

EU-MORE Project

Accelerating the renovation of electrical motors in the EU

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Background

In March 2020, the European Commission published its Climate Target Plan (CTP) [1] where it is proposed to raise the Union's ambition on reducing greenhouse gas emissions to at least 55% below 1990 levels by 2030.

According to the CTP Impact Assessment [2], to reach the desired targets, final energy consumption needs to be reduced by 36-37% and sees as unlikely that these required higher levels of energy efficiency would be achieved through market forces, current market organisation and technology development alone.

Under the European Green Deal (EGD) a substantial revision ('recast') of the Energy Efficiency Directive (EED) is included in the 'Fit for 55' package, recognizing the need for improved energy efficiency policies. Most notable is the increase in annual energy savings obligations (to +1.5 %) that Member States (MS) are expected to meet over the 2024-2030 period (compared to +0.8 % under the 2018 EED).

The Commission's proposal for a recast EED was accompanied by a detailed impact assessment which, among other things, identifies the acceleration of the replacement rate of old inefficient products as an effective way of reducing their energy use. In its 2021 World Energy Outlook, the IEA identifies 40 milestones without which total final energy consumption would be around 30% higher by 2030. One of these milestones is that all motor sales are best in class by 2035. This goal is unachievable if measures are not taken to steer the market in that direction.

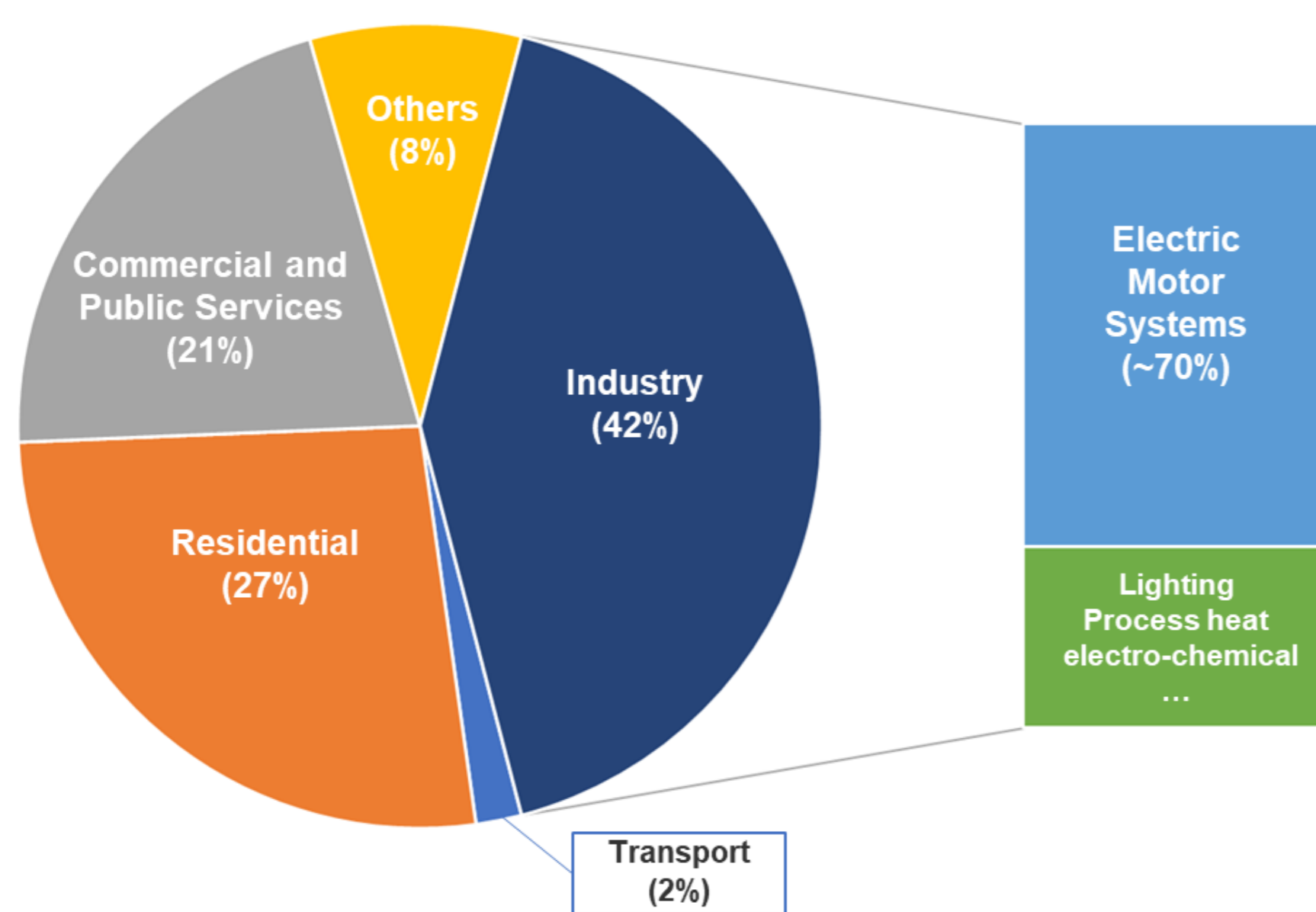


Figure 1. Worldwide electricity use (IEA, 2019)

The EU-MORE project (EU-MORE: EUropean MOtor RENovation initiative), aims at capturing the benefits of accelerating the rate of replacement of old inefficient motors through the development of new policies and the appropriate tools for projection, monitoring and evaluation of the implementation of those policies. Additionally, it will promote the exchange of knowledge between actors involved in energy efficiency policy at Member State, European and international levels.

Timeline: October 2022 – March 2025

Electric motor renovation rate

Electric motors have very long lifetimes, which means that their replacement rate is very low, hindering the achievement of these very large potential energy savings. Average motor lifetimes are usually accepted to be between 12 and 20 years depending on nominal power, the lower value corresponding to small motors (from 1kW) and the larger value to larger motors (up to 1000kW). However, recent field assessments (in Switzerland and the USA) have shown that these average lifetimes are undervalued with motors substantially older still in operation.

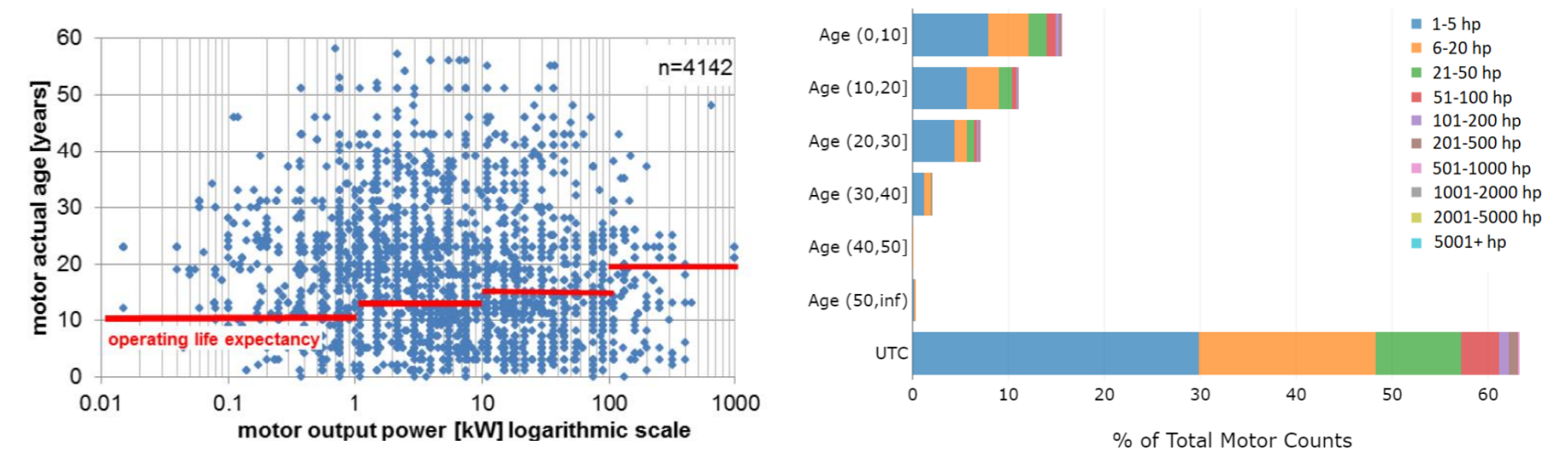


Figure 2. Electric motor age (SAFE, 2013; USDoE, 2021)

Actions

- Policy development for accelerating the replacement rate of old inefficient electric motors coupled, whenever possible, with motor systems optimization and digitisation.
- Developing tools for projection, monitoring and evaluation
- Creation of a knowledge exchange platform

Expected impacts

In the EU-27, in 2020, electric motors represented around 900TWh/year of electricity consumption. Although regulated through the Ecodesign Directive, the very long lifetime of electric motors means that the penetration rate of high efficiency technologies is very slow, with inefficient motors still representing over 70% of the installed base. This number can be even higher. Even if a small percentage of these motors is renovated through the EU-MORE actions (10%), and assuming an average 4% gain in efficiency, equal to the average difference between IE1 and IE3, the savings triggered by the project would equal 2,5 TWh/yr.