

EU-MORE



European Motor
REnovation initiative



France

Review of past and existing policy options for
the acceleration of electric motor renovation

EU-MORE

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List of Acronyms

Acronym	Text
CEE	French white certificates scheme (Certificats d'Economies d'Energie)
SNBC	National Low-Carbon Strategy (Strategy (stratégie nationale bas-carbone)
MEP	Multiannual Energy Plan (programmation pluriannuelle de l'énergie)
LTECV	<i>Law on Energy Transition for Green Growth</i>
PNIEC	<i>Integrated National Energy and Climate Plan (NECP)</i>



1. FRANCE

Introduction and description of the national policy framework and important related national programmes, measures and/or developments:

The following is taken directly from the executive summary (p.4) of the 2019 NECP of France:¹

"The integrated national energy and climate plan for France is based on two documents adopted at national level on the governance and programming of matters relating to energy and climate.

- *The Multiannual Energy Plan (programmation pluriannuelle de l'énergie, MEP), which establishes the priorities for government action in the field of energy for the next 10 years, divided into two five-year periods. It covers all energy types and all of the cornerstones of energy policy (managing energy demand, promoting renewable energies, safeguarding security of supply, controlling energy costs, developing networks in a balanced manner, etc.), and makes it possible to forge a coherent and integrated vision of the role of energy in French society and desirable future trends in this respect.*
- *The National Low-Carbon Strategy (stratégie nationale bas-carbone, SNBC), which is France's roadmap for climate change mitigation. This provides guidelines to enable the transition to a low-carbon economy across all sectors. It specifies France's short-term and medium-term greenhouse gas (GHG) emissions reduction targets (carbon budgets) and aims to achieve carbon neutrality, i.e. net zero emissions, by 2050.*

The MEP and the SNBC are closely linked: the energy scenario in the MEP is identical to that in the SNBC for the period covered by the former. The MEP covers the first 10 years of the SNBC as regards energy consumption and the energy mix. The MEP adopts an operational approach to this 10-year period in terms of government action to decarbonise energy. Compliance with the projections of the SNBC for the period until 2050 represents one possible trajectory for achieving France's climate targets. The SNBC covers all greenhouse gases, some of which are not covered by the MEP.

The scope of the MEP is restricted to metropolitan France, whereas the SNBC also covers the overseas departments. As a result, the parts of these documents incorporated into the Integrated National Energy and Climate Plan (PNIEC) may vary slightly in terms of scope.

The Law on Energy Transition for Green Growth (LTECV) of 17 August 2015 sets out the principles underpinning the process for drafting these two documents. The SNBC and the first three carbon budgets were adopted by decree (Decree No 2015-1491 of 18 November 2015). The MEP for the period 2016- 2023 was also adopted by decree (Decree No 2016-1442 of 27 October 2016). The MEP and the SNBC are linked in terms of compatibility: the LTECV provides for the MEP to be compatible with the SNBC and the GHG emissions reduction targets set in the carbon budgets.

¹ https://energy.ec.europa.eu/system/files/2022-08/fr_final_necp_main_en.pdf

The LTECV states that these two documents should be revised every five years, with the exception of the first revision, which was initially planned for the end of 2018 for the MEP and mid-2019 for the SNBC. A full revision cycle for the MEP and the SNBC therefore started in 2017 and continued throughout 2018. A draft revised version of the SNBC was published in December 2018 (hereinafter the 'draft SNBC 2'). Prior to its adoption by decree, the draft underwent a process of statutory consultation (involving the Environmental Authority, the High Council for Climate, the Corsican Assembly, the overseas authorities, the National Council for Standards Assessment, the Regulatory Impact Mission of the Secretariat General of the Government and the public). A draft version of the MEP for the period 2019–2028 (hereinafter the 'draft MEP 2') was published in January 2019. Prior to its adoption by decree, the draft underwent a process of statutory consultation involving the energy committees.

The current draft integrated national energy and climate plan for France incorporates sections from the draft SNBC 2 and the draft MEP 2, and follows the general framework outlined in Annex I to the Regulation on the governance of the Energy Union. The SNBC 2 and the MEP 2 were drafted for the purpose of ensuring that France can comply with the energy and climate targets imposed on it by the EU. The following table contains the EU targets that apply to France and the figures forecast for 2030 under a scenario that assumes the implementation of France's energy and climate strategy.

	Target	Timeline	Forecast
Final energy consumption	National target of -20% compared to 2012 EU target of -32.5% compared to trend-based scenario	2030	120.9 Mtoe or -32.6% compared to PRIMES 2007
Primary energy consumption	No national target EU target of -32.5% compared to trend-based scenario	2030	202.2 Mtoe or -24.6% compared to PRIMES 2007
Share of renewable energy in gross final energy consumption	National target of 33% EU target of 32%	2030	41 Mtoe or 33%
Renewable and recovered heat and cold in district heating	+1% per year up to 60%	2030	+0.9% per year up to 65%
Increase in the rate of renewable and recovered heat	+1.3% per year	2030	Between +1.2% and +1.8% per year
GHG emissions except for land use, land-use change and forestry (LULUCF) and except for sectors covered by the European carbon market (EU ETS)	-37% compared to 2005	2030	-42%
Land use, land-use change and forestry (LULUCF)	Emissions do not exceed removals in relation to the reference period of 2005–2009 ¹	2021–2025 and 2026–2030	Overall compliance with no-debit rule

The trajectory corresponding to these targets differs slightly from that presented in the draft MEP and SNBC published in early 2019; in particular, it is slightly more ambitious in terms of energy efficiency in the buildings and industry sectors, and includes recently implemented or planned measures (application of the Law on Energy and Climate adopted on 8 November 2019

regarding the renovation of ‘thermal sieves’ (buildings that lose a large amount of heat), freezing of the carbon component, etc.). The target for renewable energies was also increased to 33% of final energy consumption, compared to 32% in the initial draft. The measures explicitly outlined in the final version of the MEP and therefore in the integrated national energy and climate plan will not be sufficient to achieve all the relevant targets by 2030, in particular with regard to a reduction in final energy consumption, meaning that additional measures must be taken. The gradual increases in the carbon component of taxation were suspended in November 2018, meaning that new measures are also required to achieve outcomes equivalent to those anticipated for this component. These measures may be tabled by the governance bodies that have recently been set up (Ecological Defence Council, High Council for Climate, Citizens’ Climate Convention). As an indication of the amount of work that remains to be done, it has been estimated that the following outcomes would be achieved by 2030 if action were limited solely to the measures set out in the MEP:

- a reduction of 39.5% in GHG emissions (with reference to 1990), compared to a target of 40% stipulated by law, and an expected outcome of 43.2% for the trajectory that serves as a basis for the MEP and the SNBC;
- a reduction of 17% in final energy consumption (with reference to 2012), compared to a target of 20% stipulated by law, and an expected outcome of 20% for the trajectory that serves as a basis for the MEP and the SNBC;
- a reduction of 36% in primary fossil fuel consumption (with reference to 2012), compared to a target of 40% stipulated by law, and an expected result of 41% for the trajectory that serves as a basis for the MEP and the SNBC;
- an increase of 33% in renewable energy consumption, in line with the target stipulated by law and the trajectory that serves as a basis for the MEP and the SNBC.”

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“Current energy and climate policies and measures relating to the five dimensions of the Energy Union”

(...)

Industry

France’s policy on reducing GHG emissions in the industrial sector mainly involves capping emissions from the industrial installations that emit the most GHGs via the EU’s emissions quota trading system, improving energy efficiency (by means of green loans for SMEs and industrial intermediate-sized enterprises, grants from the Agency for the Environment and Energy Management (ADEME) for research into energy efficiency in industry and reductions in the public electricity grid usage tariff for companies that consume a lot of energy and that introduce an energy efficiency policy) and recovering waste heat (with mandatory cost/benefit analyses for new installations that generate waste heat with a view to determining whether this heat could be used in a district heating or cooling network).²

Brief evaluation of the overall size and scope of national actions in relation to the replacement of electric motors and the EU-MORE project as a whole

France’s White Certificates Scheme includes several action types related to electric motors, including one about high efficiency motors (IE4 class) up to 1 MW. These larger motors can be eligible as a specific action, requiring an energy audit before approval.

² [France 2019 final NECP](#)

No other related measures were found in this policy review.

1.1 Measure 1: White Certificates Scheme [Certificats d'Economies d'Energie – CEE]

	Overview
Short Description	The catalogue of the scheme includes several action types related to electric motors, including one about high efficiency motors (IE4 class) up to 1 MW. However, the way this action is counted does not differentiate whether this would be an early replacement or not. Larger motors can be eligible as a specific action, requiring an energy audit.
Responsible Authority	Ministry in charge of energy (Ministry of Ecological Transition)
Status	Ongoing
Issue Date	2005
Start Date	July 2006
Ending Date	No ending date
Duration	17 years until now (and to be continued)
Reference:	https://www.ecologie.gouv.fr/operations-standardisees-deconomies-deenergie

1.1.1 Main Description

A detailed description of the policy measure – including references to (if applicable) anchoring national law, EU directives, other schemes

The scheme has been created by the national Energy Law adopted in 2005 and started officially in July 2006. It sets mandatory energy savings targets on energy suppliers. The energy suppliers can meet their target by acquiring white certificates, either with their own programmes or buying them on the market. The most common way to get certificates is to use the catalogue of the 200+ types of standardised actions (88% of the white certificates in 2018-2021). It is also possible to get certificates from specific actions reported with energy audits (3.6%), or by funding accompanying programmes selected by the ministry through calls for programmes on topics defined by the ministry (8.4%).

The scheme covers all end-use sectors, including the industry. Until 2019, the industrial sites covered by the EU ETS were not eligible. They can now be eligible under certain conditions. It should be noted that, even if the scheme is cross-cutting, it has aimed primarily to achieve energy savings in buildings (where it is possible for end-users to cumulate incentives from white certificates with public incentives). Nevertheless, the amount of white certificates from actions in industry has increased over time.

The parties that can apply for white certificates are the obligated parties (energy suppliers), delegated parties (organisations contracted by obligated parties to meet part or all of their

energy savings target) and eligible parties (local authorities, social housing body and the national housing agency). End-users cannot apply for white certificates, however they can benefit from the support offered by the obligated, delegated or eligible parties. This support is most often a financial support (e.g. grant or soft loan). It can also be a tailored technical support, but this is rare as it is more difficult for the obligated parties to demonstrate that they had a material role in the implementation of the energy efficiency actions.

The standardised actions are defined with technical specifications (e.g. minimum efficiency requirements, capacity range, installation by a professional, applicable technical standard(s) to be met). These specifications also set the data to be reported for each action. The specifications' factsheets (in French) are given below as hyperlink on the catalogue's code of each action type.

List of standardised actions related to electric motors (as of July 2023), with their code in the catalogue:

Most of these action types are about industry:

- [IND-UT-132](#): asynchronous motor of class IE4
- [IND-UT-102](#): variable speed drive on asynchronous motor
- [IND-UT-114](#): permanent magnet or reluctance synchronous motorised variable speed drive
- [IND-UT-133](#): electronic control system for an electric motor with energy recovery
- [IND-UT-136](#): motor-controlled systems

There are also two action types about services:

- [BAT-EQ-123](#): permanent magnet or reluctance synchronous motorised variable speed drive
- [BAT-TH-112](#): variable speed drive on asynchronous motor

In case of actions not covered by the catalogue, they can be submitted as specific actions. The submission file shall then include an energy audit, and the payback time shall not be less than 3 years. The methodology to document a specific action has been defined by ADEME (French agency for ecological transition).

	Characteristics
Budget	<p>The public budget is for the administration of the scheme.</p> <p>The financial incentives are funded by the obligated parties. For the period 2018-2020, it was estimated to represent about 2 billion euros per year. It is likely to be about 4 to 5 billion euros per year in the current period (2022-2025).</p> <p>The funding used for actions related to electric motors cannot be estimated, as the incentives vary according to the action type and the obligated party.</p>
Financing of the measure	<p>The scheme is funding by the obligated parties, energy suppliers. They recover their cost on the energy bills. So ultimately, the scheme is funded by the energy consumers (instead of taxpayers in case of public funding).</p>
Policy focusses	<p>Focus on 'physical' actions (investments in energy efficiency technologies or solutions).</p>

Intervention Type	Financial incentives for energy efficiency actions
Main Barriers Addressed	<ul style="list-style-type: none"> Primarily the financial barriers, as the scheme makes that financial incentives are offered to end-users for implementing energy efficiency actions. The scheme also addresses the information barriers, as the obligated parties have a direct interest in making their customers and other end-users aware of the energy efficiency solutions relevant to them. Energy suppliers have direct contact with end-users, and also have large marketing and information capacities (much larger than ministries or public agencies). The catalogue of standardised actions is also a way to make end-users aware of energy efficiency solutions available on the market. The scheme might also help to develop the supply chain of energy efficiency actions: the white certificates market can help to increase the viability of business models for the actions eligible to the scheme. Obligated parties also have an interest to develop partnerships with manufacturers or installers, to optimize their programmes and reduce their costs.
Key Driver(s)	The scheme was adopted in 2005, after the electricity and gas markets started to be liberalized. This made that the former agreements on energy efficiency between the national monopolies for electricity and gas and the national energy agency could not be continued. The government then decided to replace these agreements with a market-based mechanism. It has then become progressively the main French energy efficiency policy. Between 2006 and 2022, the equivalent annual target has been multiplied by a factor of more than 40.
Replicability	High: currently 13 Member States implement an Energy Efficiency Obligation Scheme (the general type of policy instrument to which white certificates belong), whose 4 EEOS include white certificates (France, Italy, Poland and Spain).
EU Inclusion	Yes: the white certificates scheme is the single policy measure reported by France to the energy savings obligation set by the Energy Efficiency Directive (formerly Article 7 now Article 8). It is therefore included in all reporting of France to the European Commission about energy efficiency (formerly the National Energy Efficiency Action Plans and annual reports to the EED; now in the National Energy and Climate Plans, and in the National Energy and Climate Progress Reports).
Related Characteristics	

1.1.2 Impacts

A detailed description of the final (expected) results of the measure implementation and any achievements related to the measure implementation.

Key results from the period 2018-2021:

17.7% of white certificates from actions done in industry
Main action in industry is not electric motor, but heat recovery on cooling units that represents 54% of white certificates achieved in industry.
The main action related to electric motor is motor-controlled systems, that represents 10 times less certificates (5.4%).
However, in terms of number of actions done in 2019-2021, the most frequent action in industry was variable speed drive on asynchronous motor, with 4 281 actions (vs. 1 294 actions of heat recovery on cooling units).

For more details, see the report on the 2018-2021 period (in French):

<https://www.ecologie.gouv.fr/sites/default/files/VF%20CEE%20Bilan%20P4vIntegrale.pdf>

Data for year 2022:

4 366 variable speed drives on asynchronous motor
1 727 motor-controlled systems

For more details, see the 2022 annual report (in French):

<https://www.ecologie.gouv.fr/sites/default/files/Bilan%20annuel%20CEE%20P5%20-%202022.pdf>

	Impacts
Case level impact	High (main French policy for energy savings)
Policy level impact	High
Size	<p>An increasing trend can be seen in the number of actions related to electric motors: 4.281 actions of variable speed drives on asynchronous motor over 2019-2021 4.366 actions of variable speed drives on asynchronous motor in 2022</p> <p>The detailed data per efficiency level and power range are not publicly available.</p> <p>It should be noted that for new motors, the scheme complies with the additionality principle of Article 8 (formerly Article 7) EED, meaning that only the energy savings beyond the minimum requirements set in the Ecodesign regulations are eligible. The baseline may also be updated according to the market average.</p>

	In practice, IE2 and then IE3 motors are no longer eligible since April 2022 and September 2022, respectively. New motors up to 1 MW shall now be at least IE4.
Energy	N/A for motor replacement action specifically
Impact evaluation	<p>An ex-post evaluation of the scheme has been done in 2019. However, it did not look specifically at actions related to electric motors. As the largest amount of certificates comes from the residential sector, the conclusions from the evaluation are not necessarily relevant to the case of electric motors.</p> <p>However, the trends in white certificates show that the number of certificates from actions done in industry has increased over time. The scheme has thus been effective in supporting energy efficiency actions in industry.</p> <p>The data available also show that the action types in industry that brought the largest amounts of certificates are the ones related to heat recovery. This is likely related to the additionality rules, making that heat recovery actions get 'full' savings (before/after comparison), whereas actions related to electric motors are credited for 'additional' savings only (see below about calculation methods).</p> <p>Nevertheless, actions related to electric motors represent the largest number of actions (see data above). It is then also likely that actions related to electric motors are, on average, smaller than the ones related to heat recovery (in terms of energy consumption).</p> <p>There are also accompanying programmes to promote energy management in companies. This supports the identification of cost-effective energy savings opportunities, including about electric motors.</p>

Description of the method used for calculating the final energy- / cost- savings achieved through the measure.

Only the results from the calculation methods are publicly available (i.e. the ratio of energy savings per action type). The detailed calculation methods can be asked to the ministry or ADEME. They are likely to be similar to the calculation method about early replacement of electric motors developed by the streamSAVE project. However, with the main difference that the French scheme does not seem to differentiate the case of early replacement. Which means that the baseline used in the French scheme is either the minimum energy performance requirements set in the Ecodesign regulation for electric motors, or the market average.

1.1.3 Lessons Learnt

Description of the lessons learnt and/or (initial) feedback gathered in response to the measure's implementation. The main barriers found that hamper and/or the conditions that are necessary for the implementation of the measure.

Actions related to electric motors can be addressed in catalogues of standardised actions. Which makes possible to streamline their monitoring and the crediting of the related energy savings. It is however difficult to know what shares of the actions would have been done anyway, in the absence of the scheme. Especially now, as the scheme has been in place for already 17 years, making that it is almost impossible to define a counterfactual.

As part of the monitoring process for the white certificates, it is possible to collect a minimum set of data (e.g. nominal power of the motor). However, these detailed data are not publicly available.

Obligated parties likely compile the data they collect about the actions they support (including invoices, and thereby cost data). Therefore, they also develop a detailed knowledge about energy efficiency actions. However, information and knowledge are then a key competitive advantage in the market of white certificates, making that the detailed data are not shared.

The public authorities have also developed their knowledge and skills in piloting the scheme, and especially in avoiding too strong variations in the price of white certificates. This is essential, as too strong variations can affect significantly the market players and their business models. The price should be high enough to be attractive for market players to engage in the market, but not too high, as otherwise this makes it too difficult for obligated parties to meet their target and this can have a too high impact on energy prices (as obligated parties recover their cost on energy prices).

The main principle of such a market-based mechanism is that obligated parties are free to support the action types they want, as long as these action types are eligible to the scheme. The rationale of such scheme is that it is supposed to support the most cost-effective actions, which means in this context, the actions that the obligated parties can trigger with the least efforts from their side. In practice, obligated parties estimate the ratios of certificates they can get according to their cost to get these certificates. They might also prioritize action types that are strategic to them, for example to retain or gain customers.

The public authorities can also adapt the rules to prioritize action types in line with their policy priorities. This can be done for example in the way to define the baseline for the energy savings calculations (e.g. crediting 'full' or 'additional' savings), or using bonuses that will increase the number of certificates per action, independently of the energy savings achieved, and thereby making the action types with bonuses more attractive for obligated parties.

In its current settings, the French white certificates scheme does not prioritize the early replacement of electric motors. The policy priority is to promote building renovations and the replacement of fossil fuel heating systems, and to a lesser extent car pooling (ride-sharing). The scheme also aims to tackle energy poverty and achieve a minimum share of certificates among low income households (to compensate the distributional effects due to the increase on energy prices from the obligated parties' cost recovery).

Nevertheless, the size of the scheme makes that it is clearly a driver for energy efficiency actions in industry. Moreover, the long history (started in 2006) and the visibility about its continuation make that it is a major component of the energy efficiency markets in France, well known by the market players (energy companies, end-users, manufacturers, installers, etc.).

	Lessons Learnt
Key takeaways	<ul style="list-style-type: none"> • Main energy efficiency policy • Actions in industry not the policy priority of the scheme, but the size of the scheme makes that it is very likely the main driver for standardised actions in industry. • Actions related to electric motors do not represent the largest share of white certificates achieved in industry, but they do represent the largest number of actions done in industry. • The specific case of 'early replacement' of electric motors is not yet considered in the scheme (new high efficiency motors are eligible vs. a baseline at least equivalent to the minimum requirements of the Ecodesign regulations or the market average).
Recommendations	It would be interesting to discuss whether the specific case of 'early replacement' of electric motors could be credited with a different baseline, to value the promotion of anticipated replacements of the least efficient motors (similarly to the recent legislation requiring the renovation of the least efficient buildings in case of lease or sale).
Linked measures	
Reference(s)	<p>(all sources below are in French)</p> <ul style="list-style-type: none"> • Official information, reports and data on the ministry's website: https://www.ecologie.gouv.fr/politiques/certificats-economies-denergie • Guide prepared by ADEME in 2020 to present the scheme to companies: https://librairie.ademe.fr/changement-climatique-et-energie/3008-certificats-d-economie-d-energie-pour-les-entreprises-9791029709876.html • Page on the scheme on the website of ATEE, professional association that gathers the market players (energy companies, ESCOs, manufacturers, ...) and coordinates the technical working groups that propose new or revision of standardised actions: https://atee.fr/efficacite-energetique/club-c2e/les-certificats-deconomie-denergie
Other	<p>Responsible authority: Ministry of Ecological Transition (DGEC – General Directorate on Energy and Climate)</p> <p>Supporting agency: ADEME (French agency for ecological transition)</p> <p>Other supporting body: ATEE (French association of market players, coordinating the technical working groups of the scheme)</p>



Thoughts, comments, considerations ...	
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Table 1: National Policy Measure Overview – France

#	Measure Title	Short Description	Type of Measure	Start Year	End Year	Duration	Target Groups	Source link / Reference	Case Level Impact of the measure
1	White Certificates Scheme	Sets mandatory energy savings targets on energy suppliers. The energy suppliers can meet their target by acquiring white certificates, either with their own programmes or buying them on the market. The scheme Includes several actions related to electric motors, including high efficiency motors (IE4 class) up to 1 MW.	Financial incentives for EE	2006	Ongoing	>17 years	Companies	link	High

