

# ENERGY EFFICIENCY FIRST: OVERCOMING THE HURDLES?\*

*Lisa Pinto Ferreira\*\**

## INTRODUCTION

Energy efficiency is one of the five dimensions of the Energy Union. As such, it is the subject of two directives in the Clean Energy Package,<sup>1</sup> and the Governance Regulation (EU) 2018/1999 foresees it as a key aspect to be addressed by the Member States in their national energy and climate plans (NECPs). Also, these plans are expected to incorporate the “energy efficiency first” principle, meaning that Member States shall consider the value of investing in efficiency – including energy savings and demand-response initiatives – in all policy, planning and investment decisions regarding the energy system development, and whenever efficiency improvements prove to be more cost-effective or valuable than investing in supply-side infrastructures (such as new power generation or grids), prioritize them.

Yet, despite the policy developments at EU level since 2006,<sup>2</sup> energy efficiency is still far from being a front-runner, and the younger and related “energy efficiency first” (EE1st) principle has been struggling for implementation.

A recast of the Energy Efficiency Directive (EED) was proposed by the European Commission as part of the “Fit for 55” Package within the

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\*\* Energy law adviser. Lawyer.

1 Directive (EU) 2018/2002, amending Directive 2012/27/EU, on Energy Efficiency, and Directive (EU) 2018/844, amending Directive 2010/31/EU, on the Energy Performance of Buildings (EPBD).

2 With the adoption of the Energy Services Directive.

European Green Deal<sup>3</sup>, with the purpose of fostering energy efficiency as an effective priority across all sectors, removing barriers in the energy market and overcoming market failures that hamper efficiency in the supply and use of energy. The proposal for a new EED includes a specific provision regarding the EE1st principle (Article 3) and another (Article 25) that intends to clarify and enhance the role of national regulatory authorities in implementing the EE1st principle, both in their decisions on the operation of the electricity and gas infrastructure and in ensuring that the electricity and gas transmission system operators (TSOs) and distribution system operators (DSOs) apply the principle in their network planning, network development and investment decisions.

The recently issued Commission Recommendation (EU) 2021/1749 *on Energy Efficiency First: from principles to practice – Guidelines and examples for its implementation in decision-making in the energy sector and beyond*, following the EU Strategy for Energy System Integration<sup>4</sup> and complementing the proposal for a recast of the EED, provides a good opportunity for a brief analysis on energy efficiency and the EE1st principle at EU level, subject to further developments.

## 1. ENERGY EFFICIENCY

### 1.1. A pillar and a gap

What exactly is “energy efficiency”? According to Article 2 of the EED, it means “*the ratio of output of performance, service, goods or energy, to input of energy.*”<sup>5</sup> In simpler terms, energy efficiency means using less energy to achieve the same level of result, eliminating the waste of energy, both in the conversion of primary energy to final energy and in the consumption of final energy.

Energy efficiency is not only a decarbonization instrument, albeit being an important one: it serves other relevant purposes and thus it stands as a *pillar*

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3 In view of the new climate target of 55% reduction of greenhouse gas emissions by 2030 inscribed in the European Climate Law (Regulation (EU) 2021/1119).

4 COM(2020) 299 final.

5 Article 194 (1)(c) TFEU states that “[...] Union policy on energy shall aim, in a spirit of solidarity between Member States, to: [...] (c) promote energy efficiency and energy saving and the development of new and renewable forms of energy”.

of the Energy Union<sup>6</sup>. It is also considered an energy source in its own right, in which the public and the private sectors can invest ahead of other more complex or costly alternatives (“save before you build”)<sup>7</sup>.

It is rather puzzling that despite the aforesaid the reality shows a clear *delivery gap*. Indeed, it is generally accepted that energy efficiency is the most cost-effective way to reduce emissions, lower energy bills for households and industries, reduce energy poverty, improve energy security by reducing demand for energy imports and dependence on suppliers of fossil fuels, and deliver better air quality and better health. All these made energy efficiency won the epitome of “the low hanging fruit”.

But something did not go as expected: the last available data by the European Environment Agency<sup>8</sup> points out to the 20% reduction binding target on energy efficiency for 2020 being met *only* because of the impact of covid-19 on energy consumption<sup>9</sup> and not because of structural changes – thus, with strong *risks of rebound*.

Also, according to the European Commission’s assessment of the final NECPs,<sup>10</sup> the aggregative energy efficiency ambition of the Member States amounts to a 29.7% reduction for primary and 29.4% for final energy consumption, which represents a *gap* of 2.8 percentage points for primary and 3.1 percentage points for final energy consumption in respect to the 32,5% reduction target for 2030 foreseen in the Clean Energy Package. Hence, as stressed in the State of the Energy Union 2021 Report, “[t]his will require the updating and proper implementation of the NECPs with new measures being planned to bridge the collective ambition gap of the current NECPs.”<sup>11</sup>

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6 Along with decarbonization, energy security, internal energy market and research, innovation and competitiveness.

7 Commission Recommendation (EU) 2021/1749, recital 8.

8 <https://www.eea.europa.eu/data-and-maps/indicators/final-energy-consumption-by-sector-13/assessment>

9 Previous data from the Eurostat pointed out to the energy efficiency target not being met by 3,0% in primary energy consumption and by 2,6% in final energy consumption ([https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy\\_saving\\_statistics#Primary\\_energy\\_consumption\\_and\\_distance\\_to\\_2020\\_and\\_2030\\_targets](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_saving_statistics#Primary_energy_consumption_and_distance_to_2020_and_2030_targets)).

10 COM(2020) 564 final, p. 6.

11 COM(2021) 950 final, p. 12.

## 1.2. The need to go further

The proposal for a new EED recognizes the need to substantially increase the efforts on energy efficiency and, accordingly, sets more ambitious targets for reducing energy use at EU level – 39% for primary and 36% for final energy consumption<sup>12</sup> -, and makes those targets binding at EU level, since the current target of a 32,5% reduction<sup>13</sup> for both primary and final energy consumption is merely indicative.

Despite national targets remaining indicative, the proposal introduces a formula for Member States to set their national indicative contributions to the (now) binding EU target and adds delivery gap mechanisms to those foreseen in the Governance Regulation.

Among other changes, the proposal nearly doubles Member State’s annual energy savings<sup>14</sup> obligations in end use (from current 0,8% to 1,5%) and strengthens the obligation of the public sector to play a leading role by introducing an annual renovation obligation of at least 3% for public buildings, which are considered in wider terms, comprising all buildings owned by public bodies at all administration levels and in all sectors of public bodies’ activities.

It also gives special attention to the EE1st principle, as explained below.

## 2. THE “ENERGY EFFICIENCY FIRST” PRINCIPLE

### 2.1. The Clean Energy Package

The Clean Energy Package translated into legislation the goals of the Energy Union and enshrined the EE1st principle in the Governance Regulation<sup>15</sup> as an overarching theme linking the initiatives on energy efficiency, including on the energy performance of buildings, renewable energy and market design. The idea behind the principle is that energy efficiency, along with

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12 Calculated using the new 2020 Reference scenario baseline.

13 Calculated using the 2007 Reference scenario baseline.

14 According to Article 2(5) of the EED, “energy savings” means “an amount of saved energy determined by measuring and/or estimating consumption before and after implementation of an energy efficiency improvement measure, whilst ensuring normalisation for external conditions that affect energy consumption”.

15 Articles 2(18) and 3(3)(b) and Recital 64.

demand-side resources and flexibility,<sup>16</sup> should compete in an *equal footing* with the supply-side resources (*e.g.* generation capacity and grid enlargement) and, thus, should be favored whenever proved more cost-effective than supply-side solutions to a given need.

So, Article 2(18) of the Governance Regulation defined “energy efficiency first” as “*taking utmost account in energy planning, and in policy and investment decisions, of alternative cost-efficient energy efficiency measures to make energy demand and energy supply more efficient, in particular by means of cost-effective end-use energy savings, demand response initiatives and more efficient conversion, transmission and distribution of energy, whilst still achieving the objectives of those decisions.*”

It is worth stressing that, according to this definition, the EE1st principle is *not entirely coincident* with the concept of energy efficiency, which is related to the setting of measures leading directly to energy savings: on the one hand, the EE1st principle goes *beyond* energy efficiency measures and savings by including demand-side resources and flexibility as part of energy efficiency solutions from a system efficiency perspective, on the other hand, as a result of the EE1st being acted, the implementation of an energy-efficient solution is *one of the possible outcomes*, but not necessarily the chosen one.

In turn, the EED stated that it contributed to the implementation of the EE1st principle and provided some additional explanation.<sup>17</sup>

In addition, the Electricity Market Directive included some provisions regarding the procurement of demand response services and energy efficiency measures by DSOs and TSOs whenever such services cost-effectively alleviated the need to upgrade or replace electricity capacity and supported the efficient and secure operation of the distribution and transmission systems.<sup>18</sup> To some degree, this was also foreseen in the Renewables Directive (RED II), when stating that Member States should encourage local and regional administrative bodies to consult the network operators to reflect the

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16 Article 2(20) of the Electricity Market Directive (EU) 2019/944 defines “demand response” as “*the change of electricity load by final customers from their normal or current consumption patterns in response to market signals, including in response to time-variable electricity prices or incentive payments, or in response to the acceptance of the final customer’s bid to sell demand reduction or increase at a price in an organised market as defined in point (4) of Article 2 of Commission Implementing Regulation (EU) No 1348/2014 (17), whether alone or through aggregation.*”

17 Article 1(1) and Recital 2.

18 Articles 32(1) and 40(5) of the Electricity Market Directive.

impact of energy efficiency and demand response programs on the infrastructure development plans of the operators.<sup>19</sup>

However, neither the Governance Regulation nor the Energy Efficiency Directive (or any other piece of the Clean Energy Package) included specific requirements on how the principle should be *applied*. Consequently, most final NECPs only set out limited details on the application of the EE1st principle, without foreseeing cost-effective, technically, economically and environmentally sound energy efficiency measures as alternatives to supply-side solutions in planning, policy and investment decisions.

## 2.2. The European Green Deal

### *a. The strategies*

An important *push* towards the strengthen and operationality of the EE1st came from the EU Strategy for Energy System Integration of the European Green Deal<sup>20</sup>, whereby the EE1st principle is to be applied across the whole energy system and sectoral policies, by giving priority to demand-side solutions whenever these are more cost-effective than investments in energy infrastructure in meeting policy objectives.

The strategy links the EE1st principle to circularity and improved use of resources (resource efficiency) and identifies the issue of a guidance to Member States on how to make the EE1st principle operational as a key action.

The Renovation Wave Strategy<sup>21</sup> also makes the EE1st a *key principle* for building renovation towards 2030, including in the revision of the EPBD.

Finally, the Commission's proposal for the revision of the TEN-E regulation<sup>22</sup> integrates the EE1st principle in the planning and project assessment process by requiring ACER to include the EE1st principle in the framework guidelines for the joint scenarios to be developed by the European Network of Transmission System Operators (ENTSOs) for electricity and for gas, and by requiring the ENTSOs to implement the EE1st principle when assessing the infrastructure gaps and consider with priority all relevant non-infrastructure related solutions.

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19 Article 15(3) of Directive (EU) 2018/2001.

20 COM(2020) 299 final.

21 COM(2020) 662 final.

22 COM(2020) 824 final.

*b. The proposal for a recast of the EED*

A dedicated article regarding the EE1st principle (Article 3) was proposed by the Commission in the recast of the EED as part of the “Fit for 55” Package, to ensure its practical implementation, as follows:

*‘Article 3****Energy efficiency first principle***

1. *In conformity with the energy efficiency first principle, Member States shall ensure that energy efficiency solutions are taken into account in the planning, policy and major investment decisions related to the following sectors:*
  - (a) *energy systems, and*
  - (b) *non-energy sectors, where those sectors have an impact on energy consumption and energy efficiency.*
  
2. *Member States shall ensure that the application of the energy efficiency first principle is verified by the relevant entities where policy, planning and investment decisions are subject to approval and monitoring requirements.*
  
3. *In applying the energy efficiency first principle, Member States shall:*
  - (a) *promote and, where cost-benefit assessments are required, ensure the application of cost-benefit methodologies that allow proper assessment of wider benefits of energy efficiency solutions from the societal perspective;*
  - (b) *identify an entity responsible for monitoring the application of the energy efficiency first principle and the impacts of planning, policy and investment decisions on energy consumption and energy efficiency;*
  - (c) *report to the Commission, as part of the integrated national energy and climate progress reports in accordance with Article 17 of Regulation (EU) 2018/1999 on how the principle was taken into account in the national and regional planning, policy and major investment decisions related to the national and regional energy systems.”*

Furthermore, Article 25 intends to *clarify and enhance* the role of national regulatory authorities in implementing the EE1st principle, both in what regards their decisions on the operation of the gas and electricity infrastructure, including their decisions on network tariffs, and in ensuring that the gas and electricity TSOs and DSOs apply the EE1st in their network planning, network development and investment decisions. Accordingly, it is expected that *i)* only the energy really needed is produced, *ii)* investments in stranded

assets are avoided, and *iii*) demand for energy is managed in a cost-effective way and network losses are reduced, all while taking full account of security of supply and market integration.

To this end, it is foreseen that national regulatory authorities shall provide *methodologies and guidance* on how to assess alternatives in the *cost-benefit analysis*, taking into account *wider benefits*, and verifying the implementation of the EE1st principle by the TSOs or DSOs when approving, verifying or monitoring the projects submitted by such operators.

Also, national regulatory authorities shall ensure the removal of incentives in transmission and distribution tariffs that are detrimental to the *overall efficiency* (including energy efficiency) of the generation, transmission, distribution and supply of electricity and gas.

Some thoughts on the regulatory challenges that come with the aforesaid provisions and the Commission Recommendation (EU) 2021/1749 will be outlined in 3. *infra*.

*c. The Commission Recommendation (EU) 2021/1749 on Energy Efficiency First: from principles to practice*

In view of the need identified in the Energy System Integration Strategy to provide guidance to Member States on how to make the EE1st principle operational across the energy system when implementing EU and national legislation, the Commission issued a total of 8 recommendations, preceded by explanatory recitals. To this end, recital 16 importantly stresses that “[r]egardless of whether the energy efficiency-related action is taken, careful assessment of energy-efficient solutions should always be demonstrated. Reducing the full potential of implementing energy efficiency as an option should be justified. The risk of not applying the EE1st principle is to commit to more expensive solutions, with more negative externalities. In particular, when energy demand is overestimated, investments can lead to underused capacity and stranded assets”. Recital 18 points out the relevance of the EE1st principle for various decisions, in different sectors, taken by policy makers, regulators and market entities, and the particular role of policy makers and regulators in supporting and enabling the proper application of the principle.

In short, the 8 recommendations to Member States are as follows:

1. Ensure that the EE1st principle is applied in *policy, planning and investment* decisions at various decision making levels in a *proportionate* way.



2. Treat the EE1st principle as an *overarching principle* to be applied broadly and in conjunction with other policy objectives, notably regarding climate and security of supply, and not as an ultimate goal to reduce energy consumption.
3. Take a *system approach and wider societal perspective* for cost-benefit analysis when making strategic decisions, designing regulatory frameworks and planning future investment schemes. In this sense, demand side resources and flexibility shall be considered as part of energy efficiency solutions from a *system efficiency perspective* and the principle shall lead to the selection of energy-efficient solutions at asset level, whenever they also represent a cost-effective decarbonization pathway.
4. Verify the *application* of the EE1st principle.
5. Provide *framework conditions* (including adequate incentives) for the application of the principle and *remove barriers* to the EE1st principle in all relevant policy areas and sectors.
6. Provide *information, guidance and assistance* to relevant parties, in particular at local level, and notably through a *cost-benefit assessment methodology* developed by the national regulatory authority that would allow estimating *energy savings co-benefits* and shall be applicable to energy related sectors, in particular energy generation, transformation, transmission and distribution, and energy using sectors, such as buildings, industry, transport, Information and Communications Technology services and agriculture.
7. Collect *data* and *monitor* energy efficiency developments.
8. Follow and promote the *guidelines* provided in the Annex to the Recommendation.

The guidelines aim firstly at policy makers and regulators and are based on a study contracted by the Commission and on preliminary findings of the ENEFIRST<sup>23</sup> and sEnergies<sup>24</sup> projects under Horizon 2020. The purpose therein is to provide useful insights into the actions to be taken by policy makers and regulators in the decision-making process when applying the EE1st principle in specific sectors and policy areas.

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23 <https://enefirst.eu/>.

24 <https://www.seenergies.eu/>.

### 3. CHALLENGES FOR THE NATIONAL REGULATORS AND NETWORK OPERATORS IN IMPLEMENTING THE EE 1ST PRINCIPLE

Despite the aforesaid efforts at the EU policy level to make the EE1st principle an operational tool, notably, to minimize the costs of the energy transition, some challenges come to mind, especially to national regulators and network operators. To name a few:

- a) The EE1st principle can be a difficult concept to communicate and can be perceived as a barrier to investment.
- b) How to effectively compare investments in the supply-side and in the demand-side in order to prioritize, *e.g.*, the option of having a substation and a new wire *versus* procuring flexibility or energy efficiency services from thousands of households? How to get the methodologies and cost-benefit analysis right?
- c) How to establish correct system adequacy scenarios for energy efficiency and demand-side response?
- d) How to enable all capacities to be competitive on the same level?
- e) Considering that in most Member States DSOs and TSOs have a rate of return on capital investment, meaning a direct finance incentive to invest in assets (CAPEX), how can they be incentivized to invest in energy efficiency and demand-response flexibility services (OPEX)?

Therefore, the EE1st principle faces operability and credibility tests that will show whether or not it stands as an important instrument of the EU energy and climate policy.