“Fit for 55 Package”: 10 policy ideas to make the new 55% CO_2 reduction objective by 2030 becoming a reality

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According to the Intergovernmental Panel for Climate Change (IPCC)[1], if the world is to stay within a global warming trajectory of 1.5-degree, emissions need to be significantly abated by 2030 (minus 30 to 50 percent for CO_2 compared to today) and zeroed by 2050. The EU's decision to increase its 2030 GHG emissions reduction target from 40% to at least 55% compared to 1990 levels constitutes a step in the right direction. However, to achieve this new objective, the European climate policy architecture needs to be deeply reviewed, which is what the "Fit for 55" legislative package is for.

Moving from 40% to 55% CO_2 reduction by 2050 (based on the 1990 baseline) means significantly stepping up the level of effort. The annual investment in the energy system will need to be around EUR 350 billion higher in the coming decade (2021-2030) than in the previous decade (2011-2020).

Achieving at least 55% GHG emission reduction by 2030 requires an increased share of renewable energy in the range of 38% to 40% of gross final consumption. The power sector will continue to move away from fossil fuels, which would generate less than 20% of the EU's electricity in 2030 while renewables would supply around two-thirds of the EU's electricity. The Commission's Impact Assessment indicates that consumption would further fall by 2030; about half of the efforts to achieve the 2030 milestone is to be coming from more energy efficiency according to the IEA.

Decarbonizing both energy supply and demand is key to becoming climate neutral and must actually be achieved while ensuring a just and fair transition. The acceleration of decarbonization will now depend on the ability of this policy bundle to reduce the energy transition's cost, empower end-users, and stimulate innovation. Energy efficiency, end-use electrification and digitalization are the three critical principles that must drive the development of the fit for 55 package.

- Energy efficiency is where the lion's share of EU efforts must happen. Energy consumption had been gradually decreasing since the beginning of the century - but this trend changed in 2014. The overall problem is that economic growth is still not truly decoupled from energy use, especially once imports are considered. This raises not only a sustainability issue but a security of supply one. Europe currently imports more than half of all energy it consumes and it is still particularly dependent on imports of crude oil and natural gas.
- An economy where 60% of final energy consumption directly comes from net-zero electricity can be achieved and would greatly benefit both society and the environment. Direct electrification of end-use sectors like buildings, heating and cooling, transport, and industry will bring massive macroeconomic benefits regarding growth and employment. But, according to 2019 figures from Eurostat, approximately 75% of heating and cooling is still generated from fossil fuels while only 22% is generated from renewable energy.
- Finally, digitization comes as a key enabler to combine efficiency, sustainability, and decarbonization. It greatly supports the improvement of energy efficiency and the integration of renewable energy because it enables new forms of transparency, collaboration and control; it provides data for better informed production and consumption decisions. Digital is particularly competitive and disruptive to bring efficiency on brownfield buildings and plants and infrastructure, through retrofitting and upgrading. But digital has not yet been integrated into the regulatory framework about decarbonization in Europe.

[1] IPCC (2018), Global Warming of 1.5 degree Celsius.

Table: Summary of proposed policy measures per EU Directive/Regulations

	Regulation at stake	Residential buildings	Non-residential buildings	Industry	Transport	Power
EU final energy consumption (2019, in percentage)		27%	15%	25%	31%	Not Applicable
Sharing Regulation covers about 60% of EU GHG emissions. (1750) 2030 ESR emission reduction target to be compatible with the -55% target: -47% GHG relative to 1990	EPBD[2]	- Phase out worst energy performance buildings	- Set-up mandatory energy consumption reduction milestones (2030, 2040 and 2050)		- Increased targets for EV charging stations in private spaces - Define smart charging capabilities for EV charging	
		- Toward new metrics for buildings: • Reform the energy performance certificate (digital logbook) • Base energy performance on final and not primary energy • Change standard for new buildings to net-zero standard • Encourage digital technologies deployment				
	EED[3] 40% energy efficiency target by 2030		- Incentives to implement energy audits obligations implementation for large companies			- Adopt sustainable procurement for grid operator (and a smart grid indicator)
	RED[4] 38-40% renewable energy target by 2030	Set minimum mandatory target for renewable electrification (heating & transport)				
		Phasing out fossil fuel heating systems				
	AFID[5]	Extension of the scope to "not publicly accessible" charging with target for private and semi-private charging stations			Minimum requirements for smart charging capabilities	
Energy Trading System covers about 40% of GHG emissions. (2570) 2030 ETS emission reduction target compatible with the -55% target: -63% GHG relative to 1990	ESR[6]	Maintain residential and non-residential buildings under the Effort Sharing Regulation as the main compliance regime to decarbonize the existing stock				
	ETS[7]	Limited carbon pricing instrument for heating (cap system, no trade)				
	ETD[8]	Abolish fossil fuel tax benefits and establish tax rates based on the energy and carbon content of each source of energy				

[2] Directive on the energy performance of buildings Directive, so-called "Energy Performance of Buildings Directive"

[3] Directive on energy efficiency, so-called "Energy Efficiency Directive"

[4] Directive on the promotion of the use of energy from renewable sources, so-called "Renewable Energy Directive"

[5] Directive on the deployment of alternative fuels infrastructure, so-called "Alternative Fuels Infrastructure Directive"

[6] Regulation on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030, so-called "Effort Sharing Regulation"

[7] Directive establishing a system for greenhouse gas emission allowance trading within the Union, so-called "Emissions Trading System"
According to Agora Energiewende's calculations[10],

[8] Directive for the taxation of energy products and electricity, so-called "Energy Taxation Directive"

10 policy evolutions to make the new 55% CO_2 reduction objective by 2030 becoming a reality

1. We need more ambitious Energy Efficiency (EE) and Renewable Energy (RE) targets to achieve the 55% CO_2 objective – with the lion's share coming from the building sector

- Following the European Commission's proposal to increase the GHG emission reduction target from 40% to at least 55%, the current 32.5% energy efficiency and 32% renewable energy targets are not sufficient meet these goals by 2030 according to the Commission's own calculation[9]. A 55% GHG reduction sees ca. 38%-40% renewable energy share by 2030. 2030 final and primary energy savings increase to 36-37% and 39-41% respectively. According to the Fraunhofer Institute for Systems and Innovation Research (Fraunhofer ISI), the EU has the potential for a 41% cost-effective end-use energy savings by 2030.

The importance of the building sector to reach 55% less GHG by 2030

- The building sector should be the main point of attention with the new 55% CO_2 reduction objective. This means that the Effort Sharing Regulation (ESR) should be changed to reflect the central role of the building sector in delivering further decarbonization. According to Agora Energiewende, technically feasible emissions reductions for the EU-27 countries range from 45-49% for the non-Emission Trading Scheme (ETS) sectors, and from 59-63% for the ETS sectors (both relative to 2005)[10].
- To achieve this target, the Energy Performance in Buildings Directive and the Energy Efficiency Directive have to play a central role in mandating the reduction of the energy consumption by the building sector (see section 3 and 4).
- Should the European Commission decide to extend the ETS to the building sector, the measure should focus on putting a carbon cap on the building sector, while being mindful of its social impact – for example, by setting a carbon price for heating producers as is done in Germany[11]. A "cap and trade" system (that exists today in energy-intensive industry) is unlikely to work in the building environment because the sector is much more fragmented.

[9] European Commission, 2030 Climate Target Plan Impact Assessment, Table 28, 2020

[10] Öko-Institut and Agora Energiewende,"How to Raise Europe's Climate Ambitions for 2030: Implementing a -55% Target in EU Policy Architecture", 2020

[11] Clean Energy Wire, Germany's carbo pricing system for transport and buildings, 2020

2. Carbon externalities should be better reflected in energy prices (ETD)

- The coherent and effective taxation of energy products should be the centerpiece of any successful energy and climate policy. In many countries, renewable energy surcharge mechanisms have been borne by consumers, further tilting the playing field toward energy carriers.
- Addressing the disparities between energy carriers should allow for a proper reflection for a more equitable tax benefit across all energy sources. Today's taxation rules favor gas over electricity, and there are insufficient incentives to develop renewables given that the electricity from renewables is taxed as much as electricity from fossil fuels. Accounting for the real climate impact of all energy carriers is paramount if Europe intends to move to green energy towards achieving Net Zero 2050 goal. To level the playing field, tax rates and tax benefits should be based on the energy and carbon contribution of each and every energy source.

3. A new set of metrics and requirements to accelerate the decarbonisation of the building sector (EPBD)

- The renovation of existing buildings is the major issue to address short term. 75% of the building stock needs renovation according to the recent Renovation Wave strategy by the European Commission. Achieving 60% GHG emissions reduction for the building stock by 2030 is a prerequisite to putting Europe on a sustainable pathway toward a net-zero carbon stock by mid-century.
- However, the yearly deep energy efficiency renovation rate barely reaches 0.2% for both residential and non-residential buildings, according to a recent study by the European Commission[12]. Based on this current renovation rate, it would take centuries to renovate the building sector in a way that complies with the EU's climate objective. Therefore, we need long-term final energy reduction milestones for the building sector to establish a clear direction and to accelerate the renovation market in Europe.
- As expressed in the Renovation Wave strategy, the introduction of mandatory minimum requirements is necessary[13]. Minimum Energy Performance Standards require buildings to meet a predefined minimum target. For example, this could be an energy rating which must be reached by a specified date or at certain moment in the life of the building[14]. However, a differentiated approach might be preferable when it comes to non-residential vs. residential buildings.
  - In the EU, non-residential buildings represent 25% of the building floor space, 32% of the final energy use in buildings, and about 13% of total CO_2 emissions. Overall, private non-residential buildings[15] have a higher decarbonization potential compared to residential buildings for the same level of investment (a double energy saving figure in general). Tackling non-residential energy efficiency is also easier than in residential buildings because of the frequent change of activity every three to five years (according to our own estimation). High value would therefore come from establishing long-term, mandatory milestones regarding the decarbonization of tertiary buildings. In that regard, the French Tertiary Decree must be used as a benchmark (see the table below). The French law prescribed all tertiary buildings to reduce their final energy consumption by 40% by 2030, 50% by 2040, and 60% by 2050[16].

[12] European Commission, Communication on the EU Renovation Wave, 2020

[13] ibid.

[14] As outlined by the Building Performance Institute in Europe, "Mandatory minimum requirements may be related to sale, rental or other property transaction based on a minimum energy performance certificate class but are not limited to this. They may also include accompanying measures that help to overcome barriers for implementing mandatory minimum requirements, barriers related to practical implementation and subsidiarity". BPIE, "The role of mandatory minimum requirements and their potential impact on increasing the rate of energy retrofits in the EU", 2020

[15] A building is regarded as a non-residential building when the minor part of the building (i.e. less than half of its gross floor area) is used for dwelling purposes. We specify 'private' non residential building when we focus on non-residential buildings owned by the private sector.

[16] French Decree n°2019-771 regarding obligations of final energy consumption reduction in tertiary buildings, 2019

Example of the French "Tertiary Decree" – Mandatory final energy consumption reduction targets for tertiary buildings

- The French Tertiary Decree entered into force in October 2019 in France and specified the implementation of the article 175 of the "loi Elan".
- The decree targets apply to all tertiary buildings above 1,000m2 – all public and private buildings with a few exceptions – and proposes two methods to achieve the targets:
  - In the first option, building owners/occupants must demonstrate that they fulfill the final energy consumption reduction objectives based on a year of reference that needs to be 2010 or after.
  - In the second option, building owners/occupants commit to achieve a final real energy consumption level by a given year, based on a set of performance targets, which is being set up by the public authorities (to be adjusted per type of activities/buildings).
- The decree includes a list of actions to achieve the energy performance objective (thermal performance, energy management, maintenance, behavioral changes, etc.). A digital platform has been introduced where building owners/occupants must report their final energy consumption based on certain criteria. Penalties are being included in case of non-conformity.

- In contrast, the milestones for residential buildings should focus on tackling the worst performing buildings[17]. It is a softer approach than mandatory energy reduction milestones for a sector that is more difficult to address and more sensitive politically. Practically, the requirement should require renovation of the least efficient building stock when ownership changes (looking to upgrade the energy performance certificate level). This requirement must go hand-in-hand with a framework including financial assistance and support for building owners and occupants to ensure both a just transition and a practical impact.
- For both residential and non-residential buildings, the energy performance assessment should be based on a broader set of metrics than we have today. It should also rely on the measurement of the final energy consumption per building rather than on a primary energy methodology as it is today (see table below).

[17] RAP, "Filling the policy gap: Minimum energy performance standards for European buildings", 2020

Primary energy vs. Final energy: The importance of better reflecting what end-users actually consume

- "Primary energy" is the amount of energy contained in raw fuels and other forms of energy received as an input to a system. "Final energy" refers to what end-users actually consume.
- In the building sector, the EU is using "primary energy" as a baseline to calculate energy savings. A Primary Energy Factor (PEF) has been developed to convert savings coming out of a calculation methodology based on primary energy. The PEF describes the efficiency of converting energy from primary sources (e.g. coal, crude oil) to a secondary energy carrier (e.g. electricity, natural gas) that provides energy services delivered to end-users. To do so, it uses a default coefficient of 2.1 (as defined in the last revision of the Energy Efficiency Directive).
- As a natural progression, the methodology should be moved from primary energy demand to final energy. Europe consumes more energy from renewables in the form of electricity, it manages similar economic output while consuming less primary energy. As buildings need to be ultra-efficient, all electric and digital to become climate-neutral, the energy performance of buildings should reflect efforts taken at end-use level. This makes the case for reflecting even more efforts achieved in terms of final energy at the building level.

- Another impactful policy change would be to refine the nearly-zero energy building standard for new buildings in Europe by moving from a "nearly" to a "net-zero" approach. The current EPBD Technical Standard for Nearly-Zero Energy Buildings (NZEB) defines a NZEB as "a very high energy performance building with energy produced by renewable sources on-site or nearby", and required new public buildings to reach this standard starting in 2019, and all new buildings to reach this standard starting in 2021. However, several interpretations both for the NZEB definition and limits are available in the EU countries. For instance, only Austria, Ireland and Romania have set up CO_2 emissions limits in their national definitions. Plus, there is a wide range of definitions for what an energy-efficient building is. Some Member States (e.g. Belgium, the Netherlands) use non-dimensional value or an energy performance class (e.g. Lithuania where NZEB have to comply with building class A++) as an indicator, while in France, the NZEB definition matches the actual thermal regulation (i.e. the primary energy performance of residential buildings must be below 50kWh/m2/year). NZEB is a very flexible policy requirement with no single, agreed-upon definition throughout the EU. Second, the current definition does not require buildings to have their energy use fully covered by renewables (i.e. the energy required should be covered to a very significant extent by energy from renewable sources) contrary to what the net-zero energy standard is requiring. The NZEB standard is being widely used in North America. It usually requires the building consumption to have a net-zero carbon balance and to be fueled with renewable energy sources only.

4. Toward a new Energy Performance Certificate system (EPBD)

The implementation of national Energy Performance Certificate (EPC) regimes (that is required under the current EPBD) led to a diverse set of instruments, varying in terms of scope and available information, in some cases resulting in limited reliability, compliance, market penetration, and acceptance at the country level[18]. On top of this, building-related data – such as EPC data, sustainability, environmental performance information, digitalization of buildings – continues to be scarce, of unreliable quality and limited accessibility. The reason why is that there are many data points related to building performance (smart data usage, energy flexibility, and the impact of energy management systems) that are simply not covered in the current EPC regimes. It then leads to a low impact of the EPC system, especially for non-residential buildings.

A reform of the Energy Performance Certificate must be one of the critical priorities of the EPBD and address four points:

- Key indicators must be fully harmonized across Europe. The indication of the building performance in both CO_2 emission and final energy must be required, as it will provide clearer and easier information to end-users on end-use energy efficiency[19]. Most importantly, common sets of data points on EPC across Europe are necessary to promote a European renovation market across countries (as it happens today with the CO_2 labelling of passenger cars in Europe).

- The Energy Performance Certificate must consider a wider range of parameters to estimate the actual energy performance of a building[20].

- Thirdly, linking EPC with other existing databases and tools, such as the Smart Readiness Indicator (SRI), through Digital Building Logbook could overcome value chain fragmentation (see glossary below). The SRI holds a great potential to enable the deployment of digital solutions with the highest impact to decarbonize the buildings stock. It must be introduced on a mandatory basis alongside EPC for non-residential buildings.

- Last, but not least, the Energy Performance Certificate shall be made available for a group of buildings (district buildings) when the cost-optimum energy performance is to be found at the district level (rather than at the individual building level) and when the group of buildings is willing to participate to a collective scheme (district building, micro-grid[21]).

[18] Hartenberger et al. (2019) "The Building Passport as an enabler for market transformation and circular economy within the built environment"

[19] The French EPC (so-called "Diagnostic de Performance Energétique") will evolve in July 2020 and will no longer be expressed in primary energy consumption only (calculated in kWh/m2/year) but also in greenhouse gas emissions (expressed in CO_2 kg/m2/year).

[20] BPIE, "Energy Performance Certificates Across the EU", 2015

[21] For instance in Finland, Schneider has partnered with Lidl to build Finland's largest industrial microgrid which will reach a high level of energy efficiency based on 100% renewable energy. The microgrid include a 1600-panel solar power plant on the building's roof, enabling solar-generated electricity to be utilized in the co-generation of heating and cooling. The heat recovered from the distribution center's refrigeration equipment and systems will be used for the building's energy needs and supplied to Järvenpää's residents, heating water for approximately 500 private homes.

Glossary - Digital Building Logbook, Energy Performance Certificates, SRI and B.I.M. for a decarbonized building stock

- The Digital Building Logbook, based on the "Study on the development of a European Union framework for digital building logbooks" is expected to establish a common European approach through the 2021 EPBD review, aggregating all relevant building data based on a standardized approach for data collection, data management and interoperability, and integrating other certification schemes such as EPCs and SRI.

- Introduced by the 2018 Energy Performance of Buildings Directive review, the proposed Smart Readiness Indicator (SRI) aims to measure ICT integration and digital technologies to optimize energy performance (e.g. through the deployment of monitoring, automation and controls). This is to enable adaptation of building energy consumption in response to both the availability of renewable sources and the needs of the occupants, as well as to "measure" the flexibility of the power demand of a building, expressed as participation in demand response strategies in relation to the grid requirements. With this indicator, a reduction of the performance gap between the current building energy performance certificates and the actual behavior is expected[22]. The final methodology was adopted in 2020 and its implementation has started in EU Member States, although on a voluntary basis only.

[22] "Update of energy performance certificates in the residential sector and scenarios that consider the impact of automation, control and management systems: A case study of La Rioja", 2016

5. Accelerating digital technologies deployment in buildings (EPBD)

Digitalization has significant potential to accelerate the transition to a low-carbon and circular economy. With the same budget, digital technologies can renovate 10 times the space of traditional technologies[23]. Digitalization comes as a key enabler to combine efficiency, sustainability and decarbonization within the building environment. Digital technology is removing inefficiencies through use of 5D Building Information Modeling (BIM), modelling all aspects of buildings, organizing the ecosystem of players, ensuring timely execution, offering transparency of works, and certifying decarbonization labels. It gives a new perspective to building management. The importance of digital technology needs to be reflected in the EU regulatory framework. This can be done by:

- Promoting the digital exchange of product descriptions and service descriptions, based on standardized data formats (e.g. ecl@ss advanced). Support/mandate the roll-out of digital design and operating tools such as BIM in construction work (and renovation work when applicable). A disruption is needed in the construction industry to decrease the cost of making a building zero-carbon, especially in residential and commercial buildings, to drive costs down. What is required is not only the deployment of Best Available Technologies (BAT), but also more efficient processes, materiel efficiency and recirculation. Demand through new design-and-use models and lifetime extension needs to be reduced. BIM has been recognized as a strategic enabler for cost, quality and policy goals and its wider adoption is supported by the work of the EUBIM Task Group[24].

- Supporting the development of a common European data space for buildings in Europe. The availability of data is very important to ensure Europe benefits from the added value that comes with the data economy.

[23] World Economic Forum, "Why buildings of the Future are the foundation of an energy-efficient future", 2021

[24] EUBIM Task Group "Handbook for the introduction of Building Information Modelling by the European Public Sector - Strategic action for construction sector performance: driving value, innovation and growth", 2017

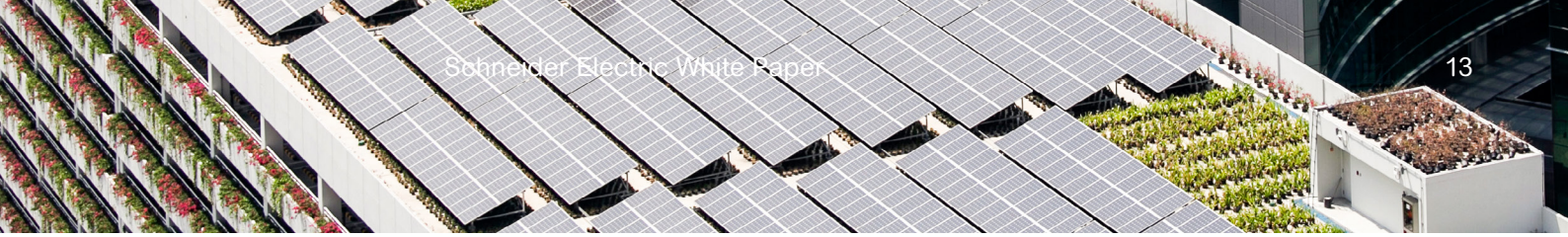
6. Introduce strong incentives for large enterprises above to implement recommendations from energy audits (EED)

The article 8 of the Energy Efficiency Directive introduces an obligation to undertake an energy audit every four years in Europe. Yet many companies still consider these audits an administrative burden rather than a useful tool for improving efficiency. A majority of them (subject to the obligation) carry out a low-quality audit without taking any further action. It is a missed opportunity – not only from an efficiency perspective but also from a cost-saving one. From the more than 400 client audits Schneider Electric's Energy Sustainable and Services team conducted under Energy Savings Obligations Schemes of the EED Phase 1 & 2, average savings of about 20% have been identified and it was shown that 60% of those energy conservation measures had paybacks of two to three years. However, without an incentive to implement those energy conservation measures, most of those savings remain untapped. To tackle this missed opportunity, many experts, including Schneider Electric, propose an adjustment of EED Article 8 through:

- A strong incentive to implement recommendations from energy audits. In particular, there should be a focus on measures with possible additional incentives for companies that act on these recommendations. For example, financial incentives should be made available and conditional upon the implementation of identified measures, such as the Energy Investment Allowance scheme introduced in the Netherlands[25].

- Promoting medium-to-long-term energy/carbon reduction targets for companies. This will provide additional focus and a framework for companies to follow to drive the implementation of the recommendations and ensure the measures encompass both energy efficiency actions and renewable electricity deployment

[25] Netherlands Entreprise Agency, 2020



7. Set up binding regulation to require a minimum percentage of renewable electricity in end-use sectors (transport & buildings) and introduce a ban on gas boilers (RED)

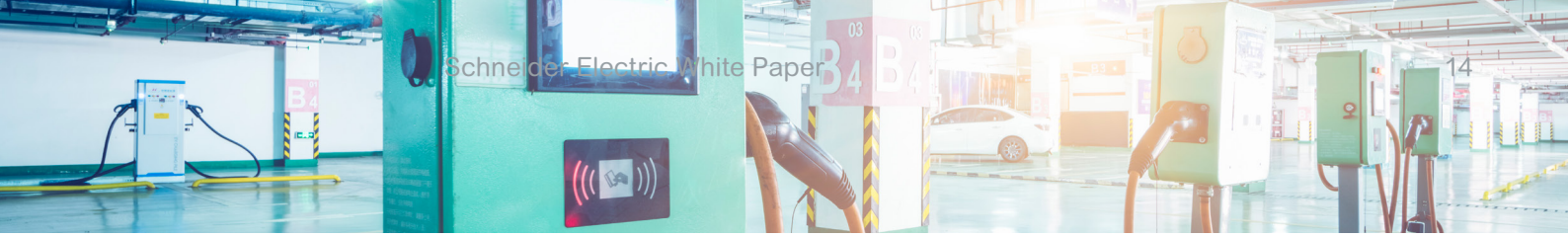
- The current level of renewable electrification of end-use sectors is not enough to reach the amount of renewable electricity needed for the 55% target. The European Commission Climate Target 2030 Impact Assessment points to a strong role of further electrification of the economy to achieve the increased climate target. Electrification is confirmed as a key avenue for energy system integration and thus cost-effective decarbonization in line with the Energy System Integration Strategy[26].

- Therefore, the EU should set up mandatory sectorial targets for electrification of end-use sectors. The Directive currently foresees an indicative target of a 1.3% annual increase for renewable energy used in heating and cooling. In their National Energy and Climate Plans (NECPs), only half of the member states provided an indicative yearly increase of 1.1%[27]. Those member state trajectories and the target level are close to business-as-usual and would be insufficient to deliver on the 55% GHG target. There is a clear need to accelerate the use of renewable electricity in buildings, industry and in the transport sector. The target must become mandatory.

- Finally, the reviewed Directive also introduces incentives to phase out fossil fuel heating in the building environment as is currently the case in several countries (UK, France, etc.). The U.K. government said that all new homes should be built without fossil fuel heating starting in 2025, while France is about to put forward a draft environmental regulation containing climate rules for new residential buildings beginning in 2022. This includes restrictions that would force most new home builders to install hybrid heat pumps or decarbonized solutions beginning in 2025.

[26] Based on the assessment of the EU 2030 Climate Target Plan, 2020, to meet the objectives, within the next 10 years, the pace of deploying wind and solar capacities must at least double. 480 GW of renewable capacities should be added by 2030, representing almost half of the total power capacity in the EU.

[27] ibid



8. Speed-up the deployment of smart charging at building level (AFID, EPBD)

The Sustainable and Smart Mobility Strategy, unveiled in December 2020, reiterated the need for a 90% reduction in GHG emissions from transport for the EU to become a climate-neutral economy by 2050[28]. To achieve this systemic change, electrification of transport and infrastructure will have to be accelerated. In this context, electric vehicle (EVs) sales are rapidly increasing. Indeed, if costs of EVs continue to decrease, and are on a par with internal combustion engine vehicles by 2024 for light vehicles, and by 2027 for heavy vehicles, then half of all new light vehicle sales will be EVs shortly after 2025, and shortly after 2030 for heavy vehicles.[29] Thus, there is a need to boost the quantity and availability of electric charging points in all member states and for all modes of transport. On top of this, there is a need to expand private and semi-private charging. Recent analysis show a need to deploy around 290 million charging points by 2040, with home, workplace, and private commercial charging accounting for 78% of this investment[30]. However, the electricity system simply cannot cope with the increased uptake of electric vehicles (EVs) unless their use of the electricity system is carefully managed.

The Fit for 55 Package should stimulate the shift toward private charging, while enabling the adequate framework for the integration of those distributed energy resources:

- Set up a target as part of the AFID revision for the mandatory deployment of private and semi-private EV charging stations with mandatory installation of charging points in the building sector.

- Set up, in both the AFID and the EPBD, smart charging functionalities for private and semi-private charging points. This would entail only minimal additional costs to end-users as the marginal difference in investment costs between normal and smart charging will be less than €50 by 2025. The smart charging capabilities should integrate:

    1. Bi-directionality components with the ability for the vehicle to interact with an electrical energy network or a local energy network.

    2. A minimum level of controls, such as shifting the start time of charging in response to price signals; intermittent recharging; or recharging with power modulation to optimize the use of those distributed energy resources.

[28] Sustainable ad Smart Mobility Strategy, 2020

[29] WindEurope Breaking new Grounds, 2018

[30] BNEF, Long-Term Electric Vehicle Outlook, 2020

9. Extend provisions on self-consumption to enable collective consumption (C&I) (RED)

A more integrated energy system will rely on more decentralized generation. The Clean Energy Package has introduced several key rules to extend energy market access, which should be properly enforced. Still, non-residential customers (e.g. commercial, industrial, non-residential buildings) are not yet allowed to contribute to energy sharing in communities and in renewable energy communities. The Renewable Energy Directive should extend the scope of “renewables self-consumers” and of “jointly acting renewables self-consumers” to create the conditions for collective consumption. To that end, charges and fees to renewable self-consumers should be removed for self-generated electricity, including for installations with a total installed capacity of more than 30 kW. Therefore, the following changes should be implemented:

- First, the definition of a renewable energy community needs to be modified to include all types of prosumers, including legal entities which are corporations, companies and large enterprises. This will enable the active participation of all types of prosumers, for the benefit of the renewable energy community.

- Second, in article 21.4 of the REDII, the obligation for self-consumers to be located in the same building should be removed. This will facilitate the collective sharing of renewable electricity generation within a community of prosumers.

- Finally, in article 21.3(c), the 30kW threshold should be increased to avoid disproportionate charges on all types of prosumers.

10. Toward sustainable energy grids (EED)

Distribution grids are the backbone of the digital and energy transitions. European distribution grids will need investments of between €375-425 billion until 2030, according to a study commissioned by Eurelectric[31]. In contrast, grid operators have little incentive to pursue the development of new sustainable grid technologies in Europe. Investment in electricity grids has also declined for the third consecutive year. For a long time already, the U.S. and China have spent more money on smart grids than Europe.

Sustainability and energy efficiency of electrical networks must be better recognized within the legal framework. Therefore, integrating measures to facilitate indirect efficiency gains, as one new network functionality to be monitored in the smartness monitoring process, would adequately address the indirect impact of networks on energy efficiency[32]. As part of the article 15 of the EED[33], a common methodology for a "Smart Grid Indicator", which provides a checklist to ensure implementation at the member state level of supportive measures including all aspects of grid sustainability (decarbonization and circularity), should be established.

The Indicator should be designed with a reference to the smartness monitoring process for the electrical grids established at a national level as part of the implementation of article 59.1 (l) of the Electricity Directive. The indicators developed for this process by each national energy regulator could be part of the network development plans to enable operators to assess the progress of efficiency and flexibility in their network.

Also, the Energy Efficiency Directive shall give stronger incentives to grid operators for sustainable public procurement. Grid operators should invest much more into net-zero emission technology (with a lifecycle perspective). For instance, SF6 gas is being used in the switchgear industry despite its atmospheric lifetime of at least 1,000 years. And its installed base is expected to grow by 75% by 2030[34]. In article 15, The Energy Efficiency Directive must prescribe grid operators to buy sustainable products.

[31] Eurelectric, "Making power grids fit for the transition will create 500,000 jobs", 2021

[32] From a structural point of view this task is identical with the preparation of the network infrastructure for new, future proof functionalities for which the Electricity Directive, article 59.1 (l) is asking for a smartness monitoring process.

[33] The new paragraph 2.a of Article 15 of the Energy Efficiency Directive requires that *"By 31 December 2020 the Commission shall, after consulting relevant stakeholders, prepare a common methodology in order to encourage network operators to reduce losses, implement a cost-efficient and energy- efficient infrastructure investment programme and properly account for the energy efficiency and flexibility of the grid.*

[34] Energy Post, "Grid switchgear uses SF6, the world's most potent greenhouse gas. How do we regulate it?", 2019

Sources

1. https://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer
2. https://www.eea.europa.eu/themes/climate/trends-and-projections-in-europe/national-action-across-all-sectors/national-action-across-all-sectors
3. https://www.eea.europa.eu/data-and-maps/daviz/eu-ets-emissions-by-activity-type-1#tab-chart_5

Schneider Electric

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