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ENERGY IN BUILDINGS

EMEA 2024

Europe, the Middle East & Africa

FRIDAY - SATURDAY

NOVEMBER 22-23, 2024

@ 9:00-18:00

SESSIONS:

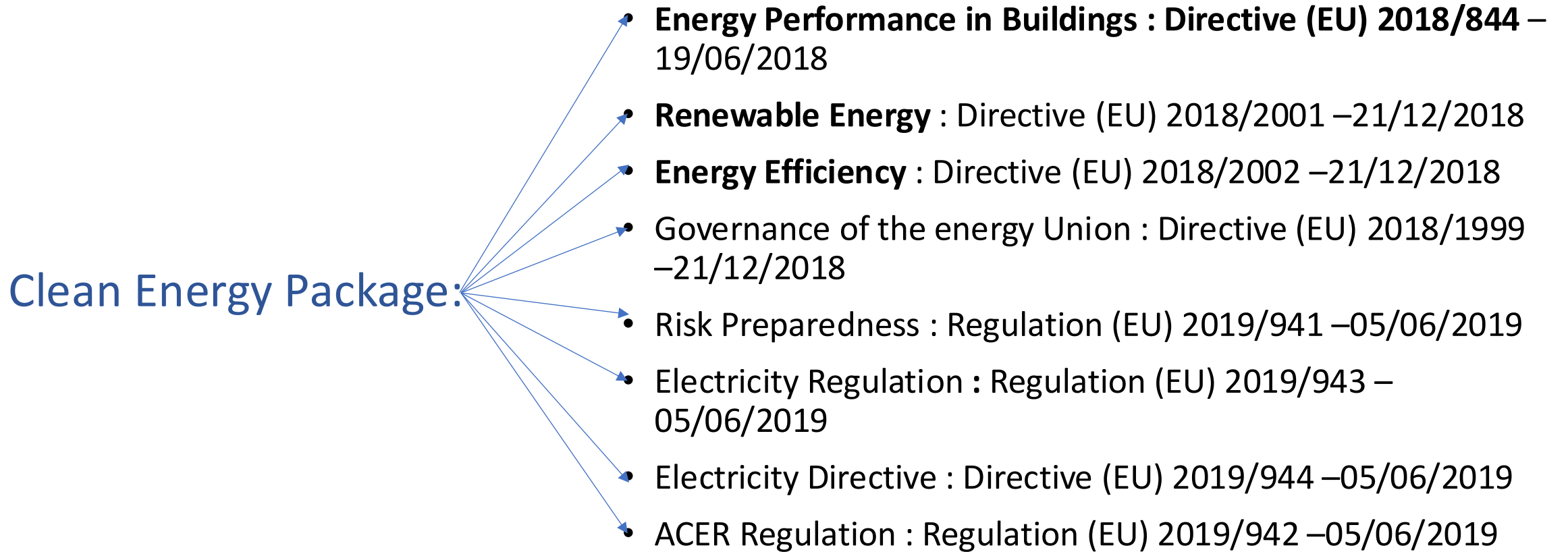
- SUSTAINABILITY
- HEALTH & SAFETY
- DECARBONIZATION
- TECHNICAL SOLUTIONS
- DIGITAL ENVIRONMENT
- POLICIES & LEGISLATION
- ENERGY EFFICIENCY FIRST
- RESILIENCE TO CLIMATE CRISIS

Developments in the Energy Building Framework at EU and national level

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EU policy and legal framework for green transition (1)



EU policy and legal framework for green transition (2)

EU GREEN DEAL (2019) → the more general plan

- EU's growth strategy towards green transition in line with Paris Agreement
- Climate neutrality by 2050

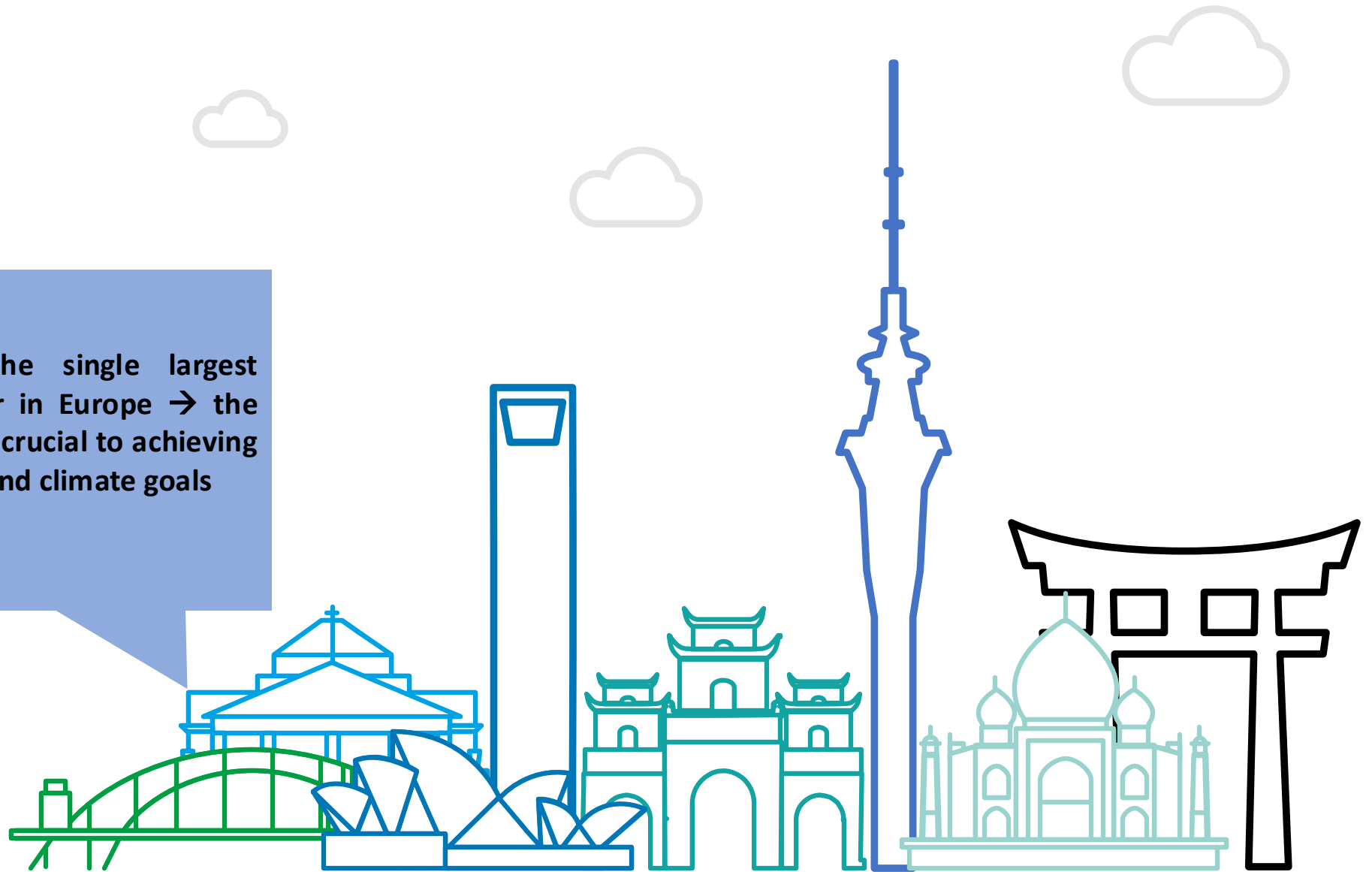
EU CLIMATE LAW Entry into force: 29.07.2021

- Legalization of the EU Green Deal goal for climate-neutrality by 2050
- Intermediate target: **reduction of net greenhouse gas emissions by at least 55% by 2030**, compared to 1990 levels
- All EU policies to contribute to this goal and all sectors of the economy and society to play their part

FIT FOR 55 (14.07.2021) → specific topics to be addressed

- Set of proposals to revise and update EU legislation with the aim of ensuring that EU policies are into line with the abovementioned climate goals

Buildings are the single largest energy consumer in Europe → the building sector is crucial to achieving the EU's energy and climate goals



Renovation Wave Strategy

Statistics	Objectives	Areas of Action	Key legislative initiatives	By 2030
<p>Buildings responsible for:</p> <ul style="list-style-type: none"> - about 40% of the EU's energy consumption - 36% of greenhouse gas emissions from energy 	Doubling of the renovation rate	Decarbonization of heating and cooling	Review of RED to strengthen the renewable heating and cooling target and introduce minimum renewable energy level in buildings	35 million buildings could be renovated
<p><u>However</u>: only 1% of buildings undergo energy efficient renovation every year</p>	Boost recovery	Tackling of energy poverty and worst-performing buildings	Examination of how the EU budget resources alongside the EU ETS revenues could be used to fund national energy efficiency schemes targeting lower income populations	Up to 160,000 additional green jobs could be created in the construction sector
	Reduction of energy poverty	Renovation of public buildings (e.g. schools, hospitals, administrative buildings)		

REPowerEU: a framework to reduce dependency on Russia's fossil fuels

To reduce dependency on Russia's fossil fuels, EU introduced the REPowerEU framework, consisting of three 3 major pillars in the effort to decouple from Russia's fossil fuels.

Savings

Energy users to save energy in light of cost containment and security of supply

- Consumers and businesses, coupled with energy efficiency measures will have a positive impact on prices - directly reducing energy bills, making economy more resilient and accelerating EU's clean energy transition.

Diversification of energy supplies

Working with international players to alternate energy sourcing on gas, coal & oil as soon as possible

- LNG on the front - Increase LNG imports from US & Canada
- Agreements, cooperation and with new parties for gas sourcing
- **Share of EU gas imports coming from Russia in 2021: 45% ≠ Share of EU gas imports coming from Russia in 2023: 15%**

Accelerating Clean Energy

Renewables are the cheapest and cleanest energy available. RepowerEU to speed up green transition through a large investment program

Increase the EU's 2030 target for renewables from the current 40% to 45%, which brings the total renewable energy generation capacities to **1,236 GW by 2030**, in comparison to the 1,067 GW by 2030, envisaged under Fit for 55 for 2030.

- Boost solar rollout - strategy aims to bring online **over 320 GW of solar photovoltaic newly installed by 2025**, over twice today's level, and almost 600 GW by 2030.
- Introduction of the '**European Solar Rooftop Initiative**' which aims to make rooftop solar infrastructure mandatory for commercial and public buildings by 2025, and residential buildings by 2029
- Doubling of **heat pump deployment** in heating systems
- **A hydrogen accelerator to build 17.5 GW by 2025** of electrolyzers to fuel EU industry with homegrown production of 10 million tones renewable hydrogen

EU Energy Building Framework



Target

Legislative Instruments

Reduction of greenhouse gas emissions

- **EU ETS Directive** (2003/87/EC as amended by Directive EU/2023/959)
- **Social Climate Fund Regulation** (EU/2023/955)
- **Effort Sharing Regulation** ((EU) 2023/857)

Enhancing the energy performance of buildings

- **Energy Efficiency Directive** (EU/2023/1791)
 - **Renewable Energy Directive** (EU/2023/2413 - RED III)
 - **Energy Performance of Buildings Directive** (EU/2024/1275)
-

EU ETS FRAMEWORK

EU ETS



EU ETS framework in general

ETS original framework

- Launched in 2005
- World's first carbon market - among the largest ones globally
- **“Cap and Trade” principle**
- Cap: refers to the limit on the total amount of GHG that can be emitted by installations falling within the scope of the system
- 4th trading phase: 2021-2030

Activation of obligation

- Electricity and heat generation
- Industrial manufacturing
- Aviation
- Emissions from maritime transport since 2024
- ***NOT FOR THE BUILDING SECTOR***

Allowances

- Emission allowances: 1 allowance gives right to emit 1 tonne of CO2 eq
- Allowances are sold in auctions and may be traded
- Companies may also trade allowances among themselves as needed → if an installation reduces emissions, the company can either sell the spare allowances and/or keep them to use in the future.

EU ETS II: part of the revision of the ETS Directive

ETS Extension

- **CO2 emissions from fuel combustion in buildings**, road transport and additional sectors corresponding to industrial activities (mainly small industry) not covered by Annex I to Directive 2003/87/EC, such as heating industrial installations
- It complements the EU Green Deal in the covered sectors, **helping Member States achieve their emission reduction targets under the Effort Sharing Regulation**

Activation of obligation

- Release for consumption of fuels used for combustion in the buildings and road transport sectors, including greenhouse gases for the purpose of geological storage
- (Un)leaded petrol, gas oil, kerosene, LPG, natural gas, heavy fuel oil, coal, coke, any other product intended for use, offered for sale or used as motor fuel or heating fuel as specified in Art. 2(3) ETD, including any fuel additives used as motor fuel, certain bio-based fuels, and any other hydrocarbons for heating purposes, except for peat
- **It puts the point of regulation “upstream” → it will be fuel suppliers, rather than end consumers that will be required to monitor and report their emissions**

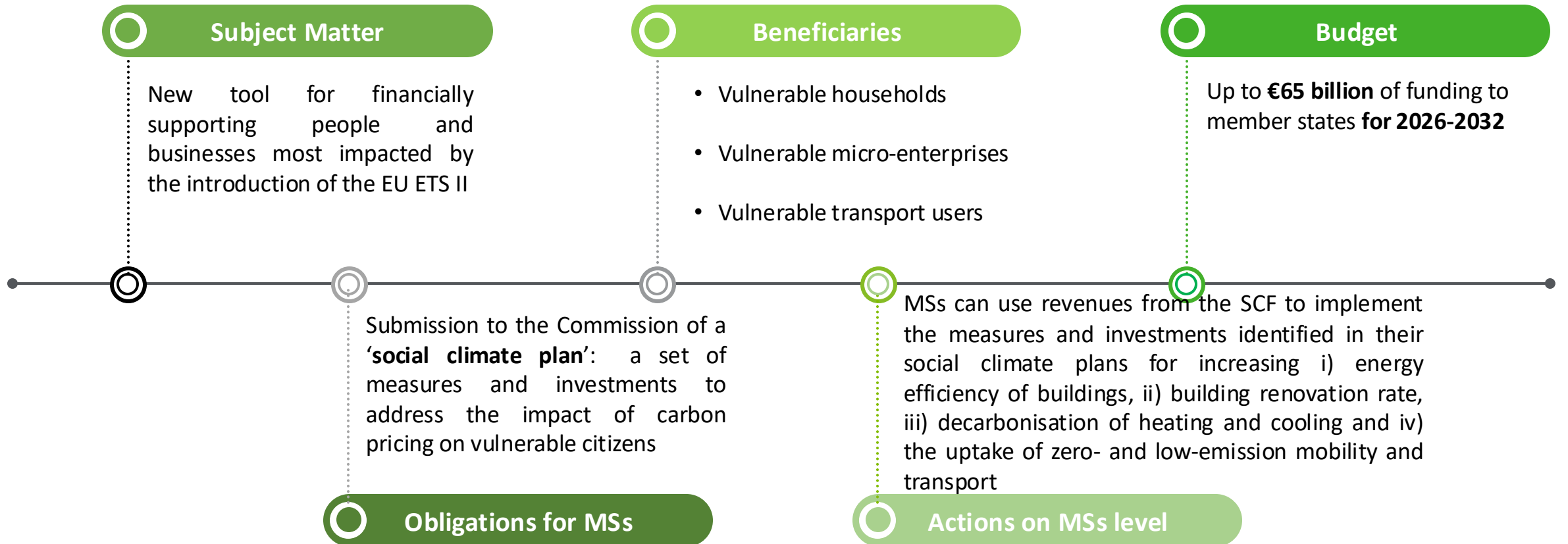
Allowances

- **Allowances for buildings will only be allocated through auction without the possibility of free allocation**
- **A share of the revenues will be used to support vulnerable households and micro-enterprises through the Social Climate Fund (SCF)**
- The issuance of rights and compliance obligations for these entities will apply from 2027
- **Regulated entities shall hold a greenhouse gas emissions permit by 1 January 2025**, as well as an approved monitoring plan for the monitoring and reporting of their annual emissions as part of greenhouse gas emissions permits

SOCIAL CLIMATE FUND



Regulation EU/2023/955





ESR

EFFORT SHARING REGULATION

Subject Matter

- Initially adopted in 2018, for the time period 2021 - 2030
- Amended in 2023
- The Regulation covers the non-EU ETS emissions, i.e. road transport, buildings, agriculture, small industry and waste (**almost 60% of total domestic EU emissions**)

Amendments

- With the updated rules, the EU aims to reduce greenhouse gas emissions in the ESR sectors by 40% by 2030.
- Previous 2030 target: 29% reduction
- **New 2030 target: 40% reduction (compared to 2005 levels)**

Obligations for MSs

- New and binding national targets for each Member State
- Different targets set for each country, **depending on their GDP per capita and the cost-effectiveness of reducing emissions** in them
- Greece: -22,7 % (instead of -16 %)
- **Review Clause (Article 15 ESR)**

Relation between EU ETS II & ESR

Buildings and road transport sectors will be covered under both the new dedicated ETS and the ESR

ENERGY
EFFICIENCY
DIRECTIVE



Directive 2012/27/EU

2012

- **20% energy efficiency target by 2020 on EU level**
- Important measures:
 - energy savings equivalent to an annual reduction of 1.5% in national energy sales
 - **energy efficient renovations to at least 3% per year of buildings owned and occupied by central governments**
 - **national long-term renovation strategies for the building stock in each EU country**
 - obligation schemes for energy companies to achieve yearly energy savings of 1.5% of annual sales to final consumers
 - **large companies conducting energy audits at least every four years**

Directive EU/2018/2002

2018

- Part of the “Clean energy for all European” package, to update the policy framework to 2030 and beyond
- Energy efficiency target for a reduction in final energy consumption **of at least 32.5% by 2030 (relative to the 2007 reference scenario)**
- Extension of the energy savings obligation in end use → EU countries shall achieve new final energy consumption savings of 0.8% each year for the 2021-2030 period, except Cyprus and Malta, whose annual target was 0.24%
- **A general review of the Energy Efficiency Directive was required by 2024**

Directive EU/2023/1791

2023

- The proposal a recast directive on energy efficiency was put forward by the Commission in July 2021, as part of the EU Green Deal package
- The 2021 proposal was further enhanced as part of the REPowerEU plan, presented by the Commission in May 2022, to decrease the EU’s dependency on fossil fuel imports from Russia
- Nine (9) guidance documents – the most recent has been adopted in September 2024 – it concerns Article 26 EED (“Accele-RES” initiative)

Unlike the 2012 EED, after the adoption of Directive EU/2018/2002, updated measures relating to national long-term renovation strategies were covered under the amended Energy Performance of Buildings Directive (EU)2018/844.

*“While the energy savings potential remains large in all sectors, **there is a particular challenge relating to transport**, as it is responsible for more than 30 % of final energy consumption, and **to buildings, since 75 % of the Union’s building stock has a poor energy performance**. Another increasingly important sector is the information and communications technology (ICT) sector, which is responsible for 5 to 9 % of the world’s total electricity use and more than 2 % of global emissions.”*



Crucial provisions of the revised EED

Article 3: “Energy Efficiency First” principle: fundamental principle of EU energy policy → in practical terms: energy efficiency must be considered by EU countries in all relevant policy and major investment decisions taken in the energy and non-energy sectors

Article 4: New energy efficiency targets and national contributions: EU countries shall collectively ensure an **additional 11.7% reduction in energy consumption by 2030**, compared to the projections of the EU reference scenario 2020 → EU countries shall set **indicative national contributions**, using a combination of objective criteria (energy intensity, GDP per capita, energy savings potential and earlier efforts for energy efficiency by EU countries) + a '**gap-filling mechanism**', triggered if countries fall behind in delivering their national contributions

Articles 5, 6 and 7: Energy consumption in the public sector, renovation of public buildings and public procurement → (indicatively) i) at least 3 % of the total floor area of heated and/or cooled buildings owned by public bodies must be renovated each year in order to convert them to buildings with at least nearly zero or zero energy consumption, ii) MS shall monitor how the energy efficiency requirements are taken into account by contracting authorities and contracting entities in the procurement of products, buildings, works and services + contracting authorities shall take action as part of procurement procedures by purchasing new buildings that address global warming potential over the full life cycle

Articles 8, 9 and 10: Energy saving obligations to drive savings to buildings/industry/transport → **EU countries shall achieve cumulative end-use energy savings from 2021 to 2030, equivalent to new annual savings of at least 0.8% in 2021-2023, at least 1.3% in 2024-2025, 1.5% in 2026-2027 and 1.9% in 2028-2030**



Crucial provisions of the revised EED

Article 11: Energy management systems and energy audits in the industrial sector:

- i) Obligation of large industrial energy consumers (average annual energy consumption higher than 85 TJ in the preceding 3 years) to implement energy management systems to monitor and optimise their energy efficiency
- ii) **Energy audit obligations for all companies consuming energy above a certain threshold (regardless of their size) → SMEs shall also carry out an energy audit, where there is significant energy saving potential**

Article 12: Introduction of an obligation for owners and operators of data centres, with a power demand of the installed information technology (IT) of at least 500kW, to monitor and report their energy performance by 15 May 2024 and every year thereafter

Articles 21, 22 and 24: Consumer related provisions: removal of barriers related to split incentives for energy efficiency renovations between tenants and owners or among multiple owners, ii) energy efficiency improvements for vulnerable customers, individuals affected by energy poverty and those living in social housing (use of funds through the Social Climate Fund)

Article 26: Heating and cooling aspects → efficiency criteria for a district heating and cooling system

- i) Support to new high-efficiency cogeneration units using natural gas and connected to district heating in efficient district heating and cooling systems will only be possible until 2030, whereas any other fossil fuel use will be banned for new heat generation capacities in such systems
- ii) EU countries will also have to promote local heating and cooling plans in large municipalities having populations above 45 000



THE RED III

•RED II (Directive (EU) 2018/2001)): RES energy share in the EU gross final consumption of energy in 2030 would be at least 32%

•RED III (Directive (EU) 2023/2413, adopted in the context of the “Fit for 55” package and the REPowerEU Plan): **RES energy share in the EU gross final consumption of energy in 2030 to be 42.5% in 2030 – which even exceeds the ambition of a 40% target proposed by Fit for 55 - an additional indicative mark-up of 2,5 % to reach the 45 % target is introduced**



1. Share of RES in the operation of buildings

Indicative target of 49% for 2030

2. Heating and cooling aspects

- It promotes the use of renewable heating and cooling systems and equipment and innovative technologies, such as smart and electrified renewable heating and cooling systems and equipment, complemented, where appropriate, intelligently managing energy consumption in buildings.
- It gradually increases renewable energy targets for heating and cooling, **with a binding increase of 0.8% per year at national level until 2026 and 1.1% from 2026 to 2030.**
- A guidance paper concerning heating and cooling (Articles 15a, 22a,23 & 24) has been recently adopted by the European Commission (“Accele-RES” initiative).



ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE

1

Zero Emission Buildings/ Emission Reduction Targets

- Zero emissions buildings: a building with a very high energy performance, requiring zero or a very low amount of energy, producing zero on-site carbon emissions from fossil fuels and producing zero or a very low amount of operational greenhouse gas emissions
- From 1 January 2028: all new buildings (residential and non-residential) owned by public authorities must be zero emission
- From 1 January 2030: all other new buildings must be zero emission

Non-Residential Buildings: MS shall:

1. establish measures to support owners in renovating non-residential buildings → at least 16% of building stock to be renovated by 2030 and at least 26% of building stock is renovated by 2033
2. provide a specific timeline for the renovation of the remaining non-residential stock by 2040 and 2050

Exemptions (optional): for individual non-residential buildings, due to their expected future use/ serious hardship/unfavourable cost-benefit analysis - where the overall renovation is not cost effective, the cost-effective parts shall be implemented

Residential Buildings: MS shall ensure:

1. reduction in the average primary energy use by at least 16% by 2030 and 20-22% by 2035 (when compared to 2020) → at least 55% of this decrease must be achieved by renovating 43% of the worst performing buildings.

Exemptions: heritage buildings/ places of worship/defence installations.

Minimum Energy Performance Standards

2

3

Gradual phasing out of fossil fuels

• Member States shall outline how to decarbonise heating and cooling systems to phase out fossil fuels by 2040.

• Not a mandatory EU-level phase-out date for new fossil fuel boilers BUT a clear legal basis for national bans → MS can set requirements for heat generators based on greenhouse emissions /type of fuel used/minimum part of RES energy used for heating.

• Subsisting stand-alone fossil fuel boilers will be prohibited from 2025 and they shall not be eligible for public support, in line with REPowerEU and EU Save Energy Communication.

• **Financial incentives possible for hybrid heating systems using a considerable share of RES energy (such as combi boilers).**

• **All new buildings shall be “solar ready”** i.e. to be fit to host rooftop photovoltaic or solar thermal installations at a later stage without costly structural interventions

• MS shall ensure the deployment of suitable solar installations on i) large existing public buildings and ii) existing non-residential buildings going through major renovations or for which a permit is required, as well as on iii) new roofed car parks.

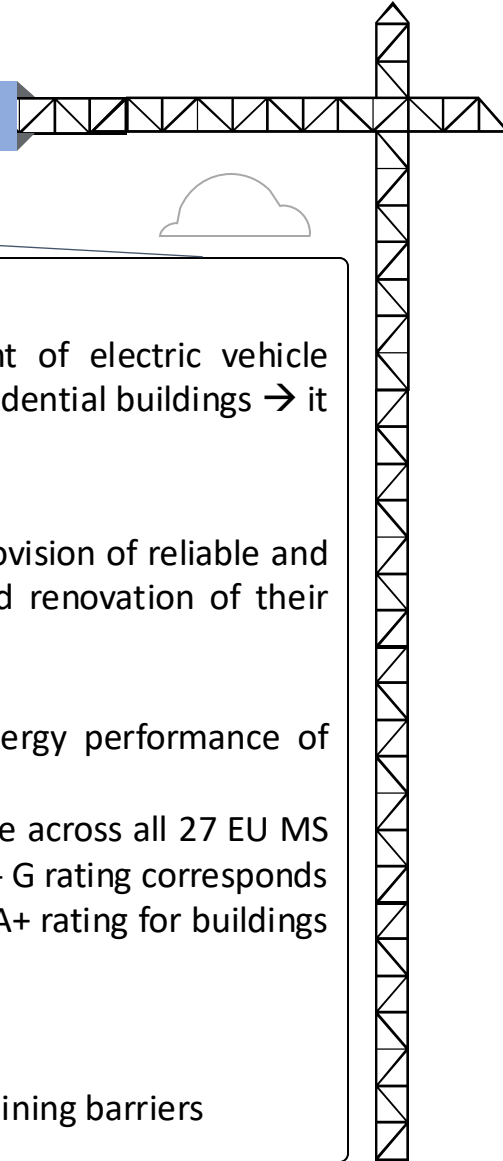
• In zero-emission buildings (i.e. all new buildings from 2030): 100% of the total annual primary energy use shall be covered by i) RES energy **generated onsite, nearby or from a renewable energy community**, ii) energy from an efficient district heating and cooling system or iii) energy from carbon free sources (where technically and economically feasible) → Energy Performance Certificates (EPCs) + Building Renovation Passports

Requirements for new buildings

4



Other important provisions of the revised EPBD



PROMOTION OF SUSTAINABLE MOBILITY

Several measures to be implemented by MS to increase the amount of electric vehicle recharging points and pre-cabling installed in both residential and non-residential buildings → it complements AFI Regulation.

BUILDING RENOVATION PASSPORT SCHEMES

Introduction of building renovation passport schemes across all MS → provision of reliable and personalised renovation roadmaps to building owners planning a staged renovation of their building.

ENERGY PERFORMANCE CERTIFICATES (EPCS)

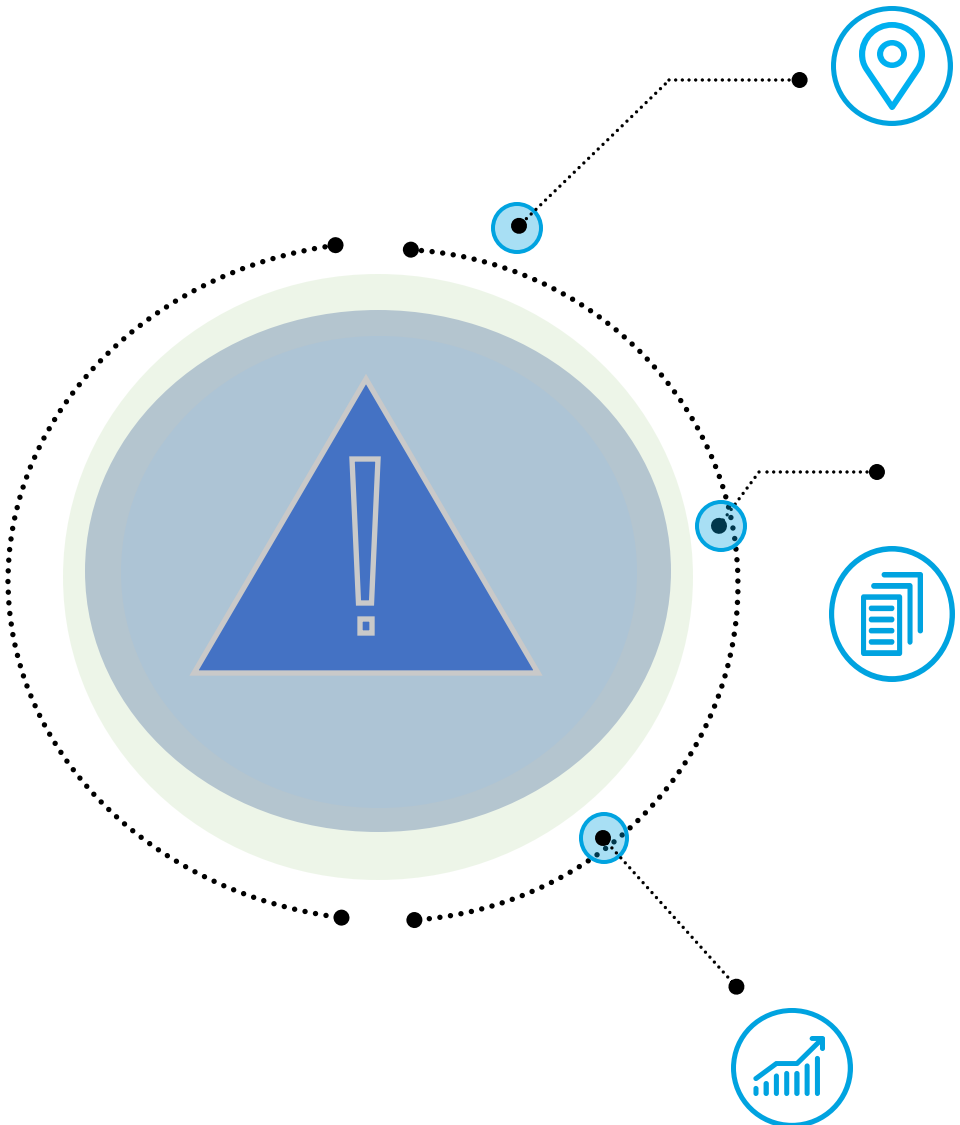
- An essential tool for assessing and providing transparency on the energy performance of buildings.
- The revised EPBD includes measures to base EPCs on a common template across all 27 EU MS → common scale of A-G: A rating corresponds to a zero-emission building - G rating corresponds to the very worst performing buildings in each MS. MS may introduce an A+ rating for buildings with even better energy performance than zero-emission buildings
- EPCs act as safeguards for tenants as well

NATIONAL BUILDING RENOVATION PLANS

National strategies to decarbonize the building stock and address the remaining barriers



THE FOCUS ON GREECE



The Climate Law (4936/2022)

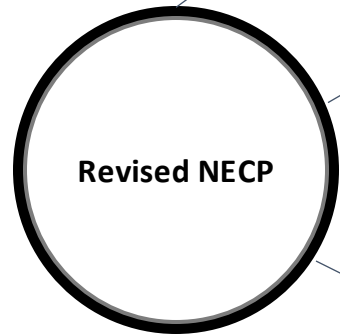
- As of January 1, 2025, the sale and installation of heating oil burners is prohibited
- As of January 1, 2030, only heating oil blended at least thirty percent (30%) by volume with renewable liquid fuels may be sold.
- Photovoltaic or solar thermal power generation systems at a rate corresponding to at least thirty percent (30%) of the coverage.

The Energy Efficiency Act (4342/2015)

- Annually renovate 3% of the total floor area of heated or cooled buildings owned and occupied by the central public administration
- Energy distributors and retail energy sales companies are obliged to provide final customers with individual meters at a competitive price
- If the heating and cooling or hot water of a building are supplied by a district heating network, a device for measuring heat or hot water consumption is installed in the heat exchanger or at the distribution point
- Article 32 of Law 5151/2024: Energy upgrade program for 'Clusters' of eligible public buildings (new Article 9A of the Energy Efficiency Act)

The Law on Energy Performance of Buildings (4122/2013)

- **New buildings** (minimum energy performance requirements of KENAK; Energy Efficiency Study; mandatory coverage of 60% of hot water needs from solar thermal systems; installation of self-regulating device equipment, if technically and economically feasible, etc.)
- **Existing buildings** (get upgraded, to the extent technically, functionally and economically feasible, in order to meet the requirements provided for in KENAK; Energy Performance Study; installation of self-regulating devices when a new one is installed or the heat production unit that serves them is replaced, if technically and economically feasible)



Energy saving obligations:

- Part of the cumulative energy savings target will be achieved through energy upgrade interventions in households affected by energy poverty
- Target for reducing the final energy consumption of all public authorities by at least 1.9% annually compared to the year 2021.
- Upgrade at least 3% of the total floor area of heated and/or cooled buildings is extended to all public authorities

- Reduction of the average use of primary energy in residential buildings by 16% by 2030 and by 20-22% by 2035 - **RES share in the final energy consumption has been revised to 72.2%, up from 67.4%**
- The target for other buildings is redefined → 16% of the buildings with the worst performance must be renovated by 2030, and 26% of the buildings with the worst performance must be renovated by 2033
- Annual rates of residential building renovations: i) during the period 2025-2030: 68.000 renovations, ii) during the period 2031-2040: 64.000 renovations, iii) during the period 2041-2050: 83.000

ELECTRA program: promotion of the exemplary role of the public sector in improving the energy efficiency of buildings, to meet the target of the annual energy renovation of 3% of the floor area of buildings in the central public administration, as well as to achieve the national energy efficiency target

- Promotion of efficient heating and cooling systems → e.g. Article 48 of Law 5151/2024 **BUT: RES share in cooling and heating is projected to decrease, standing at 52.6%, down from 61.1%**
- Replacement of old and energy-intensive appliances with new, more energy-efficient ones
- Gradual phasing out of boilers using fossil fuels by 2040
- Increase in the contribution of buildings to the installation of electric vehicle charging infrastructure

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THANK YOU! Q & A

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