The Future of European Energy Efficiency Policies: Options and Updates

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How can we create a framework in which "Energy Efficiency First" (E1st) is ingrained, that is translated and interpreted in a day-to-day practice to all decisions and projects that include or relate to the use of energy?

KEY RECOMMENDATIONS

- ☑ Create a European Committee on Energy Efficiency interacting with national monitoring bodies
- ☑ A framework to improve the reporting and monitoring of E1st through enablers/ decision-makers/ regulators
- ☑ A framework for integrating E1st in financial institutions' reporting and risk assessment frameworks
- ☑ Integrate the strategic nature for companies of EE investments and enhance their information & training capacities
- ☑ Conditionality of EU funds on the implementation of the E1st principle

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I. Definition and contextualisation

Energy efficiency (EE) is considered to be a core component of the European Union (EU)'s long-term strategy to build a competitive, secure, just, and climate-neutral economy by 2050. Within EU policy making, the importance of EE has been translated into many legislations, including the 2018 Energy Efficiency Directive (EED) which has just been re-negotiated in order to define a more ambitious EU-wide binding target for the reduction of energy use. That is, a further reduction of total energy consumption by about 1.5% every year until 2030, on top of the current 32.5% EE target for 2030 (European Commission press release, March 10th 2023; Directive (EU) 2018/2002). In particular, the Energy Efficiency First (E1st) principle has been formally embedded in EU energy policy through the Fit-For-55 package and RePowerEU. As per the European Parliament, E1st is defined 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*" (EU Governance Regulation 2018/ 1999).

The E1st principle is based on the rationale that the EU should aim to employ as few resources as possible to achieve its mitigation goals. Before the oil shocks of the 1970s, the priority of policymakers was heavily directed towards energy supply and meeting growing energy needs. However, a change in paradigm has been observed since the 2000s with a new priority placed on the development of renewable energy, coupled with EE measures on the side, under the motto that the best (cleanest, cheapest) energy is the one that is not consumed (Oikonomou and Broc, ENEFIRST interview, 2023).

Stand-alone EE policies are therefore not the same as policies following the E1st principle. As a guiding decision-making framework, the E1st principle looks to prioritize investing in EE policies whenever this would deliver more or be less expensive than allocating capital to energy supply or networks. Consistently applying the E1st principle to energy policy decisions is a systematic choice that is quantitatively supported by the proven multiple benefits associated with EE decisions that go beyond fewer carbon emissions – less energy poverty, health improvements, improved energy security, support for renewables, better performing GDP and employment rates… (c.f., COMBI project). The monetization of these multiple impacts in Europe has been estimated to €61 billion per year in 2030 in the case of more ambitious EE policies, which corresponds to approximately 50% of energy cost savings (Thema *et. al.*, 2019).

Nonetheless, we observe today that the application of E1st in energy planning and investment decision-making, despite being an increasing part of European investments, still

remains limited relative to other energy investments. For instance in 2018, the allocation of capital towards EE in the EU was around €63 billion, which corresponded to almost half (approximately €120 billion) of the EU's investment into oil and gas infrastructure, electricity networks, and power generation (IEA, 2019).

This implies that EE is not systematically put "first" in energy decision-making. In particular, it seems that this lack of tangibility of E1st (i.e., as a proper policy tool) has hindered the development of a common understanding of the principle amongst all different energy stakeholders which has led to varying definitions of the principle, including between EU institutions (differences between the EU Parliament and the Governance Regulation one), between different Member States (MS), or between various European think tanks (ENERFIRST, 2019, pp.16-18). The absence of a collective and entrenched definition of E1st has led to a strong focus of European EE policies on supply-side options that can be characterized as 'efficiency-only' type of policies, that is strategies focused on market design, norms, and incentives for network operators (ENERFIRST, 2019, p.7). These policies tend to disregard demand-side resources, which are technologies or actions that decrease the amount and/or duration of energy it takes to provide the same service, thus not making the most out of end-use efficiency and the potential for demand response flexibility (*ibid*, p.21).

Additionally, while the new emphasis on demand-side options outlined in the Article 3 of the 2023 recast of the EED shows good intentions to make E1st a more integrated and time-constrained approach to energy planning between supply and demand, the definition remains very high-level. This does not give adequate clarity and advice for policymakers and market actors to actually ground the E1st principle into daily practice, and not just apply it to large projects. As such, this research project aims at elaborating a framework for the E1st principle that involves all key stakeholders to operationalize the E1st principle. The enhanced focus on demand-side resources – as highlighted in the definition proposed by ENEFIRST (2019, p. 6)[1] which we will be the one adopted in this research – is crucial for the greater operationalization of E1st. Considering demand-side and supply-side options equally before taking energy-related decisions is necessary to limit the investment burden associated with the evolution of the energy system according to EU mitigation goals (e.g., greening the grid or electrifying previously oil-based uses places will be more economically viable when demand for energy is decreased). Consequently, the framework developed in this research will seek to shift the responsibility of E1st implementation towards those actors that are the most relevant to consistently translate the principle in their decisions. In light of this, the first part of our literature review will outline the current main decision-making related obstacles to E1st implementation. The second part will map four key categories of crucial

[1] "Efficiency First gives priority to demand-side resources whenever they are more cost effective from a societal perspective than investments in energy infrastructure in meeting policy objectives. It is a decision principle that is applied systematically at any level to energy-related investment planning and enabled by an 'equal opportunity' policy design."

actors in the operationalization of E1st. This stakeholder analysis will represent the basis on which we develop our framework for the implementation of E1st, namely the enabler - regulator - decision-maker framework. The latter is a basic structure that must be adapted to specific contexts for the operationalization of the E1st principle.

Our project is based on desk research and expert interviews. Regarding the former, we used the material available in the Horizon 2020 reports – including for instance M-Benefits (on the multiple benefits of EE measures), MICAT (for the multiple impacts calculation tool), ENSMOV (on enhancing the implementation and monitoring practices of EE policies under Article 7 of the EED), or ENEFIRST (for definitions and barriers to E1st). As for the latter, we interviewed the following experts: Vlasis Oikonomou Jean-Sébastien Broc from the Institute for European Energy and Climate Policy Foundation (IEECP) on EE impact assessments; Zsuzsanna Pató from the Regulatory Assistance Project on market governance and EE regulation; Rod Janssen, President of Energy Efficiency in Industrial Processes (EEIP) on energy efficiency in the industrial sector; and Steven Fawkes from the EEFIG working group on how to apply the energy efficiency first principle in sustainable finance.

II. Literature review

1. Obstacles to E1st

The literature analyzed for this report focuses on the governance challenges associated with the implementation of EE1st and expands the nature of the barriers and drivers for EE measures from a simple source of cost-savings to one of multiple benefits, requiring adapted frameworks and relying on narratives and stakeholder engagement.

<u>Lack of appropriate assessment frameworks</u>

A central barrier in the implementation of E1st identified in the literature and in our expert interview is that EE measures tend to be undervalued in traditional frameworks of impact evaluation (ENEFIRST, 2022; MICAT, 2022; Energy Efficiency Watch, 2022a). Multiple factors explain why decision-makers in businesses or in policymaking tend to favor supply-side response. Current investment frameworks usually focus on short-term profits, with a window of usually 2 to 3 years in most companies (Chiaroni *et al.*, 2017), formulated in payback times and based on a limited amount of indicators such as cost of energy and required investment (Energy Efficiency Watch, 2022a). Furthermore, decision making tends to be designed in silos, whereby decision makers are assigned a narrow field of specialization which hinders the ability of organizations to consider supply and demand-side measures as different tools to address similar problems (ENEFIRST, 2022). Expert interviews conducted by

M-Benefits have for example found that energy managers in businesses could have a very narrow understanding of their role and were not used to linking their technical knowledge on energy performance with the broader strategic goals of the company (M-Benefits, 2021).

The current practices are thus poorly suited to capture the full potential that EE can deliver in terms of private and social gains. The literature has consequently aimed at providing a better understanding of the multiple benefits of EE measures. These are generally categorized in terms of economic, social and environmental impacts (see Figure 1) (M-Benefits, 2021; MICAT, 2022; ENEFIRST, 2022). However, a further challenge is to convert these benefits into quantifiable indexes that can inform decision makers. Projects such as MICAT (2022) propose frameworks to develop cost benefit analyses of supply and demand side options that take into account the broader range of benefits of EE measures. Nonetheless, these benefits can vary a lot depending on the context and the cost-benefit analysis can therefore be difficult to standardize. This calls for independent and trained experts that can provide fair assessments to impartially inform policymakers (Oikonomou and Broc, ENEFIRST interview, 2023).

In addition to designing the right assessment frameworks, E1st implies giving priority to demand-side measures whenever these are more cost-effective from a societal perspective. This poses an additional challenge as the outcome of impact assessments will depend on the perspective used, which could be societal or private (ENERFIRST, 2021). A cost-benefit assessment from the perspective of a private actor will usually not take into account EE benefits that are not internalized by the market. This suggests that a large part of EE benefits such as health improvements or energy security will not be included. An essential challenge is therefore to identify the policies that are most efficient in ensuring that the cost-benefit assessments of private actors deliver investments in EE that are as close as possible to a socially optimal level.

Social impacts	Economic impacts	Environmental impacts
Alleviation of energy poverty	Macroeconomic impacts (e.g., GDP, employment effects, impact on public budget, energy/EU-ETS price effects, turnover of EE goods)	Material resource savings
Quality of life (alleviation of inequality)	Microeconomic impacts (e.g., industrial productivity, asset value of buildings)	Impacts on RES targets
Human health due to improved indoor climate	Innovation & Competitiveness	Reduction in greenhouse gas emissions
Human health due to reduced air pollution	Energy Security & Energy Delivery (e.g., import dependency, energy security, impact on integration of renewables, avoided investments in grid and capacity)	Reduction in air pollution emissions

Figure 1. Categorization of the multiple impacts of EE measures (MICAT, 2022)

Lack of data on EE

While having the right frameworks is key to implementing E1st, these cannot be operated without the necessary data. The literature has repeatedly indicated that the availability of data on EE is an important barrier (Chiaroni, 2017; Energy Efficiency Watch, 2022b). It usually takes a lot of time to collect data on EE as its impacts can only be measured through time, especially regarding non-energy impacts such as health, economic competitiveness or jobs creation (Oikonomou and Broc, ENEFIRST interview, 2023). Additionally, data on the financial viability and EE is limited because the EE market is still an emerging one (European Commission, 2022). This contributes to making EE seen as risky and uncertain investments (Energy Efficiency Watch, 2022b). In response, many initiatives have been set-up to increase access to and availability of data. They include data on EE investment performances (DEEP, n.d.), projects and best practices from industry (EU-MERCI, n.d.), quantification of the multiple benefits of EE (Thema *et. al*., 2017) or aggregate data of energy consumption and savings as well as of EE measures in the EU (ODYSEE-MURE, n.d.). Nonetheless, MS must also play an important role in filling the data gap by more systematically engaging in data collection throughout the policymaking process and making the data open accessible (Energy Efficiency Watch, 2022a). Good practices include the monitoring of energy performance in all public buildings using Energy Management Information Systems or programs of aggregating the data on monitoring, measuring and verifying energy saving measures and making these openly available online (SIMPLA, 2019). Finally, while ensuring access to good quality data on EE will greatly facilitate the implementation of E1st, governments must also design strategies on how to communicate this data with the relevant actors (Energy Efficiency Watch, 2022b).

Weakly ingrained in the policy agendas of MS

Energy Efficiency Watch's (2022a) fourth expert survey argues that EE measures are poorly ingrained in the daily practices of policymakers. They point to the strong fluctuations in progress made by MS throughout the years, as measures for EE tend to be seen as specific climate policies rather than as an "integral part of economic and social policy". Being perceived as part of a specific policy agenda, EE measures are more vulnerable to policy changes and require more justification as they tend to be caught in politicized debates on climate politics. As governments change, EE goals are thus pushed up or down the policy agenda rather than being rooted in the policymaking process. The report thus highlights the role of narratives surrounding EE measures to ensure that they resonate with the interests of key actors and the topics of highest interest in the public debate. In this regard, designing the appropriate narrative for EE has a lot to gain from the literature on behavioral economics, to consider the impact of framing in terms of potential losses or benefits and the

nature of costs, but also from sociological concepts of social norms, practices and social structures (Della Valle and Bertoldi, 2022).

Stakeholders' engagement

When addressing the challenges to the implementation of E1st, mitigating barriers to stakeholder engagement is of paramount importance. This implies that MS shall engage in stakeholders mapping, identifying the main actors and analyzing them to understand their needs and motivations to apply the E1st principle in their daily decisions. The MICAT project experts recommend conducting such analysis at both the EU, national and local level. They include policy makers at different levels (DG Energy, DG Climate, EU Parliament, national and local governments) energy agencies and experts, politicians, citizen groups, market players, NGOs and think tanks. When engaging with stakeholders, inclusivity is a challenge that needs to be addressed. For instance, researchers of the Tipping+ project (TIPPING.plus, 2020) on coal phase out have developed a stakeholders mapping methodology, including an inclusivity checklist. Such practice aims to ensure that all levels of power and information are represented, as it should take into account age, gender, expertise and education level, geographical location, as well as minority and marginalized groups.

Overall, most of these barriers are interconnected and should be understood as such. For example, better ingraining EE measures into the policy practice of MS requires providing an adapted decision making framework to fairly and easily assess EE options. However, this also requires access to good and transparent data as well as engaging with the right actors.

2. Relevant actors identified

Public actors

Engaging MS into the implementation of the E1st principle when shaping and implementing domestic policies is thus a key challenge for the Commission. Indeed, as stated by Zsuzanna Pató (2021), senior assistant for the regulatory assistance project, there is a gap between the EU ambition and the national ambitions. This "ambition gap" in terms of EE was also pointed out by Golnoush Soroush in a talk given to the Florence School of Regulation in 2021 (Soroush, 2021). Yet, getting the public sector on board is crucial for the translation of the principle into national practices. As stated in the Commission recommendation 2021/1749, "prioritization of energy efficiency puts also a responsibility on public authorities to lead by example". The Commission must play its role in incentivising MS to adopt E1st in their

planning. Article 3 of the recast EED sets a legal obligation for MS to “ensure that energy efficiency solutions are taken into account” both in the energy related sectors and the “non-energy sectors where those sectors have an impact on energy consumption and energy efficiency”. The Commission's role in the implementation of the principle is both to advise MS on the translation of the principle in their domestic law and practices, and to monitor the actions taken by those latest toward the implementation of the principle. The Directive hence requires MS to report to the Commission on how the principle is applied and to designate a monitoring national entity to follow the application of the E1st principle.

In the context of an imperfect market, MS can promote EE decisions through various mechanisms aimed at mitigating the market failures and the obstacles to E1st. States have the ability to translate ambitious EE targets in their domestic law, for instance with the setting of technical reglementations in key EE sectors. “Minimum energy performance standards” (MEPS) establish performance requirements for the limit on the amount of energy a given item/device can consume. Such standards are usually associated with test obligations that shall ensure that a device performance has been evaluated. MEPS specify the “minimum level of energy performance that appliances, lighting and electrical equipment (products) must meet or exceed before they can be offered for sale or used for commercial purposes”. Products that do not meet the required energy consumption standards cannot be supplied, sold nor imported into the country. MEPs can for instance be applied to refrigerators and freezers, clothes washers and dryers, dishwashers, televisions, computer monitors, electric motors, air conditioners, and lamps. In Australia, products for which minimum energy standards are mandatory are registered on an online platform. MS' role is also crucial in the mitigation of the information gap. Energy performance certificates are an example of a ranking mechanism, providing consumers with information on the EE of products and goods.

State-led information platforms are another example of implantation of information article 3 of the Directive. For instance, since 2021, the French government has launched a platform that is aimed at gathering information on buildings energy consumptions and providing a benchmark of EE in the housing sector, at the national, regional and departmental levels. The “computerised platform for collecting and monitoring the reduction of final energy consumption platform” is still under development. The management of the platform is ensured by the French government, the French Agency for ecological transition (ADEME) and the observatory on energy performance and tertiary sectors actions. It was created by a 2021 law, and will gather data on energy consumption that house owners will have the obligation to provide annually. Such an initiative is an example of a state-led initiative with legal basis that intends to address the information gap on EE to accompany private actors and individuals in their choices. Other examples of platforms can be found in European countries such as the “EnergyHUB for ALL” in Greece, or the German Info Portal of the Federal Institute for Research on Building, Urban Affairs and Spatial Development.

Private actors

In order to unlock the full potential of E1st, it is also important to ensure that market actors are on board. However, each industry is composed of multiple actors with their own interests and capabilities who will respond differently to EE incentives (Yu *et. al.*, 2022). It is thus not possible for policymakers to entirely plan and monitor the implementation of E1st. For example, top-down methods of system planning such as the Integrated Resource Planning for the power market have been found to be ineffective after the liberalization of these markets (Thomas *et. al.*, 2000). Additionally, market actors display a mix of economic and behavioral characteristics that play a role in determining the extent to which E1st will be incorporated. For example, while energy audits tend to be considered a rather effective tool to encourage EE investments in industry (ODYSSEE-MURE, 2021), the way in which audits are conducted (Delmas *et. al*., 2013) or the level of hierarchy that audits are reported to (M-Benefits, 2021) can change the extent to which their recommendations are incorporated into the enterprise's strategy.

Furthermore, the framing of EE policies must be considered. The literature points to the need to cater the EE narratives to the specific interests and needs of key market actors (Energy Efficiency Watch, 2022b). These actors matter both insofar as they will ultimately be those who follow, or not, a E1st logic and as they can have a strong influence on the legislative agenda. While the societal benefits of increased EE targets are concludingly positive, the implementation of E1st will also incur losers (Coalition for Energy Savings, 2022). These can create important political barriers for E1st as it can face resistance from influential actors such as trade unions, associations of large industries or chambers of commerce (Energy Efficiency Watch, 2022a). However, these actors can also provide opportunities to disseminate the principle. Considering that E1st is essentially a norm, these networks of actors provide a lot of potential for the sharing and promotion of E1st within an industry. The social network literature provides interesting insights into the dynamics of knowledge exchange within industry clusters, and the types of organizational structures that best promote these exchanges (Alberti *et al*., 2021) and could provide innovative avenues for implementing E1st in the private sector. Networks of industry actors could serve as a vector to rapidly spread expertise, awareness, understanding and good practices within a specific sector. In parallel there is also a clear need for a mixture of top-down supervision, for example through the creation or strengthening of the role of regulators in ensuring compliance with EE objectives (Patò and Mandel, 2022).

For EE to be ingrained in the day-to-day practices of all actors, decision makers must have the right options available. Businesses such as Energy Service Companies (ESCOs) have an important role to play in providing the expertise and services needed to make EE an option. This requires supporting the creation of these business models. Regulatory measures such as enforcing strict EE standards to create demand for EE services or removing regulatory

barriers and counter-productive subsidies can support the creation of a viable market for ESCOs (Energy Efficiency Watch, 2022a). However, considering that the nature of the sectors and that the regulatory structures can diverge largely between MS, it can be challenging to identify one-size-fits-all solutions. Differences in the nature of the market will determine the extent to which governments can centrally design long-term investment strategies, monitor actor compliance and rely on regulatory or market-based tools.

Financial institutions

Financial institutions are of paramount importance to operationalizing E1st as they provide financial resources and expertise to fund and support EE projects. By prioritizing EE in their investment and lending decisions, financial institutions can help drive the adoption of EE technologies and practices and influence the behavior of various stakeholders, including customers, asset owners, and policymakers. Although financial institutions cannot decide the level of energy performance of any project, they can provide financial incentives to prioritize energy savings and provide technical assistance for customers. By doing so, they can also benefit from the potential cost savings and reduced risks associated with EE measures. However, E1st is still poorly understood and engrained in financial institutions' decisions. Many stranded projects are still being financed, neglecting the full potential range of cost-effective energy efficiency measures. Generally, buildings are financed as long as they meet minimum local building regulations but neglect additional cost-effective EE opportunities. Similarly, many industrial investments miss the cost-effective potential for EE. This market failure that sees banks miss cost-effective projects can be explained by multiple factors.

To begin with, financial institutions have no proper overview of accurate, timely and visible energy use data of an asset, which makes it harder for financiers to demand higher levels of efficiency. Secondly, there is a lack of demand for higher levels of efficiency by customers, who do not appreciate the benefits derived from E1st, including those that go beyond energy savings. One problem associated with this is the possibility of customers turning to competing financial institutions with lower standards. Thirdly, banks generally lack qualified specialists and capacity among project developers to identify optimal energy efficient assets (EEFIG, 2015; EEFIG, 2022). On top of that, one crucial observation made by Steven Fawkes (2023) in our interview was that while current risk frameworks, including those produced by the Task Force on Climate-related Financial Disclosures (TCFD) and the EU Taxonomy, recognize the importance of climate-related risks and opportunities, they do not always adequately address the role of EE in mitigating these risks and realizing the opportunities. In these frameworks, EE is often treated as a secondary consideration, rather than being recognized as a critical element in achieving climate goals and reducing emissions.

Nonetheless, good examples of financial institutions implementing E1st exist. As for the public sector, the European Investment Bank (EIB) is promoting E1st by updating its cost-benefit analysis methodology to include the additional benefits generated by EE projects. For instance, some of the standards contained in the EIB Group Environmental and Social Sustainability Framework require the project promoter to show that they have considered alternatives to minimize project-related GHG emissions, such as using the best available techniques or emerging techniques that improve EE (EIB, 2021). Similarly, ING is providing examples on the operationalization of E1st in the private sector. In 2021, it launched sustainability loans with a reduction in the interest rate of 1%. The bank has also created an "energy robot 2.0" that informs customers about energy usage when buildings are converted to an EPC rating of A (ING, 2020). Highlighting good examples of how to operationalize E1st is crucial to bring other financial institutions on board while simultaneously incentivizing individuals to engage in energy efficiency investments.

Individuals and households

In addition to policymakers, the private sector, and financial institutions, households also play a significant role in the implementation of the E1st principle. As one of the largest energy consumers, households have huge power in enhancing the prioritization of demand-side responses over supply-side initiatives. Thus, households can adopt behaviors aimed at saving energy, as well as choosing innovative and energy-efficient appliances and technologies. Hence, the extent to which EE can be pursued and prioritized in energy infrastructure to meet energy needs depends to a large extent on households' behavior and choices (Chlechowitz *et. al.*, 2022; Trotta, 2018).

While households are crucial for implementing E1st, there can be several reasons why they may not switch to more efficient options. First of all, people may be unaware of the principle of E1st, as well as the benefits they may derive from it. They may not know the extent to which their behaviors and daily actions can contribute to saving energy and paying lower energy bills. Instead, increased awareness of the benefits derived from EE positively and significantly affects consumer attitudes (Akroush *et. al.*, 2019). Secondly, households may not be inclined or have the means to incur high upfront costs to substitute less-efficient appliances with more energy-efficient ones. This can represent a crucial barrier, especially for households with lower incomes (Odronez *et. al.*, 2017). Thirdly, households may not engage in energy-efficient practices due to a lack of incentives. For instance, in areas where energy costs are relatively low, individuals may not be incentivised to pursue EE. A lack of feedback measures and energy audits, which provide consumers with EE information, can also discourage consumers from improving EE (European Environment Agency, 2013). Finally, it may be challenging for individuals to adjust their behavior if they are used to engaging in practices that do not promote EE (Chlechowitz *et. al.*, 2022). For example, it can be difficult

to convince people who are used to leaving lights on when they are not needed to change behavior. Or, it would be unlikely for people who are used to living in overly heated or cooled houses to invest in renovations to improve their energy performance.

In order to address these challenges individuals should be properly informed about the benefits of EE and incentivized to adjust their behavior. Some projects demonstrate the importance of providing households with incentives and information to implement E1st. For example, the US Department of Energy has funded the Weatherization Assistance Program, which provides free home energy upgrades to low-income households in the US. Upgrades included insulation, air sealing, and the installation of energy-efficient appliances and lighting. This project allowed low-income families to reduce their energy costs by saving energy (Tonn, Rose, and Hawkins, 2018). Individual projects show that when provided with the right information and incentives, households are willing to change behavior and undertake initiatives that operationalize the E1st principle.

III. Recommendations

Below are five key recommendations that this research project would like to develop as channels and frameworks through which E1st is translated and interpreted in a day-to-day practice to all decisions and projects that include or relate to the use of energy.

Create a European Committee on Energy Efficiency interacting with national monitoring bodies

Article 3 of the recast EDD sets an obligation for MS to "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". Such an entity could be both an advisor and an assessor of the public and private sector energy related projects, at the national level. One way to foster the implementation of the principle could be to create a committee, at the European level, in charge of advising the national entities and collecting reports on the implementation of the principle.

<u>A logic similar to that of the European Data Protection Board for the implementation of the GDPR</u>

For the implementation of Article 3 of the recast EED, it is possible to learn from the implementation of the General Data Protection Regulation (GDPR). Indeed, the GDPR sets

an obligation for MS to "provide for one or more independent public authorities to be responsible for monitoring the application" of the regulation (GDPR, Article 51). The mission of this authorities are, among others, to:

- monitor and enforce the application of the GDPR ;
- promote public awareness and understanding of the risks, rules, safeguards ;
- advise, in accordance with Member State law, the national parliament, the government, and other institutions and bodies on legislative and administrative measures relating to the GDPR ;
- cooperate with, including sharing information and provide mutual assistance to, other supervisory authorities.

The national authorities interact with a European monitoring body, the European Data Protection Board, that is also in charge of ensuring the consistent application of the GDPR. Its missions are, amongst others, to:

- issue guidelines, recommendations, and best practices related to data protection ;
- promote the cooperation and the effective bilateral and multilateral exchange of information and best practices between the supervisory authorities;
- promote common training programmes and facilitate personnel exchanges between the supervisory authorities.

Thus, following the same logic, an independent European Committee on Energy Efficiency could be created to monitor the implementation of the E1st principle, advise the different stakeholders and share assessments and good practices related to EE. It would interact with the national entities mentioned in Article 3 of the recast Directive, responsible for monitoring the application of the E1st principle.

Such a committee would help alleviate various obstacles to the implementation of the principle such as information and knowledge barriers, lack of stakeholders engagement or the lack of EE assessment as it would collect the assessment of the national monitoring entities, document good practices, and advise stakeholders on their implementation of Article 3 of the EED.

The Committee board could for example be composed of :

- Representatives of each national monitoring entity (as per the recast EED)
- Representatives of the EU Commission – DG ENER
- Relevant energy entities with synergies with EE projects – e.g., EU System Operators (SOs)
- Representatives of the International Energy Agency (Energy Efficiency unit)
- Prominent EU think-tanks working on EE – e.g., Institute for European Energy and Climate Policy, European Climate Foundation

- Regional representants of the EU Covenant of Mayors with energy competencies
- Network of recognized independent experts on EE

The missions of the European Committee on Energy Efficiency could be the following :
1° Provide guidelines on the implementation of the E1st principle
2° Document examples of good practices and issue recommendations on how to systemize them at the different levels of decision making
3° Advise the commission and propose updates to the energy related European regulations when needed/relevant
4° Advise national monitoring entities on the implementation of the E1st principle and the assessment of its application
5° Gather reporting from each national entity, compare the national reporting and issue a public annual reports reviewing the steps taken and the steps to be taken for the implementation of the principle
6° Promote cooperation and exchange of information between the different national monitoring entities, and the European Commission
7° Provide reliable, transparent and easily accessible data on energy efficiency and promote common training programs

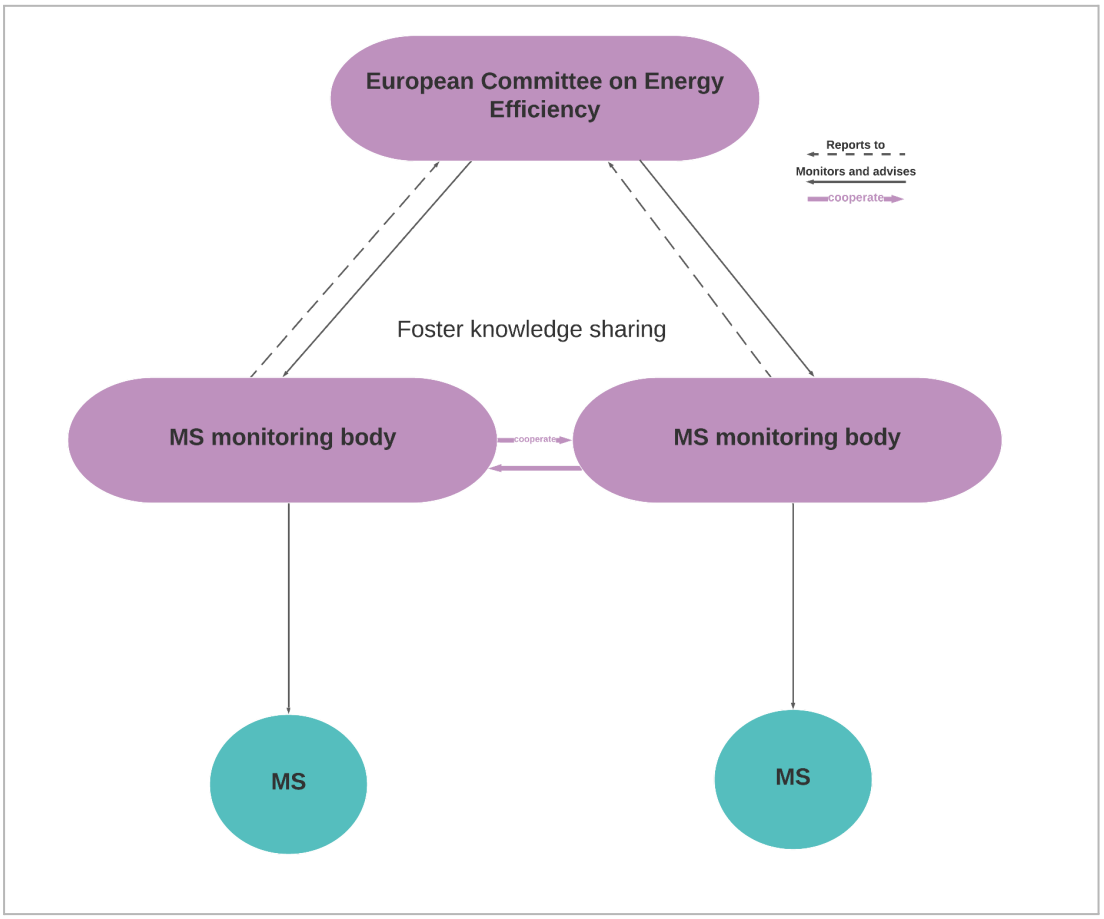

Figure 2: Creating a European Committee on Energy Efficiency to monitor the application of the E1st principle and foster cooperation between national monitoring entities (self-made)

A framework to improve the reporting and monitoring of E1st

As identified in the previous sections, ingraining E1st in the day-to-day practices that relate to the use of energy is challenging. The nature of EE makes it difficult to monitor, as EE can only be measured against counterfactual scenarios of energy consumption (ECORYS, 2021). An assessment framework that fairly evaluates all the benefits of demand-side responses is difficult to design and, furthermore, can be challenging to internalize into the decisions of individual or market-actors. Additionally, EE is weakly engrained in MS' political agenda making progress on EE fluctuate with the political environment, making it all the more important for the EU to monitor and incentivize its incorporation into MS's practices. While different frameworks have been developed to encourage the implementation of E1st by assessing the transferability (ENEFIRST, 2021), type (ODYSEE-MUREE, n.d.) or planification (ECORYS, 2021) of EE policies, we believe that they tend to be too rigid or complex.

Rigid policy recommendations are not suited for E1st because, by being a principle, its implementation cannot be designed in-vitro. Instead, economic, cultural and political factors will shape the way this logic takes shape in seemingly similar (same sector…) but different (… but in a different economy) contexts. Beyond the particular nature and features of each market, political and cultural considerations will also shape the extent to which MS are capable of and motivated to implement E1st (Energy Efficiency Watch, 2022b). In this regard, E1st should not be linked to specific policy recommendations based on a series of pre-defined factors but should instead be a basic structure for policymakers to follow and adjust to their context. Furthermore, the implementation of complex frameworks and of specific policy recommendations would be too difficult for the EU to monitor. Instead, a basic framework that identifies the key actors and their relationship to the implementation of E1st could facilitate the design of policies that incorporate E1st and make it easier for the EU to monitor.

In this regard, we propose a framework that aims to capture the principle behind E1st, while making it simple enough to be adaptable to most contexts and monitored. We aim to depict E1st as essentially hanging on whether the final decision-maker follows or not an E1st logic. This final decision maker will differ depending on the sector, it could be an individual deciding how to renovate their house, an industrial actor deciding how to improve its production line or a regional government assessing plans to build a new office. E1st in all these scenarios is dependent on whether the final decision maker fairly assesses the supply and demand-side options available to achieve their objective. While in an ideal world a completely internalized principle would not require external interventions to ensure that E1st is implemented, the decisionmaker may not have the necessary incentives or tools to fairly assess demand and supply-side options. Consequently, two types of actors are needed: an *enabler*, which facilitates the implementation of E1st-aligned measures and a *coordinator*, responsible for ensuring that both the enabler and the decisionmaker follow certain rules that are designed to facilitate the adoption of demand-side responses. A

framework to implement E1st thus needs an enabler as well as a coordinator, two actors that provide the carrot and stick to ensure that the decision-maker follows an E1st logic (see Figure 3).

Enabler

The enabler is the actor responsible for facilitating the implementation of E1st into the decision maker's behavior. Enablers help overcome some of the key barriers identified previously to put supply and demand on an equal footing by fulfilling some of the following roles:

- Collect and provide relevant data to inform the decision maker on the full costs and benefits of demand and supply-side measures ;
- Provide relevant expertise to evaluate different measures and/or provide services to implement them ;
- Provide access to capital to finance EE measures ;
- Give regulatory and policy assistance to ensure that the decisionmaker is aware of all the relevant policies and programmes available to implement demand-side measures.

The enabler could be a public or a private actor. Examples of enablers frequently mentioned in the literature include:

- Energy Service Companies ;
- One Stop Shops ;
- Government agencies ;
- Financial actors ;
- Networks of industry actors.

While we elaborate further upon some of the different enablers in the subsequent policy recommendations, their design will ultimately depend on the preferences and capabilities of the MS and their context.

Coordinator

In this framework, the coordinator is the relevant public authority in charge of designing the necessary regulations, policies and market frameworks that direct the behavior of the final decision maker and the enabler (ECORYS, 2021). The coordinator can be at any level of governance from national to municipal, the level will ultimately depend on the division of competences in each MS. While this model only includes the 'final' coordinator – that is, the coordinator best positioned to provide the necessary incentives to direct the behavior of the decision maker and the enabler – higher levels of governance need to ensure that the legal framework is adjusted to give the final coordinator the necessary resources and mandate to coordinate the decision-maker and the enabler. Furthermore, the coordinator supervising the decisionmaker may not be the same as the coordinator supervising the enabler, which highlights the need for coordination between different levels of governance.

A central task of the coordinator is to ensure that the cost-benefit analysis of the various stakeholders is aligned with socially optimal levels of energy consumption. However, while higher levels of governance must take on a societal perspective in their cost-benefit analyses, lower levels of governance and implementation must ensure that their cost-benefit framework is also aligned with investor and end-user perspectives (European Commission, 2021). To do so, coordinators must design rules and incentives that align the cost-benefit analysis of the private actors with societal needs. This can translate into direct obligations that the coordinator sets on the decision maker (such as setting sectoral targets for energy-performance) or on the enabler (such as asking financial actors to provide loans conditional on meeting certain EE standards for energy-related projects) to maximize the likelihood that the decision maker will ultimately follow an E1st logic. Furthermore, the coordinator can ensure the existence of enablers by, for example, facilitating market access to ESCOs or by designing government agencies with EE expertise. The coordinator is thus any public actor in charge of setting the necessary regulatory environment for E1st to be a viable option for the decision maker. Overall, the level and nature of the coordinator will depend a lot on the context, and national governments must ensure that the coordinator has the necessary resources to properly execute its obligation.

Overall, our model proposes to distinguish between three key roles: a decisionmaker whose decision ultimately determines whether an E1st logic is followed; an enabler, which can be a market or a public actor, in charge of providing services and resources to facilitate the implementation of measured aligned with E1st and a coordinator, which designs rule sand obligations to ensure that the enabler and decisionmaker have the necessary incentives to create an environment suitable for E1st-aligned decisions.

Reporting and monitoring

Currently, the EU asks MS to incorporate E1st in their decision-making processes and specifically incorporate it into their integrated National Energy and Climate Plans (NECPs) (European Commission, 2021). Yet, this has hardly been the case, E1st has been sporadically mentioned, sometimes just as a footnote, but has not been an integral part of the design of these plans (Pato and Mandel, 2022). Our simple yet flexible framework could be designed as a template for MS to truly incorporate E1st in the design and reporting of their national plans for sectors that are relevant to E1st (such as national transport, electricity or hydrogen plans).

An efficient monitoring and reporting mechanism for this model should follow simple rules:

- MS should subdivide their relevant plans into clear subgoals for which a final decision maker can be identified. This means that important plans such as national sectoral strategies need to be broken down into distinct elements for which clear actors can be identified as the decision maker, the enabler and the coordinator.

- The reporting document must explain how the coordinator will have the necessary competences and resources to fulfill its tasks. This could, depending on the context, include new laws to expand the mandate of a government agency or increase the resources available for sub-national governments to fulfill their new duties.

Considering that the NECPs will not be renewed before the end of the decade, we propose to either include this framework as a new reporting obligation, which could take over the former National Energy Efficiency Action Plans (NEEAPs) that were used for MS to set out their plans to meet the 2020 EE targets, or to make this model mandatory for any national strategies in sectors for which energy usage is an important element.

While this framework promotes an important level of autonomy for MS to design E1st implementation strategies, frequent exchanges of best practices among MS should be organized as regularly as possible to ensure that MS can learn from peers and incorporate particularly successful initiatives. In this regard, the Concerted Action on the Energy Efficiency Directive, a platform for policymakers to exchange measures to implement the EED, is an important initiative that can complement the implementation of our framework.

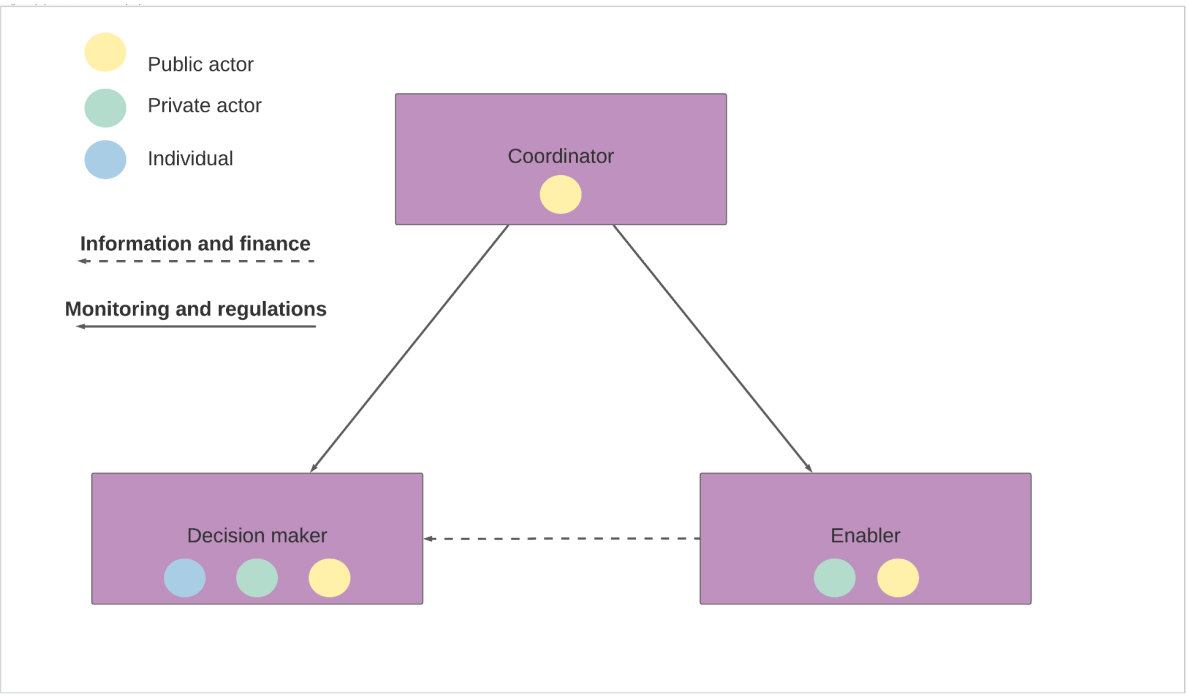

Figure 3: e**N**ergy efficiency **I**mplementation sta**K**eholders **O**verview

Embrace the strategic nature of companies' EE investments and enhance their information & training capacities

EE practitioners, such as the engineers undertaking energy audits or other enablers from the private sector as mentioned above, tend to adopt a financial approach when deciding on an investment on EE. That is, they tend to characterize an investment in EE as profitable according to the expected monetary returns of such investment and the decrease in costs it should bring about (i.e., saved energy and maintenance costs). This approach is prioritized given the uncertainties around the profitability of EE investments regarding both the assessment of actual physical savings and the difficulty in predicting future energy prices. However, moving away from a sole financial justification of EE investments towards embracing also its strategic justification can increase the chances of putting EE at the forefront of investment decisions. Coomerans (2011) defines a strategic investment as one that "contributes to create, maintain, or develop a sustainable competitive advantage". One reason why EE investments are not consistently pursued by firms despite the improvement of investment returns is therefore the lack of consideration for its strategic potential.

Consequently, the enablers should be trained to take a broader approach to EE investments to consider – and communicate – the implications of such investments for the reinforcement of each company's specific competitive edge in carrying out its main business in terms of value, costs and risks. This relates, as mentioned several times already, to the necessity of also considering non-energy benefits of EE investment projects to make EE investments happen more systematically. It has been shown that energy management also has an impact on the perceived strategic nature of EE investments. Two enabling factors are when the company's owner has a positive vision for EE, and when the company allocates resources to EE, which both improve the financial evaluation of EE investments (Cooremans, 2019). The likelihood of taking a favorable EE investment decision increases with the quality of the energy management system. Indeed, the more investments are regarded as strategic, the less stringent the financial criteria applied to the decision will be (*ibid*). Yet, just like there is an absence of monitoring and control tools at the MS' level regarding the application of the E1st principle, there are similarly no such tools for companies to properly evaluate their investments in EE. At the practical level, this translates into the necessity of providing technical help to enterprises about EE initiatives, as well as to expand information, education, and training.

Our recommendations to enhance companies' education and training regarding the consideration of EE in their investments are first related to the clarification of the role of a company's energy manager. The typical responsibilities and duties associated with the position should be identified and outlined more clearly in the EU's agenda-setting initiatives related to energy, given that these are the enablers that are at the heart of creating a vision for the implementation of E1st within companies. Specifically, large-scale energy consumer companies should be targeted in priority given that they are energy-intensive companies. For instance, the European Committee on Energy Efficiency could ask each MS's national monitoring entity to target the main energy consumer companies in each country and

provide technical expertise for the identification and implementation of EE enhancements and initiatives follow-ups, with a special attention to company-specific non-energy benefits of EE investments. More globally, all experts involved in energy audits for energy consumer companies should be aware of the strategic considerations to take into account when providing technical support for the systematization of projects that generate energy savings. This kind of training can take place simultaneously to good E1st practices sharing forums at national and/or EU levels.

A framework for integrating E1st in financial institutions' reporting and risk assessment frameworks

To ensure that financial institutions prioritize and invest in EE measures, there is a need for greater recognition and integration of EE in climate risk frameworks and reporting systems. One effective way to achieve this is by explicitly linking EE and sustainable finance, emphasizing that cost-effective energy investments should be a priority in financial decisions. This can be accomplished by developing indicators and metrics that capture the EE performance of portfolios and investments, which can then be used to evaluate potential climate-related risks and identify opportunities to invest in EE measures. While some banks are making progress in this area, this is still a slow process. The EU should accelerate this progress by acting as a regulator and developing guidelines that include specific metrics to measure and report on EE, such as the energy intensity of their investment portfolios or the percentage of energy-efficient projects in their lending portfolios. Moreover, the EU could require financial institutions to report on their EE performance as part of their sustainability reporting requirements. This could include requiring disclosure of EE data, targets, and progress towards those targets.

Exerting this kind of pressure on the financial sector can be a valuable way to address some of the barriers at the individual level. As discussed beforehand, high up-front costs and a lack of awareness of E1st's benefits can discourage individuals and households' investments in EE. Financial institutions could address these issues by providing technical assistance through energy efficiency advisors and by offering preferential lending rates for energy-efficient projects. Tools such as Energy Efficiency Mortgages (EEMs) can be used to provide lower interest rates or additional funds to support energy-efficient upgrades for homes.

Given that banks are unlikely to implement these adjustments by themselves, the EU should offer financial incentives to banks that issue EEMs, such as lower capital requirements or preferential treatment in EU funding programs. This will make it more attractive for banks to act as enablers by offering EEMs to individuals, who act as policy-makers taking decisions based both on regulators' and enablers' regulations and advice.

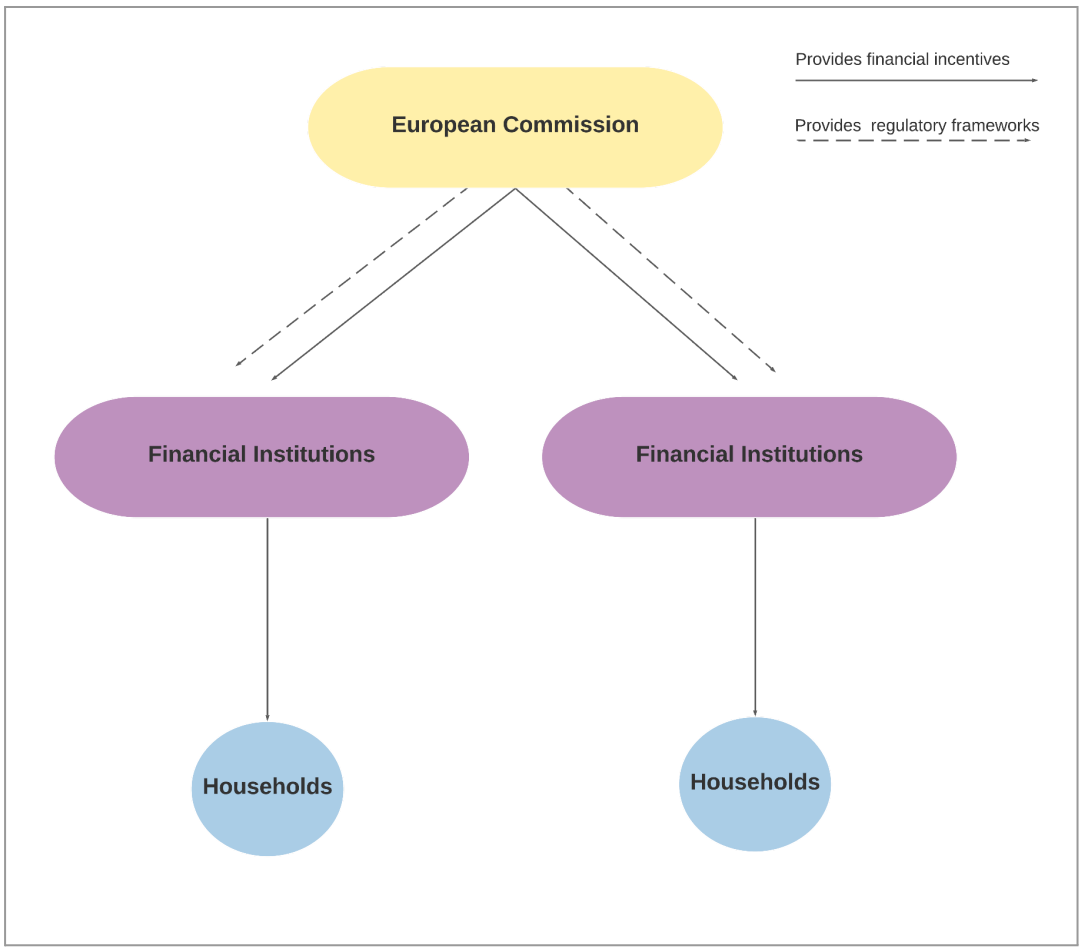

Figure 4: fra**M**ework for energy efficiency fin**A**ncial **R**eporting re**C**ords

Conditionality of EU funds on the implementation of the E1st principle

A final, very straightforward, policy option is to make EU project funding for MS conditional on the proper and systematic implementation of the E1st principle. This would be implemented in priority for projects specifically related to the energy transition, including the funding of renewable energy infrastructure for instance, in which EE can be nicely incorporated, but can also be implemented for any project in which EE is relevant. Despite the potential obstacles linked to low political feasibility of this measure, the conditionality of EU funds on E1st could create a powerful incentive and obligation to integrate EE in projects. This requirement would contribute to avoiding some of the current barriers that can discourage MS to implement the directives related to EE, including the political capture by traditional energy utilities, or the lack of energy, time, and manpower. For instance, the Renewable Energy Financing Mechanism (RENEWFM) is a mechanism that pools financial contributions from all EU MS and then allocates funding to renewable energy production capacity projects through a system of competitive tenders (European Commission, 2020). Launched in the context of the post-pandemic recovery, it is still active and no later than a

few days ago, a new call for projects facilitating the cost-effective roll-out of renewables was opened. With an available budget of 40 million euros, this tender concerns solar photovoltaic projects in Finland, the host MS, and has received financing from Luxembourg, the contributing MS (European Commission, 2023). However, nowhere in the objectives, conditions, or awarding criteria is EE or the E1st principle mentioned. That is, competing entities answering to this EU-funded tender have no obligation nor the incentive to incorporate EE considerations into their proposals, meaning that the EU will be funding projects that will not follow the principle of putting energy efficiency at the heart of the investment decision. Simply obligating any EU-funded project to prove and highlight how projects will implement EE policies is a radical but highly efficient way to make energy efficiency an utmost policy priority.

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