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EUROPEAN UNION'S ENERGY EFFICIENCY POLICY – NEW DEVELOPMENTS AND CHALLENGES FOR MEMBER STATES

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Abstract: *The European Union (EU)'s energy efficiency policy has seen significant development over the last 15 years. The adoption of Directive (EU) 2023/1791 in September 2023 brings major changes compared to previous directives, namely Directives (EU) 2012/27 and 2108/2022. The new legislation introduces more ambitious targets and stricter requirements for Member States in terms of energy transition. This paper will discuss the recent changes in legislation, including a review of the integrated national plans for energy and climate (NECPs) of 2023 submitted by member states last year, as well as the European Commission (EC)'s evaluation of all these plans (COM (2023) 796 final). It will provide a renewed perspective on challenges encountered by the EU member states when implementing these measures and the overall impact related to performing the energetic sustainability targets at the European level. Our findings will show that the last Directive (EU) 2023/1791 witnesses for the first time the "energy efficiency first" principle in the EU. Besides, the EU's 2020 reference energy efficiency scenario for the energy consumption reduction of at least 11/7% up to 2030 sees itself finally renewed. However, despite this, only 21 EU member states succeeded in being on time with their newly updated integrated national plans for energy and climate – i.e., it is only them that have yet to comply with this given 2030 target.*

Keywords: *energy efficiency, integrated national energy and climate plans (NECPs), energy policy, EU member states, European Union (EU)*

JEL Classification: *Q40, Q43, Q48*

1. Introduction

Energy efficiency refers to using the minimum amount of energy needed to perform a task or process, with no energy wasted. This means reducing energy use without affecting performance and cutting costs, while also reducing environmental impact (SFH, 2024). This paper will explore energy efficiency as outlined by EU Directives and detailed in the National Energy and Climate Plans (NECPs) of EU member states. Specifically, it will examine new legislation, the role of NECPs in demonstrating member states' commitments, and their role in guiding the energy transition. Additionally, a brief look at the European Commission's evaluation of NECPs (COM (2023) 796 final) will be provided. The study will measure energy efficiency by analyzing primary (PEC) and final (FEC) energy consumption projections up to 2030 for each EU member state, and assess how these projections align with the Commission's monitoring (EC/Directive (EU) 2023/1791).

2. Literature review

There should be mentioned here data sources and studies conducted by international organizations about EU energy efficiency issues. In 2015, the European Commission (EC) and the Intelligent Energy Europe Program of the European Union (EU) conducted a comprehensive study entitled "Synthesis: Energy *Efficiency Trends and Policies in the EU"* (EC, 2015b), covering the period from 2000 to 2013 and based on 200 key indicators. The study examines the overall energy efficiency trends for the EU27 as well as for individual member countries. One key-finding was that the 2008-2009 crisis negatively impacted energy efficiency trends and the long-term policy implementation. However, after 2010 the trends showed a recovery, i.e., returning to pre-crisis levels.

The International Energy Agency (IEA), which plays an important role in developing energy indicators related to energy consumption and energy efficiency, conducted a study in 2018 – *"Analysis and Outlooks to* 2040". This study indicates that there is potential for about a 40% reduction in greenhouse gas emissions even without the introduction of new technologies. The IEA also suggests that the global landscape could change significantly if all countries fully implement their energy efficiency potential by 2040 (IEA, 2018). In another study of 2019, the IEA also highlighted the multiple benefits of energy efficiency: energy efficiency reduces the need for primary energy and the costs of energy imports, supports physical and mental health by improving conditions in household-homes and workplaces, has a positive impact on GDP, creates

jobs, and improves employee productivity by ensuring a healthier and more comfortable work environment, thereby reducing absenteeism (IEA 2019).

Energy efficiency is considered the most effective solution to the challenges of energy affordability, supply security, and climate change. For this reason, the IEA (2022, p.19) refers to it as the "first fuel" of all energy transitions. We should also mention here our main data source, Eurostat (2022), which provides the newest and reliable data about energy consumption trends and the EU's 2020 and 2030 energy efficiency targets through the *Energy efficiency statistics*.

3. Methodology

In order to carry out a brief analysis of energy efficiency policies within the European Union, we adopted a methodological approach with a series of stages as: (i) a review of the specialized literature, including European Commission reports, directives and regulations on energy efficiency; (ii) at the same time, we also examined in detail the National Energy and Climate Plans (NECPs) of each EU member state since they were submitted for the first time in draft form in 2020 and until further updates; (iii) the assessment of the European Commission on these national plans for energy was analyzed in the end.

In order to give depth to this analysis, in addition to the legislative documents, we also analyzed the statistical data provided by Eurostat, the International Energy Agency (IEA) and other relevant sources in order to have a clear picture regarding the reduction of primary energy consumption and final, energy savings, as well as the distance from the energy efficiency targets proposed for 2020 and 2030 in the case of each EU member state. These objectives and national data were then compared with the recommendations and evaluations of the European Commission in order to identify discrepancies and propose solutions to improve the alignment and effectiveness of energy efficiency policies.

4. Results and Discussion

In 2012, EC adopted its first energy efficiency Directive (EED) which established a common framework of measures to promote energy efficiency within the European Union, measures necessary to achieve the main objective of energy efficiency by reducing the EU's annual energy consumption by 20% until 2020 (Directive 2012/27/EU). In 2018, the European Commission proposed a new form of the EED directive, to improve energy efficiency in the European Union and to achieve climate change and clean energy (from renewable sources) objectives (Directive 2018/2002). This new directive

included more ambitious targets to reduce final energy consumption and increase the use of renewable energy sources, as well as measures to improve energy efficiency in the construction and transport sectors. In May 2022, as a result of Russia's military invasion of Ukraine, the Commission proposed the REPowerEU plan (COM/2022/230 final) with new objectives to further increase the ambition to reduce energy consumption and this time to limit as much as possible the EU's dependence on imports of fossil fuels from Russia (Andrei, 2023). The new Directive on energy efficiency was finally adopted in 2023 (Directive (EU) 2023/1791 and represents the cornerstone of EU energy efficiency policy (EP, 2023b).

4.1. Main points and improvements of the new Directive (EU2023/1791)

Applying the principle of "energy efficiency first" becomes compulsory for the first time with the new Directive (EU 2023/1791) that explicitly imposes to the EU Member States to include the energy efficiency in their political decisions – e.g., on investment planning in both the energetic sector and the other non-energetic sectors.

The new EU Directive equally reaches a specific energy efficiency target for 2030, i.e., a supplementary reduction of the final energy consumption (FEC) of 11.7%, as related to what was in 2020, as noted in Directive (EU 2023/1791, Art. 4/1). Another important new legislation provision regards the yearly *energy savings* that the EU member States are called to implement. And these targets nearly doubled – e.g., as high as 1.49% currently, as compared to 0.8% previously. Finally, these savings will be supposed to approach an average of 1.9% step by step up to the end of 2030 while referring to sectors like industry, constructions and transportations in the use of final energy consumption (FEC / Directive /EU/ 2023/1791 Art.8).

As for the *public sector* – about 5-10% of the EU's FEC on average – this Directive demands the member States for a yearly reduction of at least 1.9%, as compared to 2021. Besides, at least 3% of total surface used by the public administration at all levels and in all territories is demanded to be renovated (Directive /EU/2023/1791 Art. 5/1). Also to be noticed that this level of energy saving in the public sector could naturally be yielded by measures taken in a diversity of sectors like: transportations, public buildings, healthcare, water, including waste water management, sewages, waste management, district heating and cooling, energy distribution and storage, public lighting, infrastructure, education and social services (Directive /EU/ 2023/ pt.35). It is here assessed for any individual EU member country with more than 3% of total surface of public buildings renovated the capability to enrich its next-future year renovation quota with the current year surplus, as reported (Directive /

EU/ 2023/1791/pt.40). Actually, renovation is expected to turn those buildings into almost no energy consumption and zero carbon emissions establishments.

The same Directive here define the *energy poverty*. This is "no access for a household to basic energy related services – i.e., heating and cooling, warm water, lightening, plus the energy afferent to electrical appliances" (Directive EU 2023/1791/pt.52). Member States are called to settle their own definitions on the *vulnerable customer* – i.e., in terms of quantification: incomes, weight of energy specific expenses in total/ disposable income, the home-building specific energy efficiency, the age, health and others relevant criteria of dependency on electrical appliances, as also suggested by the European Commission (EC) – in order to have further related provisions, e.g., on prohibiting any disconnection of these customers in critical situations from electricity (Directive EU 2023/1791 pt.77).

Another important provision of this Directive regards the *small and middle size enterprises (SME),* i.e. for programs in the EU member countries sustaining *audit actions* in the area of energy and their recommendations to be implemented. It is as such that the *average energy consumption of the enterprise* becomes the basic criterion for the applied systems of energy management and audit (Directive EU 2023/1791, pt.82). All enterprises – i.e., firms, companies, here including SME – are demanded for a system of *energy management* implemented once they overpass the 85 TJ a year energy consumption – i.e., it is the *energy audit* that applies when not. This audit is a systematic procedure to obtain the adequate information on the energy consumption profile proper to: a building or to a group of buildings, an operation or an industrial or commercial facility, a public or private service provided (Directive EU 2023/1791, pt.32).
According to the same Directive, member States are called to promote/ produce *local plans for heating and cooling in (big) cities of over 45,000 inhabitants* (Directive EU 2023/1791, Art.25/6). In context, a revised definition for *district heating and cooling* systems will so be introduced.

Financing the energy efficiency – another chapter of this Directive's provisions – is the one calling the same member States for promoting and sustaining new, renewed and innovative credit products, procedures and schemes – called "green" – in favour of the energy efficiency (Directive EU 2023/1791 pt.135).

4.2. Updating NECPs' projects (2023) according to the new energy efficiency objective

Like several revisions of all the EU directives on energy efficiency, in turn the individual energy and climate plans (NECPs) of the 27 member States needed to be updated to show how they found to meet the targets of energy

efficiency by reducing energy consumption, first for 2020 and now for 2030. These intervals are intermediate to the ultimate goal of reaching climate neutrality in 2050. When the first NECPs were completed (2020), the majority of countries' proposals for the 2030 energy efficiency targets were considered to have low, very low, or modest ambition. Now, Member States revised their plans to comply with the new energy efficiency Directive (EU) 2023/1791 concerning the achievement of 2030 targets of 11,7 % to reduce the final energy consumption. The NECPs updated were expected to demonstrate increased ambition in terms of objectives, targets, and contributions and required to be submitted by 30 June 2023 in a draft form.

4.3. The main findings of the European Commission (EC) on the draft updated plans on energy efficiency (COM 2023 796 final)

The Commission initially analyzed only 21 of the 27 updated draft plans of the EU member States (updated draft NECPs), namely those that were submitted until the middle of November 2023, so that the analysis could have been published by the end of last year 2023. A first finding highlighted that current projects would only lead to 5.8% improvements in energy efficiency, compared to the EU-wide target of 11.7% set in the revised Energy Efficiency (Directive (EU 2023/ 1791). Although most EU Member States have presented their contributions to the 2030 energy efficiency targets, only a few of them have proposed sufficiently ambitious levels.

Three other Member States submitted their projects too late (Belgium on 30 November 2023, and Ireland and Latvia on 8 December 2023) so that the country-specific assessment could not be completed until the end of 2023, being partially taken into account in this communication COM (2023) 796 final. The following year, 2024, on 23 February, the Commission published its assessments of the updated drafts of the National Energy and Climate Plans (NECPs) for the 2021-2030 interval of Belgium, Ireland and Latvia. These assessments include recommendations on the areas where these countries should step up their ambitions to comply with the EU's 2030 targets, together with an explanatory fact sheet for each country (EC, 2024a).

Bulgaria submitted its National Energy and Climate Plan (NECP) draft updated to the Commission on 12 January 2024 and is currently facing infringement proceedings. Finally, the last two EU countries, Austria and Poland, have not submitted their Plan drafts as of April 2023. These two countries are also facing infringement proceedings for failing to meet the deadline -- i.e., then, Poland submitted a NECP draft on 5 March 2024 during the writing of this article. The Commission was published new Recommendations on the draft National Energy and Climate Plans for Bulgaria and Poland on 26 April 2024 (EC, 2024b).

5. Conclusions

The changes of the new 2023 Energy Efficiency Directive (EU) 2023/1791 compared to the previous directives, 2018/2002 and 2012/27/EU, briefly include the following:

- *"Energy efficiency first"* principle is now legally defined for the first time;
- A new target is set to reduce EU aggregate final energy consumption (FEC) by 11.7% by 2030 (compared to the 2020 reference scenario).
- A new goal of increasing energy savings is set as follows: from annual savings of at least 0.8% of final energy consumption (currently) to 1.3% (2024-2025), then 1.5% (2026-2027) and 1.9% starting in 2028. This results in an average of 1.49% new annual savings for the period 2024-2030).
- Another important provision refers to the obligation of member States to give priority to vulnerable customers and social housing so that they are not affected by energy saving measures.
- A new annual goal of reducing energy consumption of 1.9% for the public sector as a whole is also introduced.
- Extension of the obligation to renovate 3% of central administration buildings
- The obligation for enterprises, including SMEs, to have an energy management system and to carry out energy audits.
- The obligation of the member States to monitor the energy performance of data centers
- local heating and cooling plans in larger municipalities is also foreseen.

Then, there is the member States' turn, with their NECPs updated, to support the EC energy efficiency policy. Judging by the degree of low ambition within which the countries were assessed according to the first NECPs proposals for 2030, there can asserted that only part of the countries was in the satisfactory situation of having reached the targets for 2030, but the question also arises whether they will manage to maintain this downward trend and whether the rest of countries will align to the new binding targets of new Directive. The degree of ambition of member States and their alignment with the new objectives were detailed by the EC in several stages: (i) for the States that submitted their plans on time; (ii) then, for the other States that delayed, in two more additional stages. Additionally, the EC has instituted infringement procedures against those States that failed to meet their obligations to submit contributions to the reduction of final energy consumption for 2023 on time.

Key questions yet to be answered

Could the policies formulated as described above fail? Are the 2030 specific targets realistic, especially considering the time allowed for their implementation? What about the NECPs on the Member States' side? Will they reconsider their ambitions in line with the EU's recommendations for necessary reforms before submitting their final NECPs by the deadline of 30 June 2024? Furthermore, could the 2050 long-term objectives be in some real danger? What would be the full and exact causes of a potential failure?

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