EU-MORE
EUropean MOtor REnovation initiative

Policy brief

Subsidy scheme for accelerated motor replacement

Co-funded by the European Union

Why is this important?

Subsidy schemes address the high upfront investment costs that often deter businesses from replacing old, inefficient motors with high-efficient ones. Subsidies facilitate the adoption of new technologies, accelerate harvesting of energy saving potential, and reduce greenhouse gas emissions. Subsidy schemes help mitigate risks for suppliers of financial capital by reducing upfront costs and addressing challenges in evaluating project quality. They enable companies to access private capital and tackle behavioural and organizational barriers, as energy efficiency investments are often deprioritized due to unclear returns or competition with investments in core business activities. By lowering overall investment costs, subsidies make energy efficiency projects more financially appealing and ensure significant impacts on energy efficiency while also increasing trust in and adoption of energy-efficient technologies. They help to mitigate behavioural, organizational and financial barriers to energy efficiency investments, making them particularly valuable for small and medium enterprises (SMEs), which are often struggling with these barriers.

How does it function?

The subsidy scheme operates by providing financial incentives to eligible entities for upgrading their electric motors. The process typically involves:

- Eligibility assessment: identifying which businesses or projects qualify for subsidies based on predefined criteria (e.g. motor efficiency class, age or operating hours) and establishing efficiency requirements for qualifying motors.
- Application process: interested parties submit applications detailing their intended upgrades and expected benefits.
- Funding allocation: upon approval, funds are disbursed to support the purchase and installation of new, energy-efficient motors.
- Monitoring and reporting: recipients are required to report on their energy savings and other types of post-implementation impact to ensure accountability and monitoring of the measure's effectiveness.

This structured approach ensures that funds are utilized effectively while maximizing the energy and non-energy benefits of motor replacement. Most financial support programmes in Europe incentivise a whole range of energy efficiency measures, with or without specific reference to motor-driven systems, and therefore do not always have specific criteria for motor replacement.

What makes it effective?

Several factors contribute to the effectiveness of subsidy schemes:

1. **Clear efficiency criteria:** Defined standards ensure that only qualified products receive support.
2. **Tailored incentives:** Adjusting rebates based on motor size or usage ensures equitable distribution.
3. **Program design:** Balancing duration to allow adoption without distorting market prices.
4. **Stakeholder engagement:** Inclusion of manufacturers, distributors, and end-users in the policy design phase.
5. **Monitoring and evaluation mechanisms:** Ensuring accountability and effectiveness through robust assessment frameworks.
6. **Awareness campaigns:** Informing key stakeholders (plant operators, energy managers) about the benefits of high-efficiency motors.
7. **Support for SMEs:** Providing accessible financial and technical support to encourage energy efficiency investments in smaller enterprises.

Possible complementary policies that can reinforce the above success factors are:

- **Tax incentives:** Offering rebates to companies for energy-efficient investments.
- **Voluntary agreements:** Encouraging industries to commit to energy efficiency targets in exchange for benefits.
- **Information campaigns:** Raising awareness about energy and non-energy benefits and technical opportunities.
- **Energy audits:** Integrating audits to identify high-impact replacement opportunities.

Are there any good examples?

- **Portugal - Energy Efficiency Promotion Plan (PPEC):** Provided a 51% subsidy for replacing inefficient motors (IE1 or below) with IE3/IE4 motors, saving 115 GWh of electricity and reducing 43,000 tCO_2eq emissions.
- **Germany - Federal Funding for Energy and Resource Efficiency in the Economy (Module 1):** Provided a 30% subsidy (40% for SMEs) to support the upgrade of several systems including inefficient motors with IE4/IE5 motors, saving 213 GWh and reducing 184,000 tCO_2eq emissions over the 2019-2021 period.
- **Bulgaria – Operational Programme "Innovations and Competitiveness" (OPIC):** provided up to 50% funding for projects replacing old equipment, including electric motors with energy-efficient IE3/IE4 ones, supporting a total of 795 projects over the 2014-2020 period.

How can we estimate the impact?

EU-MORE developed an independent tool for making a quantified assessment of past, existing and proposed policy measures for motor replacement and motor system optimisation. The tool was baptised the "EU-MORE Motor Model" (**EU-M³**), and its primary objective is the projection, monitoring and evaluation of the policies' impact in terms of energy consumption and greenhouse gas emissions.

With **EU-M³**, the impact of motor replacement policies can be calculated at level of the motor stock of the EU or an individual country, offering valuable insight for both industrial decision makers and policy-makerss. It also considers the economic, environmental, and material impact of the measures under scrutiny. Based on a given project budget it can calculate, for instance, the number of motors replaced, the energy savings, the environmental impact, and the additional material demand.

To evaluate the effects of a subsidy scheme in **EU-M³**, users are required to provide specific information. This includes the geographical scope (either at EU or at Member State level), the power class of the motor, the programme's budget, the funding rate per motor, the time frame of the policy, the reduction in lifetime of motors to be replaced, and the efficiency classes affected (relating to both the motors being replaced and their replacements). When setting up the parameters and running a first calculation, information is provided on the payback time of individual motor replacement. A subsidy scheme typically supports projects with a payback time of more than 3-4 years.

In the Policy Impact Analysis of the EU-MORE project, subsidy-based schemes were examined, using the Portuguese Energy Efficiency Promotion Plan (PPEC) and the Swiss ProKilowatt programme as examples. Despite the need for several assumptions due to data limitations in both case studies, the results confirmed the substantial energy savings potential of the policy measures. At the same time, they underscore the inherent complexities and uncertainties when projecting and assessing the impact of such measures.

EU-M³, implemented in Microsoft Excel for broader accessibility, can be downloaded from the **EU-MORE website**. Additional information on the model's functionality is available in the **D4.3 Policy Impact Analysis**. Interactive presentations and tutorial videos on how to use the tool are part of the **D4.5 Policy Support Documents**, also found on the website.

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EU-MORE project

EU-MORE is an acronym for EUropean MOtor REnovation initiative. This LIFE-Project aims to speed up replacement of old, inefficient electric motors in industry and the service sector. Electric motors tend to stay in service for 30 to 40 years, which is much longer than generally assumed. With swift action, this replacement rate could be improved. In the EU, replacing old motors faster would free up additional energy savings, on top of the savings potential of existing regulations, with all the associated benefits.

Project website:
https://eu-more.eu/

Project partners

ISR - University of Coimbra

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