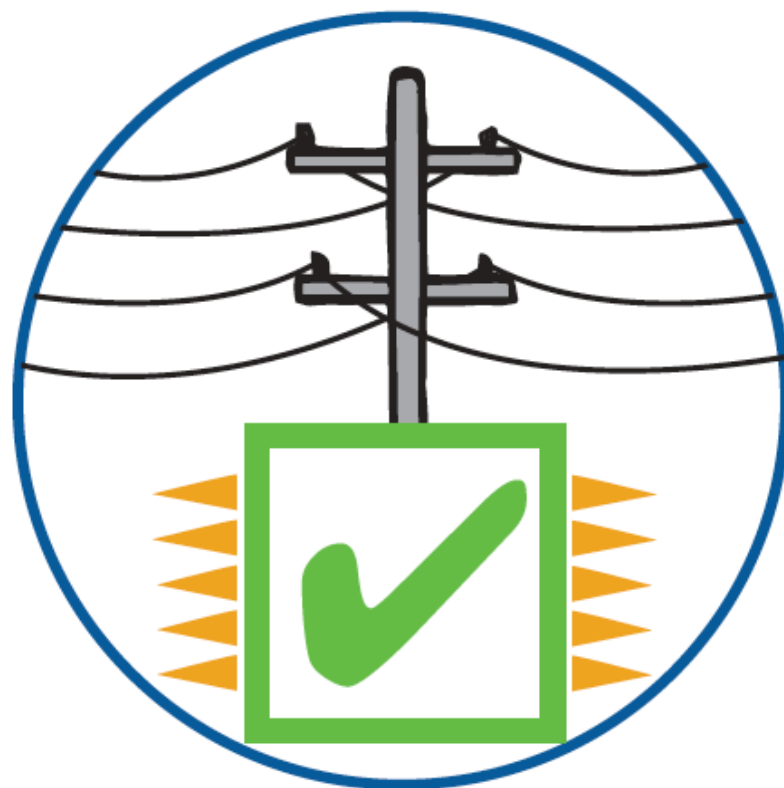
Stack services (and benefits)

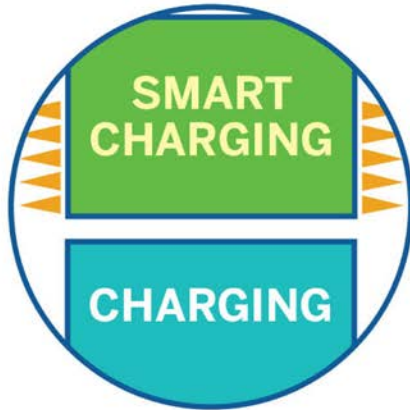
- Improve interoperability and data exchange
- Simplify metering requirements
- Enable safe data sharing



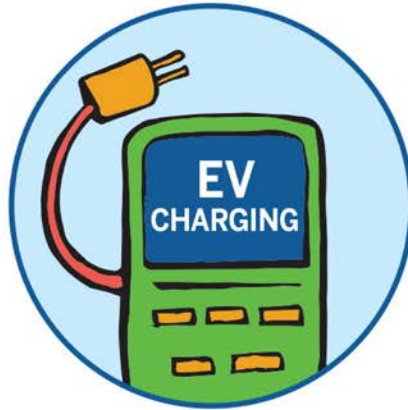
Make local grids ‘smart charging ready’

- Digitalize grids and grid management
- Integrate distributed flexible resources/local flexibility markets
- Advance network tariff reform





Make smart charging the default everywhere.



Make public charging smart too.



Empower consumers to make informed choices.



Improve rewards for consumer flexibility.



Stack multiple services for smart charging.



Make local grids 'smart charging ready.'

Key messages

- The key to smart EV charging is making it easy for consumers.
- Smart EV charging should be default everywhere.
- As the EV market grows, smart charging is needed now to save costs and maximise benefits.

About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org



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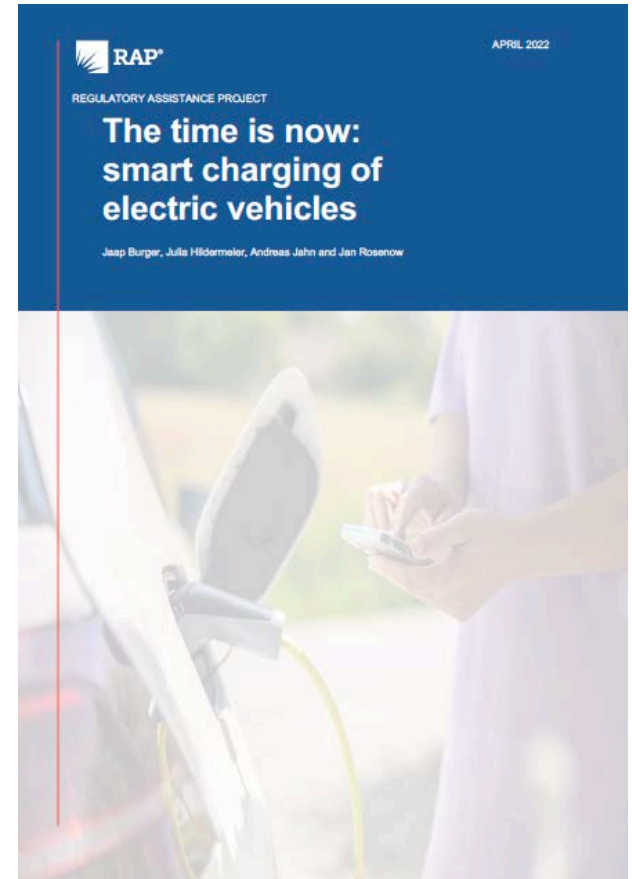
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4 More Information



Resources

- The joy of flex: Embracing household demand-side flexibility as a power system resource for Europe
- Europe needs smart charging of all EVs now
- EU's buildings directive should give EV owners the right to a smart plug
- Transport Sector transformation: Integrating electric vehicles into Turkey's distribution grids.



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