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Energy efficiency first

From a policy win to sound national plans

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A study commissioned by the European Climate Foundation

April 2019

Disclaimer

The hereby presented analysis and information in regard to draft NECPs is based on self-translation. At the time of writing (February 2019), not all NECPs were available, and few were written in English. This analysis is therefore based on the NECPs which were available in the four languages understood by the author (French, English, German and Italian). See list in Annex I.

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Summary: Guidelines for energy efficiency first in NECPs

With the Energy Union Governance, Member States are required to use a common analytical basis to set their energy targets and measures, and present everything in one single document - the integrated national energy and climate plan (NECP). In this process, they shall take into account the interlinkages between the five dimensions of the Energy Union, in particular the energy efficiency first principle.

This principle is further defined: Member States shall consider alternative cost-efficient energy efficiency measures which would allow achieving the objectives of the concerned energy planning, policy and investment decisions/measures by replacing them in whole or in part.

This paper further elaborates on the history and the benefits of this approach. It also presents a review of 10 draft NECPs submitted by Member States to the Commission (see list in Annex I), with the aim to assess how the energy efficiency first principle was taken into account.

The NECPs' analysis does not show enough evidence that the energy efficiency first principle is rooted in Member States' planning process:

Check 1 - Is energy efficiency first applied as a planning principle?

- Out of the draft NECPs studied, only 1 country outlines its understanding of the principle. It does not explain whether a process is in place to safeguard it.
- The integration of energy efficiency considerations in other policy areas is mentioned by 1 country but without presenting a systematic process.
- 1 country mentions an upcoming strategy that would anchor the energy efficiency first principle but does not provide further detail.

Recommendations for finalising the NECPs. Member States shall:

➔ Explain how the energy efficiency first principle is embedded in the NECP's overall strategy (relevant chapter in NECP: 1.1. ii.)
➔ Describe the structure which is in charge of monitoring the application of the principle (relevant chapter in NECP: 1.2. iv.)
➔ Describe how the principle was enacted in the process of drafting the NECP (relevant chapter in the NECP: 5.1. ii.)

Check 2 - Is energy efficiency first applied when setting the objectives of the different Energy Union's dimensions?

- Overall, there is little information which allows checking the adequacy of the different objectives with robust energy efficiency scenarios.
- The structure of NECPs prevents Member States from using contradicting energy consumption projections but information is missing to assess the interactions between the Energy Union's dimensions.

Recommendations for finalising the NECP. Member States shall:

➔ Adopt an overarching vision for a highly energy efficiency economy and explain how this will boost the rapid decarbonisation of the economy (relevant chapter in NECP: 1.1. ii.)
➔ Clearly state the internal energy market and energy security objectives and explain how these take into account a robust energy efficiency contribution (relevant chapters in NECP: 2.3. and 2.4.)

➔ Request Commission's support in updating the analytical basis to take into account the adoption of new EU and national targets (relevant chapters in NECP: 4. and 5.)

Check 3 - Is energy efficiency first applied when setting the measures of the different Energy Union's dimensions?

- None of the Member States surveyed shows how projects are tested against a robust energy efficiency scenario.

Recommendations for finalising the NECP. Member States shall:

➔ Put in place processes to ensure that energy savings tests are performed for each energy planning, policy and investment decision, and report in the NECP on these processes and on the results (relevant chapter in the NECP: 5.1. ii.)

Check 4 - Is a robust energy efficiency target in place and are the benefits of such a target presented?

- Some Member States present an energy efficiency contribution which is already enacted in national law, or derived from existing objectives.
- Some Member States have based their energy efficiency contributions on the result of a modelling exercise which takes into account the effect of the measures.
- Stakeholders' reviews show that the achievement of the 32.5% EU target is not ensured.
- Because the measures of the five dimensions are considered together in NECPs, the modelling presented by Member States does not allow understanding what would be the consequences of increasing the ambition in the energy efficiency dimension.

Recommendations for finalising the NECP. Member States shall:

➔ Maximise the energy efficiency target after holding a consultation with stakeholders on how to boost energy efficiency measures (relevant chapters in NECP: 2.2. and 3.2)

➔ Present economic, social and environmental benefits of a higher target, and compare it with a situation where a lower target would be set (relevant chapters in NECP: 5.2)

Three initial steps could help enact the principle:

➔ **Prioritisation by the European Commission:** As the European Commission is assessing the draft NECPs, it should pay particular attention to the quality of the information provided in the energy security and internal energy market dimensions, where the data provided by Member States did not allow checking whether the energy efficiency principle was enacted. The Commission should also assess carefully whether the energy efficiency contributions put forward are "robust" as these are the pre-requisite for applying the principle.

➔ **Clear task assignment by Member States:** Member States would benefit from assigning clear responsibilities to an entity in charge of implementing the principle.

➔ **Dialogue with stakeholders:** Feedback from stakeholders both at national and EU levels should help further understand how Member States can improve their energy efficiency target. This will maximise the economic, social and environmental benefits and put economies on track for a faster decarbonisation.

Brief history of the energy efficiency first principle

A lighthouse in the European Commission rhetoric…

On 30 November 2016, the European Commission proposed to update the EU's energy policy framework. The Clean Energy for All Europeans Package[1] was proposed under the overarching theme of energy efficiency first, the Union's global leadership in renewables, and a fair deal for energy consumers.

Legislators took slightly more than two years to achieve a political agreement on the eight different proposals. They notably settled on 2030 targets for energy efficiency[2] and renewable energy[3], definitely discarding the low energy targets supported by the EU's heads of states and governments in October 2014[4].

Although the targets were the object of a particular attention, the negotiations touched upon many more aspects of the energy transition.

The European Commission notably endorsed for the first time the energy efficiency first principle, which had been promoted by stakeholders as a pre-requisite for a rapid and cost-effective energy transition.

As noted by Richard Cowart from the Regulatory Assistance Project (RAP), the concept *"is intended to echo the theme of the International Energy Agency's 2013 Energy Efficiency Market Report, which refers to energy efficiency as the world's 'first fuel'"*. While Cowart notes the existence of other designations for the same concept, the idea is that *"public policy needs to place energy efficiency and customer demand management in a primary position in order to realize the cost, reliability, and environmental benefits of these underutilized European assets"*[5]. The principle was the object of numerous publications by different energy efficiency stakeholders who advocated for reflecting it in EU policies[6].

The Commission describes a similar idea in its proposal for revising the Energy Efficiency Directive (EED)[7]. Recital (2) of the proposal for the EED revision states that the "'*energy efficiency first' principle should be taken into account when setting new rules for the supply side and other policy areas. The Commission should ensure that energy efficiency and demand side response can compete on equal terms with generation capacity. Energy efficiency needs to be considered whenever energy system relevant planning or financing decisions are taken. Energy efficiency improvements need to be realised whenever it is more cost-effective than equivalent supply-side solutions. This should help to exploit the multiple benefits of energy efficiency for Europe's society, in particular for citizens and businesses"*.

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[1] European Commission, Communication, "Clean Energy For All Europeans", COM(2016) 960 final, 30 November 2016
[2] Directive (EU) 2018/2002, Official Journal of the European Union, L 328/2010, 21 December 2018
[3] Directive (EU) 2018/2001, Official Journal of the European Union, L 328/82, 21 December 2018
[4] European Council, Conclusions, EUCO 169/14, 24 October 2014
[5] R. Cowart, "Unlocking the Promise of the Energy Union: "Efficiency First" is Key", RAP, December 2014
[6] For an overview, see Annex II.
[7] European Commission, Proposal, "Directive of the European Parliament and of the Council amending Directive 2012/27/EU on energy efficiency", COM(2016) 761 final, 20 November 2016

This approach is aligned with the statements made by the two European Commissioners in charge of the proposals[8]. The principle is also referred to in the Communication overarching the Clean Energy package proposals[9], although with less detail.

The principle has been influencing the Commission's proposals, but was not meant to become a prescriptive principle for Member States. The only exception to this can be found in the proposal for an Energy Union governance regulation. The regulation was designed to streamline the Member States' planning and reporting obligations[10]. The energy efficiency first principle is indeed mentioned in the template for national energy and climate plans - although hidden in footnotes[11] - as an element which Member States shall consider when outlining measures in the areas of internal energy market and energy security.

…turned into a planning principle for Member States

The proposal for an Energy Union Governance was the result of an important streamlining exercise[12] led by the Commission with input from Member States. For the first time, Member States are required to use a common analytical basis to set their energy targets and measures, and present everything in one single document - the integrated national energy and climate plan (NECP).

The Commission also proposed a pledging system which regulates how Member States set their contributions to the EU energy targets. In the absence of binding targets[13], the process is intended to encourage national and EU-level activities towards common EU targets.

With integrated planning and reporting, the Commission was aiming[14] at breaking down the silos between the various aspects of energy policies. Indeed, these policies had suffered from lack of consistency in the past. For example, E3G showed[15] that gas demand projections used by the Commission to allocate funding for gas infrastructure projects under the Connecting Europe Facility were 30% higher than the Commission's reference scenario for gas demand by 2030, and 72% higher than projections if a 30% energy savings target is met. Analysis of the Commission's 2016 impact assessment for the revision of the EED showed that for every 1% extra energy savings by 2030, EU gas imports fall by 4%[16].

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[8] See for example M. Šefčovič, Driving the EU forward: the Energy Union, 2015 and M. A. Cañete, Towards an Effective Energy Union, 2015
[9] European Commission, Communication, *op. cit.*
[10] European Commission, Proposal, "Regulation of the European Parliament and of the Council on the Governance of the Energy Union", COM(2016) 759 final, 23 February 2017
[11] Footnote 6 of Part 1, Section 3.3 Dimension energy security and footnote 8 of Part 1, Section 3.4 Dimension internal energy market
[12] More information about the streamlining exercise can be found in the Regulation proposal's preamble. The Governance Regulation brought together 50 existing individual planning, integrating 31 and deleting 23. It is due to "reduce redundancy, incoherence, overlaps and lack of integration between energy and climate areas". Member States regularly engaged either at a high level (European Council or Energy Council) or technical one (framework of Technical Working Group on National Energy and Climate Plans).
[13] These were rejected by the European Council conclusions, October 2014 (*op. cit.*). While Member States never had to comply with national binding targets for energy efficiency, this was the case for renewable energy shares.
[14] European Commission, Proposal, "Regulation of the European Parliament and of the Council on the Governance of the Energy Union", *op. cit.*, Explanatory Memorandum
[15] J. Gaventa, "Energy Security and the Connecting Europe Facility – Maximising public value for public money", E3G, September 2014
[16] Stefan Scheuer Consulting, "Benefits of increasing the EU's 2030 energy efficiency targets", 2016

Some provisions in the Commission's proposal intend to tackle this issue. The proposed Article 8, which deals with the analytical basis of the integrated national energy and climate plans, states that Member States are required to describe their assessment of the *"interactions between […] policies and measures within a policy dimension and between […] policies and measures of different dimensions for the first ten-year period at least until the year 2030. Projections concerning security of supply, infrastructure and market integration shall be linked to robust energy efficiency scenarios"*. "Robust" is nevertheless not defined.

During the legislative process, the European Parliament's negotiating team defended a more stringent application of the energy efficiency first principle, as proposed by the Parliament's position[17]. The adopted regulation[18] is a compromise which nevertheless creates legal obligations for Member States.

[17] European Parliament, Report by M. Rivasi and C. Turmes on the proposal for a regulation of the European Parliament and of the Council on the Governance of the Energy Union, A08-0402/2017
[18] Regulation (EU) 2018/1999, Official Journal of the European Union, L 328/1, 21 December 2018

The legal provision and its benefits

The legal provisions…

The adopted Governance Regulation turned "energy efficiency first" into a mandatory principle to be implemented by national governments.

Member States shall, in regard to their integrated national energy and climate plans, take into account the interlinkages between the five dimensions of the Energy Union, in particular the energy efficiency first principle (Article 3). These dimensions are defined in Article 1 of the Regulation: energy security; internal energy market; energy efficiency; decarbonisation; and research, innovation and competitiveness.

The energy efficiency first principle is defined in Article 2.18 of the Regulation as *"taking utmost account, in energy planning, 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 savings, demand response initiatives and more efficient conversion, transmission and distribution of energy, whilst still achieving the objectives of those decisions".*

The interpretation of these elements is sustained by Recital (64), which states that *"Member States should use the energy efficiency first principle, which means to consider, before taking energy planning, policy and investment decisions, whether cost-efficient, technically, economically and environmentally sound alternative energy efficiency measures could replace in whole or in part the envisaged planning, policy and investment measures, whilst still achieving the objectives of the respective decisions. This includes, in particular, the treatment of energy efficiency as a crucial element and a key consideration in future investment decisions on energy infrastructure in the Union. Such cost-efficient alternatives include 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. Member States should also encourage the spread of that principle in regional and local government, as well as in the private sector"*.

…and their consequences

Member States shall consider alternative cost-efficient energy efficiency measures which would allow achieving the objectives of the concerned energy planning, policy and investment decisions/measures by replacing them "in whole or in part":

- "energy efficiency measures" should be listed by the Member State in the Section 3 of the NECPs. These measures relate to the national energy efficiency contributions outlined by the Member State in the Section 2;
- what is less clear is what is covered by the wording "energy planning, policy and investment" "decisions" or "measures". "Measures" are described in the Section 3 of the NECPs, and concern all dimensions of the Energy Union, even though the NECP template highlights that Member States should apply the energy efficiency first principle for measures related to the energy security and the internal energy market dimensions (see previous section). The term "decisions" would be broader and would also apply to targets and objectives.

The energy efficiency first principle is directly applicable in the context of the development (and update) of the national energy and climate plan. Recital (64) specifies that the principle shall be applied "before" taking energy planning, policy and investment decisions. As a consequence, and as the final NECP captures the relevant energy-related decisions, this process needs to happen before its adoption, e.g. before the end of 2019.

While there is no obligation to follow the principle, Member States are required to "take utmost account" of it, a relatively strong wording in EU law.

Benefits of the approach

Applying the energy efficiency first principle in designing all the dimensions of the Energy Union would have several benefits, which are captured by existing literature on this topic (see Annex II). In particular:

- Dimension decarbonisation: maximising energy efficiency benefits would bring the EU beyond its 2030 minimum greenhouse gas target and prepare the ground for a more rapid decarbonisation of our energy sectors and economies. It would enable a faster transition to a 100% renewable energy system. Given the positive economic, social and environmental benefits of energy efficiency, it would increase the acceptability for the energy transition. This is of particular importance as Member States are also required to submit their long-term strategies by the end of 2019 (Article 15 of the Governance Regulation).

- Dimension energy security: maximising energy efficiency will ease the efforts to diversify energy sources and supply and tackle energy import dependency. For every 1% extra energy savings by 2030, EU gas imports fall by 4%[19]. It will improve the resilience of energy systems against constrained or interrupted supply.

- Dimension internal energy market: maximising energy efficiency will help mitigate the investments needed in electricity and gas transmission infrastructure projects and ensure system adequacy. The increased flexibility of the energy system and energy efficiency measures will also go hand in hand to ensure a smoother integration of renewable energy in the system.

[19] Stefan Scheuer Consulting, "Benefits of increasing the EU's 2030 energy efficiency targets", *op. cit.*

Review of 10 draft NECPs

We have reviewed 10 draft NECPs submitted by Member States to the Commission (see list in Annex I), with the aim to assess how the energy efficiency first principle was taken into account. The following elements were assessed:

- Is energy efficiency first applied as a planning principle?
- Is energy efficiency first applied when setting the objectives of the different Energy Union's dimensions?
- Is energy efficiency first applied when setting the measures of the different Energy Union's dimensions?
- Is a robust energy efficiency target in place and are the benefits of such a target presented?

Check 1 - Is energy efficiency first applied as a planning principle?

Out of the draft NECPs studied, only 1 country, Finland, outlines its understanding of the principle (FI draft NECP p.55). The explanation provides a vision for Finland's energy system: "smart", "efficient", "integrated". Renewable and efficiency policies are "aligned", "sector coupling" is considered. Applying "cost-efficiency" helps put energy efficiency first.

> [FI draft NECP p.55] Energy efficiency first principle:
>
> Improved energy efficiency throughout the whole energy system, from production and transmission to distribution and end-use, makes a major contribution to the national goals of a competitive low carbon economy and security of energy supply.
>
> The future energy system will be flexible and intelligent. In addition to directing energy production, may energy consumption also be managed and coordinated as indicated by the current production situation. Hybrid systems that combine different forms of production will become more widespread. Flexibility of demand will change the role of the consumer. An active consumer will simultaneously consume, produce, save and store energy. Digitalization and the Industrial Internet will help improve the efficiency of energy use everywhere. Energy efficiency is a cost-effective way of reducing greenhouse gas emissions and the mentality of circular economy will further increase the efficiency of resources use.
>
> Finland aims to benefit the "smart and efficient integrated energy system" approach to implement the idea of "energy efficiency first" principle: combined generation of heat and power, and related district heating and cooling with smart demand response mechanisms improves energy efficiency, help to increase the share of renewables and link heating with electricity for flexibility.
>
> For decades has Finland used the potential for aligning energy efficiency and renewable energy policies, linking heating with electricity for flexibility and integrating more renewables in both heating and electricity and utilise waste heat and waste cold. Having in mind the benefits from greater sector coupling through electrification as the energy system decarbonises, the heating/cooling sector is critical and the use of more renewable sources will be encouraged. Taking the cost-efficiency into account comprehensively at the whole energy system level from supply to end use of energy will help to facilitate the Energy efficiency first –principle also in practice.

While this elaboration sheds a light on the thinking behind Finland's energy policy, it does not explain whether a process is in place to safeguard the principle.

The integration of energy efficiency considerations in other policy areas is mentioned by Italy (IT draft NECP p.8). But here as well, no process seems to be in place to systematically implement the energy efficiency first principle.

[IT draft NECP p.8]

However, we will also pursue the integration of energy efficiency into policies and measures whose main objectives are different from efficiency, in view of optimizing the cost-benefit ratio of the actions. In this regard, the large potential for efficiency in the building sector can be better exploited with measures that pursue, for example, energy renovation along with the renovation, seismic, engineering and aesthetics of buildings and neighbourhoods, in line with the 2050 renovation strategy for the building stock.	Si perseguirà, tuttavia, anche l'integrazione dell'efficienza energetica in politiche e misure aventi finalità principali diverse dall'efficienza al fine di ottimizzare il rapporto tra costi e benefici delle azioni. Sotto questo profilo, il grande potenziale di efficienza del settore edilizio potrà essere meglio sfruttato con misure che perseguano, ad esempio, la riqualificazione energetica insieme alla ristrutturazione edilizia, sismica, impiantistica ed estetica di edifici e quartieri, in coerenza con la strategia di riqualificazione del parco immobiliare al 2050.

In its Green Paper on Energy Efficiency[20], the German Federal Ministry for Economic Affairs and Energy had launched the discussion about setting up an energy efficiency first process. The paper presents the risk of not applying the principle: *"If the energy system is planned primarily from the supply side (import, production, generation and distribution), a risk of over-dimensioning the infrastructures exists, where either savings with a high system benefit are not made or foreseeable consumption cuts are not included in the planning and organisation of the energy infrastructure"* (p.16).

It describes the mechanisms which should be put in place: *"With the Efficiency First approach, the planning and organisation of the energy system is primarily demand-led. In order to avoid additional costs in system planning and extension, different scenarios for the development of energy demand are intended to show which alternative options exist to avoid or save energy or to improve energy efficiency. On this basis, the supply system can be dimensioned and shaped in a cost-efficient manner in overall economic terms. In addition to the higher-ranking planning instruments (and the change in planning routines), the principle of Efficiency First is to be reflected particularly in those operative instruments with which the investments and costs of the energy system can be controlled in the medium term"* (p.16).

The paper adds that the *"extent to which anchoring Efficiency First as a planning and organisational principle in the entire efficiency area could be moved forward by statutory measures is to be clarified. For example, an energy efficiency act could define a cascade for the relationship between energy savings, efficient use and energy generation"* (p.18).

[20] German Federal Ministry for Economic Affairs and Energy, "Green Paper on Energy Efficiency Discussion Paper", 2016

But Germany's draft NECP does not report progress about setting up this process. Germany mentions an upcoming strategy that would anchor the energy efficiency first principle but does not provide further detail (DE draft NECP p.13).

[DE draft NECP p.13]	
Currently, a large number of political processes are being carried out to shape German energy and climate policy in the future. These include, among others: […] Development of a cross-sectoral energy efficiency strategy that anchors the guiding principle "Efficiency First"	Derzeit wird eine Vielzahl politischer Prozesse zur künftigen Ausgestaltung der deutschen Energie- und Klimapolitik durchgeführt. Diese umfassen unter anderem: […] Entwicklung einer sektorübergreifenden Energieeffizienzstrategie, die das Leitprinzip „Efficiency First" verankert

Member States describe the existence of structures in charge of looking at cross-cutting aspects of climate and energy policies. One could imagine building on these structures to set up responsibilities on how to enact the energy efficiency first principle at national level. These include:

- In Belgium, the energy policy coordination platform CONCERE/ENOVER" (BE draft NECP p.4);
- In Finland, the Ministerial working group on energy and climate policy issues (FI draft NECP p.15);
- In Italy, the intention is to constitute a technical-political structure to stimulate the implementation of the Energy and Climate Plan (IT draft NECP p.31);
- In Sweden, the climate policy council provides independent assessments of how the overall policy presented by the Government is compatible with the national climate goals (SE draft NECP p.4);
- In Lithuania, the National Climate Change Committee has been established for advisory purposes on the development of the climate change policy and coordination of its implementation, and includes 21 representatives of ministries, municipal authorities, research and study, industrial and non-governmental organizations and 20 observers (LT draft NECP p.14).

Recommendations for finalising the NECP

Member States shall:

- ➔ Explain how the energy efficiency first principle is embedded in the NECP overall strategy (relevant chapter in NECP: 1.1. ii. Strategy relating to the five dimensions of the Energy Union)
- ➔ Describe the structure which is in charge of monitoring the application of the principle (relevant chapter in NECP: 1.2. iv. Administrative structure of implementing national energy and climate policies)
- ➔ Describe how the principle was enacted in the process of drafting the NECP (relevant chapter in the NECP: 5.1. ii. Assessment of policy interactions […])

Check 2 - Is energy efficiency first applied when setting the objectives of the different Energy Union's dimensions?

In order to enact the energy efficiency first in the design of the objectives related to the three dimensions described above, Member States would have to define what would be an ambitious energy efficiency objective (or a "robust" energy efficiency scenario, as described in Article 8 of the Governance Regulation – see check 4), and ensure that the objectives of the different dimensions are consistent.

Lithuania is among the few countries presenting an overarching vision for its climate and energy policy, with its "National Energy Independency Strategy" (LT draft NECP p.9). Energy efficiency is presented as a tool contributing to the strategy.

> [LT draft NECP p.9]
>
> The structural reforms and strategic projects of the energy sector, carried out in Lithuania as a result of implementing the National Energy Independence Strategy (NEIS) approved by the Parliament in 2012, have diversified energy supply routes and sources, reduced energy resources prices for consumers, and opened new development opportunities for the country. Lithuanian energy sector has been substantially restructured in order to reduce and eventually eliminate the energy dependence on the Russian Federation that has resulted in unreasonably high resource prices and the use of energy as a political tool. With regard to these results and the new EU energy and climate change targets that Lithuania has to achieve by 2030 by implementing the Paris Agreement and the new trends in the energy market and also targets of the EU Energy Union and the Baltic Energy Market Interconnection Plan, an updated NEIS was approved by the Parliament in June 2018, including the state's key energy policy tasks, directions and their implementation tasks up to 2030 and a vision up to 2050. According to the updated NEIS, the continuity of the pursued policy and directions will be maintained, the investment attractiveness of Lithuania will be improved, new zero GHG and zero pollutant technologies resilient to climate change will be implemented, innovations in the energy sector will be encouraged, and energy progress will be ensured.

The structure of NECPs prevents Member States from using contradicting energy consumption projections for the different dimension of the Energy Union, which ensures a certain coherence between the objectives of the different dimensions. But information is missing to clearly assess the interactions between the dimensions.

Belgium makes a clear link between energy security and energy efficiency objectives but does not provide further detail on how one objective contributes to the other (BE draft NECP p.45).

> [BE draft NECP p.45]
>
Belgium actively commits to improve energy efficiency in view of also reducing the dependence to foreign supplies of primary energy resources	La Belgique s'engage activement à augmenter l'efficacité énergétique en vue de réduire de cette manière la dépendance aux fournitures étrangères de ressources énergétiques primaires

Italy also makes this link without providing detail on how one objective contributes to the other (IT draft NECP p.8).

[IT draft NECP p.8]

For security of supply, we intend to pursue, on the one hand, the reduction of import dependency through the increase of renewable sources and energy efficiency and, on the other hand, the diversification of sources of supply (for example by using the natural gas also through LNG, with infrastructure consistent with the deep decarbonization scenario to 2050).	Per la sicurezza dell'approvvigionamento si intende perseguire, da un lato, la riduzione della dipendenza dalle importazioni mediante l'incremento delle fonti rinnovabili e dell'efficienza energetica e, dall'altro, la diversificazione delle fonti di approvvigionamento (ad esempio facendo ricorso al gas naturale anche tramite GNL, con infrastrutture coerenti con lo scenario di decarbonizzazione profonda al 2050).

Italy nevertheless notes that the adequacy of the electricity system needs to be re-assessed to consider the new targets (IT draft NECP p.79).

[IT draft NECP p.79]

A first analysis in terms of the adequacy of the system to 2030 was already carried out in 2017, also including the phase out of production with coal, and will be further updated and consolidated in the coming months, to take into account the changes introduced with this Plan.	Una prima analisi in termini di adeguatezza del sistema al 2030 è stata già svolta nel 2017, comprensiva anche del phase out della produzione con carbone, e sarà ulteriormente aggiornata e consolidata nei prossimi mesi, per tenere conto delle modifiche introdotte con il presente Piano.

Some Member States report on the existence of processes to set the objectives of the different dimensions, but it is not clear how these are affected by the new EU and national energy efficiency targets.

Finland refers to energy security targets (FI draft NECP p.32):

[FI draft NECP p.32]

The targets of the security of energy supply have been outlined in the government decision on the targets of security of supply (857/2013).

Denmark refers to a political process to discuss the desired level of security for supply of electricity (DK draft NECP p.30):

[DK draft NECP p.30]

The Minister of Energy, Utilities and Climate […] determines the level of security of supply of electricity according to a law that entered into force in 2018". p.65: "[…] The intention is to enable a political discussion of the desired level of security of supply as well as transparency on relates costs and benefits.

But often the energy security objective is not formulated clearly, and Member States refer to EU level mechanisms. Some of these were not approved yet when the draft NECPs were drafted[21], as noted by Finland (FI draft NECP p.37).

> [FI draft NECP p.37]
>
> Finland will define the national target for the security of supply related to the adequacy of electric power when the methodology concerning the definition has been approved in the EU.

EU-level processes will be important, also because several cross-border questions were raised during the drafting of the NECPs. For example, Latvia[22] mentions building a regional LNG terminal, while Lithuania (LT draft NECP p.92) suggests scaling up the Klapeida terminal and suggests that it is sufficient for the Baltic region.

> [LT draft NECP p.92]
>
> Analysis indicates that one regional LNG terminal together with the pipeline projects that are being built in the regional […] are sufficient to cover the future supply needs of the region

Estonia brought a number of questions to Finland's attention. Finland wants to follow up on this once some EU processes are concluded (FI draft NECP p. 21-22).

> [FI draft NECP p. 21-22]
>
> Estonia explained that the policies and measures planned in Finland may have several interactions with the developments in Estonia and lifted up the following […] concerns: […] many oil shale generation capacities will be shut down in Estonia in the coming years and this decreases significantly the dispatchable generation capacities in Estonia. The regional electricity market remains in deficit while the role of intermittent renewable electricity generation increases in Estonia. This is why the concerns on how well Estonia can ensure the generation adequacy in the power system are rising in Estonia. Estonia also finds it essential to develop the electricity market services on a regional scale. Increasing the level of flexibility is vital also for Estonia and the other Baltic states. […] Finland will conduct a risk assessment study in the future. According to the Finland's Energy and Climate Strategy for 2030, a target for the security of supply in electricity associated with the adequacy of electric power will be defined. This will happen as soon as the ENTSO-E publishes its method to define the sufficient adequacy level. As a part of the risk assessment study, Finland will also evaluate the regional electricity generation adequacy and this includes Estonia as well. […]

Overall, there is little information which allows checking the adequacy of the objectives with robust energy efficiency scenarios. One would need to perform new modelling to confront the new EU and national contributions with the infrastructure plans[23].

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[21] Trilogue negotiations that started in June 2018 concluded in the sixth trilogue meeting on 19 December 2018.
[22] The Latvian NECP, in Latvian, was not analysed entirely but the relevant information can be found on p.58.
[23] For examples of such modelling, see:

Recommendations for finalising the NECP

Member States shall:

- ➔ Adopt an overarching vision for a highly energy efficiency economy and explain how this will boost the rapid decarbonisation of the economy (relevant chapter in NECP: 1.1. ii. Strategy relating to the five dimensions of the Energy Union)
- ➔ Clearly state the internal energy market and energy security objectives and explain how these take into account a robust energy efficiency contribution (relevant chapters in NECP: 2.3. Dimension energy security; and 2.4. Dimension internal energy market)
- ➔ In the preparation of the final plan, request Commission's support in updating the analytical basis to take into account the adoption of new EU and national targets (relevant chapters in NECP: 4. and 5.)

Check 3 - Is energy efficiency first applied when setting the measures of the different Energy Union's dimensions?

Member States have to assess each measure (especially those related to energy security and internal energy market, see footnote 11) against an energy efficiency measure which would allow reaching the same objective. This way of implementing the principle takes place at project level.

Although literature[24] exists on how to improve the decision-making process for projects, none of the Member States surveyed shows how projects are tested against a robust energy efficiency scenario. Italy mentions something along these lines, but the process and decision criteria is not presented (IT draft NECP p.65-66).

[IT draft NECP p.65-66]	
- EastMed project: although the project may allow a further diversification of the current routes from 2025 (Italy is the country that more than any other in the EU diversifies its sources), it may not be a priority since the Decarbonisation scenarios can be implemented through existing infrastructures and the aforementioned TAP [Trans Adriatic pipeline].	- progetto EastMed: il progetto, pur potendo consentire dal 2025 una ulteriore diversificazione delle rotte attuali (l'Italia è il Paese che più di ogni altro all'interno dell'UE diversifica le proprie fonti), potrebbe non rappresentare una priorità visto che gli scenari di decarbonizzazione possono essere attuati tramite le infrastrutture esistenti e il summenzionato TAP.

Energy Union Choices, "A Perspective on Infrastructure and Energy Security in the Transition", 2017

European Climate Foundation, Presentation, "Evaluation of security of supply and gas infrastructure needs in BEMIP", 2016

European Climate Foundation, Presentation, "Evaluation of security of supply and gas infrastructure needs in NSI East NSI East Regional Gas Group", 2016

[24] For example, on matters related to the energy market, RAP recommends introducing rules requiring the network companies to assess demand-side alternatives to traditional infrastructure and ensuring proper regulatory oversight of proposed investments. RAP, 2018, Energy Efficiency First: A Key Principle for Energy Union Governance: p.5

EU-wide selection processes are sometimes mentioned, like in the Danish NECP (DK draft NECP p.32).

> [DK draft NECP p.32]
>
> There are no specific projects necessary for a certain interconnectivity target. However, 5 projects are currently on the list of Projects of Common Interest, based on their positive socio-economic value and are about to be established.

Recommendations for finalising the NECP

Member States shall:

➔ Put in place processes to ensure that energy savings tests are performed for each energy planning, policy and investment decision, and report on these processes and the results in the NECP (relevant chapter in the NECP: 5.1. ii. Assessment of policy interactions)

Check 4 - Is a robust energy efficiency target in place and are the benefits of such a target presented?

Some Member States present an energy efficiency contribution which is already enacted in national law, or derived from existing objectives:

Austria refers to a strategy adopted in 2018 (AT draft NECP p.6).

> [AT draft NECP p.6]
>
> | | |
> |---|---|
> | The Austrian Federal Government has adopted a climate and energy strategy in May 2018 (#mission2030). | Die österreichische Bundesregierung hat im Mai 2018 eine Klima- und Energiestrategie (#mission2030) verabschiedet. |

Sweden also refers to existing objectives (SE draft NECP p.11).

> [SE draft NECP p.11]
>
> By 2030, Sweden's energy us is to be 50 percent more efficient than in 2005

Sweden notes that the impact of planned policies and measures is not assessed yet (SE draft NECP p.79).

> [SE draft NECP p.79] 5. IMPACT ASSESSMENT OF PLANNED POLICIES AND MEASURES
>
> This chapter will be included in the final plan.

Finland refers to several plans and strategies (FI draft NECP p.8).

[FI draft NECP p.8]

Finland's Integrated National Energy and Climate Plan is based on the Government reports on the National Energy and Climate Strategy for 2030 (VNS 7/2016 vp) and the Medium-term Climate Change Plan for 2030 (VNS 7/2017 vp) submitted to Parliament. Parliament has discussed both reports and issued related non-binding resolutions concerning them.

The Finnish target is underpinned by measures (FI draft NECP p.25).

[FI draft NECP p.25]

The WAM projection includes a set of cost-efficient additional energy and climate policy measures that the Government has agreed upon in order to attain the targets specified in the Government Programme and adopted in the EU for 2030. The WAM projection includes planned measures that the Government has decided upon that are not implemented yet by 1st of January 2018.

Finland refers to other factors affecting energy consumption (FI draft NECP p.32), but is not clear on the additional potential.

[FI draft NECP p.32]

Finland continues the effective implementation of the voluntary energy efficiency agreement scheme and other energy efficiency actions described above after 2020. The ministerial energy efficiency working group, established in November 2018, will examine possible new energy efficiency actions, which could support the achievement of our energy targets for 2030. In spite of these strict policies and measures on energy efficiency, our projections towards 2030 show that primary energy use and final energy consumption will not turn down before 2030 (see Figure 4), because our national economy is growing with new industrial and tertiary sector energy use.

In Germany, the target and the measures underpinning the target are not fully outlined yet (DE draft NECP p.15).

[DE draft NECP p.15]

Based on the energy efficiency target of the energy concept of -20% by 2020 and -50% by 2050 (primary energy consumption compared to 2008), a German contribution to the EU energy efficiency target for 2030 in the context of the development of an energy efficiency strategy of the Federal worked out.	Aufsetzend auf das Energieeffizienzziel des Energiekonzepts von -20 % bis 2020 und -50 % bis 2050 (jeweils Primärenergieverbrauch gegenüber 2008), wird ein deutscher Beitrag zum EU-Energieeffizienzziel für 2030 im Rahmen der Erstellung einer Energieeffizienzstrategie des Bundes erarbeitet

Some Member States have based their energy efficiency contributions on the result of a modelling exercise which takes into account the effect of the measures presented in the NECP.

Denmark for example notifies a contribution which is derived from calculating the effect of measures[25] (DK draft NECP, p.25).

> [DK draft NECP, p.25]
>
> The indicative national contribution for the Danish gross energy consumption (primary energy) and final energy consumption in 2030 corresponds to the energy consumption in 2030 in the Danish Energy Agency's 2018 Energy and Climate Outlook published in April 2018 as well as the energy efficiency measures included in the Energy Agreement from June 2018.

Denmark states that it will update its contribution as part of the NECP revision process in 2023-2024 (DK draft NECP, p.25).

> [DK draft NECP, p.25]
>
> The Energy Agreement from June 2018 includes energy efficiency measures in the period 2021-2024. An updated contribution for the indicative national contribution for the Danish gross energy consumption (primary energy) and final energy consumption in 2030 will be included as a revised draft NECP and final NECP for the period 2021-2030 has to be submitted in 2023 and 2024.

The exact content of energy efficiency measures is not defined yet (DK draft NECP p.55).

> [DK draft NECP p.55]
>
> With the new energy agreement from June 2018 there is a political agreement to replace the current Energy Savings Obligation scheme beyond 2020. The new model is now being developed and it is expected that more details on the new model to fulfil Article 7 beyond 2020 will be presented in the first NECP to be prepared.

Belgium presents a contribution compared to PRIMES 2007 and 2005 consumption is based on the "possible energy savings" ("économies possibles") (BE draft NECP p.30).

> [BE draft NECP p.30]
>
> In this context, different possible scenarios have been developed and forecasts of possible savings by 2030 have been made in order to set the Belgian target which will contribute to the European target of 32.5% by 2030 (Article 3).
>
> Dans ce contexte, différents scénarios possibles ont été élaborés et des prévisions des économies possibles à l'horizon 2030 ont été réalisées afin de fixer l'objectif belge qui contribuera à l'objectif européen de 32,5% d'ici 2030 (article 3).

[25] It is not clear whether the impacts of the "Climate and Air Proposal" dated October 2018 (which is only available in terms of GHG reductions, see DK draft NECP p.115) is taken into account in the contribution.

Ireland has also based its contribution proposal on the available technical potential, although it puts a number of caveats (IE draft NECP p.16).

> [IE draft NECP p.16]
>
> Beyond 2021, the Government has identified a technical potential to save up to a further 16 000 GWh in the period towards 2030. However, this will require deeper and more expensive measures, especially in the building sector and to decarbonise heat, as most shallower measures will have already been implemented. Scaling-up energy efficiency will also require increasing policy efforts and sufficient level of funding.

Italy derived its target from its EED Article 7 obligation (IT draft NECP p.53).

> [IT draft NECP p.53]
>
For the definition of this objective, a trajectory was developed based on the achievement of the mandatory savings defined in accordance with article 7 of the EED Directive of 11 December 2018, which envisages a minimum final consumption reduction target of 0.8% per year. in the period 2021-2030, calculated on the basis of the three-year period 2016-2018 (estimates were made for the years 2017 and 2018). The proposed scenario also foresees the achievement of the objectives related to renewable sources and decarbonisation.	Per la definizione di tale obiettivo è stata sviluppata una traiettoria basata sul conseguimento dei risparmi obbligatori definiti ai sensi dell'articolo 7 della Direttiva EED dell'11 dicembre 2018, il quale prevede un target di riduzione dei consumi finali minimo dello 0,8% annuo nel periodo 2021-2030, calcolato in base al triennio 2016-2018 (per gli anni 2017 e 2018 sono state eseguite delle stime). Lo scenario proposto prevede inoltre il conseguimento degli obiettivi relativi alle fonti rinnovabili e alla decarbonizzazione.

The UK also presents the effect of policies, but fails to provide information about the energy consumption in 2030 (UK draft NECP p.27).

Overall, an assessment by the Coalition for Energy Savings[26] shows that most Member States do not even take their legal and political engagement into account when setting their energy efficiency contributions.

Because the measures of the five dimensions are considered together[27] in NECPs, the modelling presented by Member States does not allow understanding what would be the consequences of increasing the ambition in energy efficiency. The absence of such a sensitivity analysis could have a perverse effect. Indeed, Member States could be disincentivised to set ambitious energy efficiency targets, policies and measures, as those could challenge the projects for which Member States are seeking support, especially in the area of energy security. Presenting different scenarios would allow comparing the benefits of setting a higher energy efficiency target.

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[26] The Coalition for Energy Savings, "State of Energy Efficiency in National Energy and Climate Plans", April 2019

[27] A difference shall be made between the situation without the measures and the situation with the measures, both in terms of greenhouse gas emissions and energy consumption.

Recommendations for finalising the NECP

Member States shall:

- ➔ Maximise the energy efficiency target after consultation with stakeholders about boosting the energy efficiency measures (relevant chapters in NECP: 2.2. and 3.2)
- ➔ Present economic, social and environmental benefits of a higher target, and compare it with a situation where a lower target would be set (relevant chapters in NECP: 5.2)

Conclusions

Our assessment shows that little evidence could be found that the energy efficiency first principle is rooted in Member States' planning process.

Beyond the recommendations presented above, three initial steps could help enact the principle:

- **Prioritisation by the European Commission:** As the European Commission is assessing the draft NECPs, it should pay particular attention to the quality of the information provided in the energy security and internal energy market dimensions, where the data provided by Member States did not allow us checking whether the energy efficiency principle was enacted. The Commission should also assess carefully whether the energy efficiency contributions put forward are "robust" as these are the pre-requisite for applying the principle.

- **Clear task assignment by Member States:** Member States would benefit from assigning clear responsibilities to an entity in charge of implementing the principle.

- **Dialogue with stakeholders:** Feedback from stakeholders both at national and EU levels should help further understand how Member States can improve their energy efficiency target. This will maximise the economic, social and environmental benefits and put economies on track for a faster decarbonisation.

Annex I – List of NECPs considered

For the purpose of this study, 10 draft national energy and climate plans were considered. These are:

Austria - Entwurf des Integrierten nationalen Energie- und Klimaplans für Österreich, Periode 2021-2030, KONSULTATIONSENTWURF (Version 2.0), 21. November 2018

Belgium - Projet, Plan National intégré Energie Climat Belge 2021-2030, Version approuvée en Comité de Concertation du 19/12/2018

Denmark - Denmark's Draft Integrated National Energy and Climate Plan, Version: 1.0, December 2018

Finland - FINLAND'S INTEGRATED NATIONAL ENERGY AND CLIMATE PLAN, Draft version submitted to the European Commission, Unofficial translation, 20 December 2018

Germany - Entwurf des integrierten nationalen Energie- und Klimaplans

Ireland - Draft National Energy & Climate Plan (NECP) 2021-2030, December 2018

Italy - PROPOSTA DI PIANO NAZIONALE INTEGRATO PER L'ENERGIA E IL CLIMA, 31/12/2018

Lithuania - INTEGRATED NATIONAL ENERGY AND CLIMATE PLAN OF THE REPUBLIC OF LITHUANIA, Draft version, 14th December 2018

Sweden - Sweden's draft integrated national energy and climate plan

U.K. - THE UK'S DRAFT INTEGRATED NATIONAL ENERGY AND CLIMATE PLAN (NECP), January 2019

Annex II – Literature review

On aspects related to Energy Security and Solidarity

BPIE, "Safeguarding energy security in South-East Europe with investment in demand-side infrastructure", 2016

E3G, "More security, lower cost – A smarter approach to gas infrastructure in Europe", 2016

Energy Union Choices, "A Perspective on Infrastructure and Energy Security in the Transition", 2017

European Climate Foundation, Presentation, "Evaluation of security of supply and gas infrastructure needs in BEMIP", 2016

European Climate Foundation, Presentation, "Evaluation of security of supply and gas infrastructure needs in NSI East NSI East Regional Gas Group", 2016

The Coalition for Energy Savings, "Energy Efficiency First: How to make it happen", 2015

The Coalition for Energy Savings, "Progress on energy efficiency first", 2016

On aspects related to Internal Energy Market:

Ecofys, "The role of energy efficient buildings in the EUs future power system", 2015

RAP, "Energy Efficiency First: A Key Principle for Energy Union Governance", 2018

General publications

CEE Bankwatch network, "Putting energy efficiency first - Reframing the European Investment Bank's action in times of transition and uncertainty", 2015

ClientEarth, RAP, E3G, "Efficiency first, from principle to practice – Real examples from across Europe", 2016

European Climate Foundation, "Efficiency first: a new paradigm for the European energy system", 2016

German Federal Ministry for Economic Affairs and Energy, "Green Paper on Energy Efficiency Discussion Paper", 2016