

Strategies and Action Plans



Co-funded by the
Erasmus+ Programme
of the European Union



SLOVAK UNIVERSITY OF
TECHNOLOGY IN BRATISLAVA



EU 2020 goals

The European Council energy and climate change objectives for 2020:

- to reduce greenhouse gas emissions by 20 %
- to increase the share of renewable energy to 20 %
- to make a 20 % improvement in energy efficiency

Smart Growth

developing an economy based on knowledge and innovation

INNOVATION

Flagship initiative
«Innovation Union»

EDUCATION

Flagship initiative
«Youth on the move»

DIGITAL SOCIETY

Flagship initiative
«A digital agenda for Europe»

Sustainable Growth

promoting a more resource efficient, greener and more competitive economy

CLIMATE, ENERGY, MOBILITY

Flagship initiative
«Resource efficient Europe»

COMPETITIVENESS

Flagship initiative
«An industrial policy for the globalisation era»

Inclusive Growth

fostering a high-employment economy delivering social and territorial cohesion

EMPLOYMENT AND SKILLS

Flagship initiative
«An agenda for new skills and jobs»

FIGHTING POVERTY

Flagship initiative
«European platform against poverty»

EU 2030 goals – Climate and Energy Framework

The
European
Council
energy and
climate
change
objectives for
2030:

- to reduce greenhouse gas emissions by 40 %
- to increase the share of renewable energy to 32 %
- to make a 32,5 % improvement in energy efficiency



fni.no

EU 2030 goals – Climate and Energy Framework

The framework helps drive progress towards a low-carbon economy and build an energy system that

- ensures affordable energy for all consumers,
- increases the security of the EU's energy supplies,
- reduces our dependence on energy imports,
- creates new opportunities for growth and jobs and
- brings environmental and health benefits – e.g. through reduced air pollution.

Greenhouse gas emissions – a cut of at least 40%

A binding target to cut emissions in the EU by at least 40% below 1990 levels by 2030. This will enable the EU to move towards a climate-neutral economy and implement its commitments under the Paris Agreement.

To achieve the target:

- EU emissions trading system (ETS) sectors will have to cut emissions by 43% (compared to 2005) – to this end, the ETS has been revised for the period after 2020
- non-ETS sectors will need to cut emissions by 30% (compared to 2005) – this has been translated into individual binding targets for Member States.

Renewables and energy efficiency

Renewables

A binding renewable energy target for the EU for 2030 of at least 32% of final energy consumption, including a review clause by 2023 for an upward revision of the EU level target.

Energy efficiency

A headline target of at least 32.5% for energy efficiency to be achieved collectively by the EU in 2030, with an upward revision clause by 2023.

	GREENHOUSE GAS EMISSIONS	RENEWABLE ENERGY	ENERGY EFFICIENCY	INTER-CONNECTION	CLIMATE IN EU-FUNDED PROGRAMMES	CO2 FROM:
2020	-20%	20%	20%	10%	2014-2020 20%	
2030	≤ -40%	≥ 32%	≥ 32.5%	15%	2021-2027 25%	CARS -37.5% Vans -31% Lorries -30%

Upwards revision clause by 2023

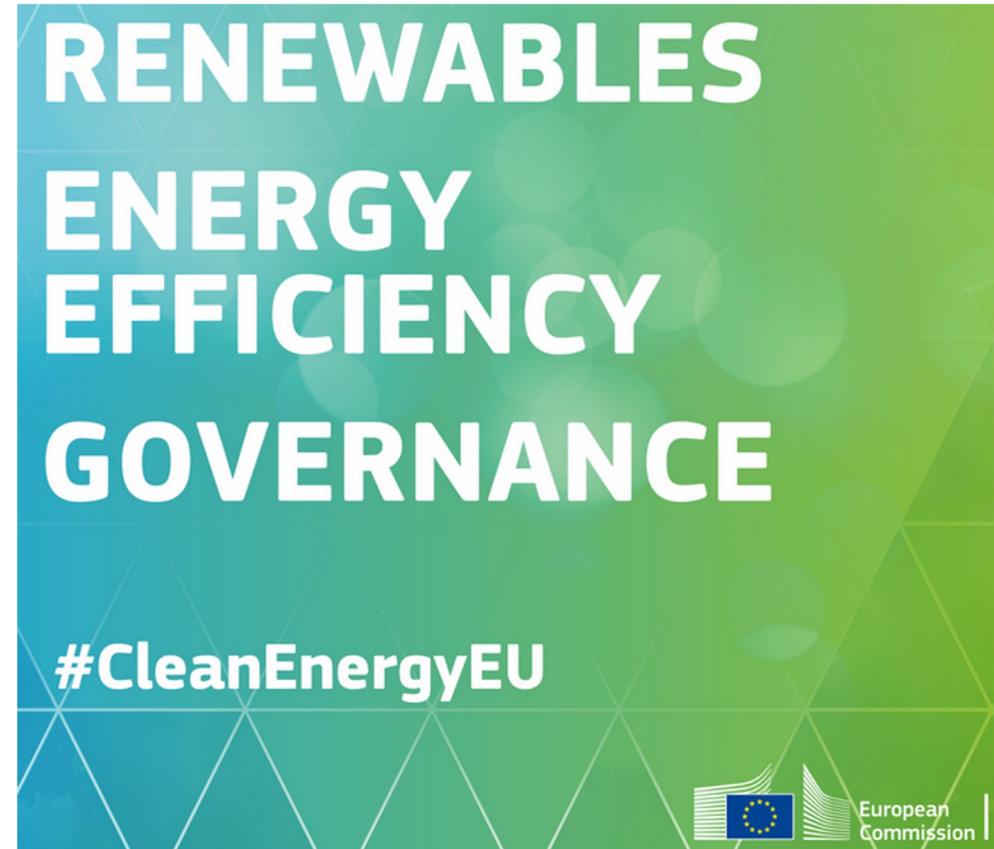
eur-lex.europa.eu

Governance system

A transparent and dynamic governance process will help deliver on the 2030 climate and energy targets in an efficient and coherent manner.

The EU has adopted integrated monitoring and reporting rules to ensure progress towards its 2030 climate and energy targets and its international commitments under the Paris Agreement.

Based on the better regulation principles, the governance process involves consultations with citizens and stakeholders.



EU Nearly Zero-Energy Building Strategy 2020 (ZEBRA2020)

Sustainability of the European society and economy will be based on renewable energy and resource efficiency.

For the building sector, this implies the large scale deployment of nearly Zero-Energy Buildings (nZEBs).

The technology is available and proven; however the large scale uptake of nZEB construction and renovation is still a challenge for all market actors and stakeholders involved

Nearly Zero-Energy Building Strategy 2020 (ZEBRA2020)

The EU committed to limit global warming well below 1,5-2 degrees Celsius and the related climate targets clearly indicate that **CO2-reductions of 80-95% will be required in the building sector by 2050.**

The ZEBRA2020 scenarios reach CO2-reduction levels of around 80% only in the ambitious cases.

An achievement of the 2050 energy and climate goals require policy ambitions, going beyond the assumed actions of the ambitious policy scenarios, which were developed together with policy makers.

Immediate action and radical policy innovations are required to reach the energy and climate targets.

Covenant of Mayors – SECAP 2030 - The role of municipalities

Sustainable Energy and Climate Plans for cities (or districts)

Mitigation and adaptation goals and actions (and energy poverty aspects):

- 40% reduction in GHG emission from a base year chosen by the municipality till 2030 more ambitious
- Emission inventories
- Monitoring (2 and 4 years – soft, full)



In November 2020



covenantofmayors.eu

Covenant of Mayors – SECAP 2030

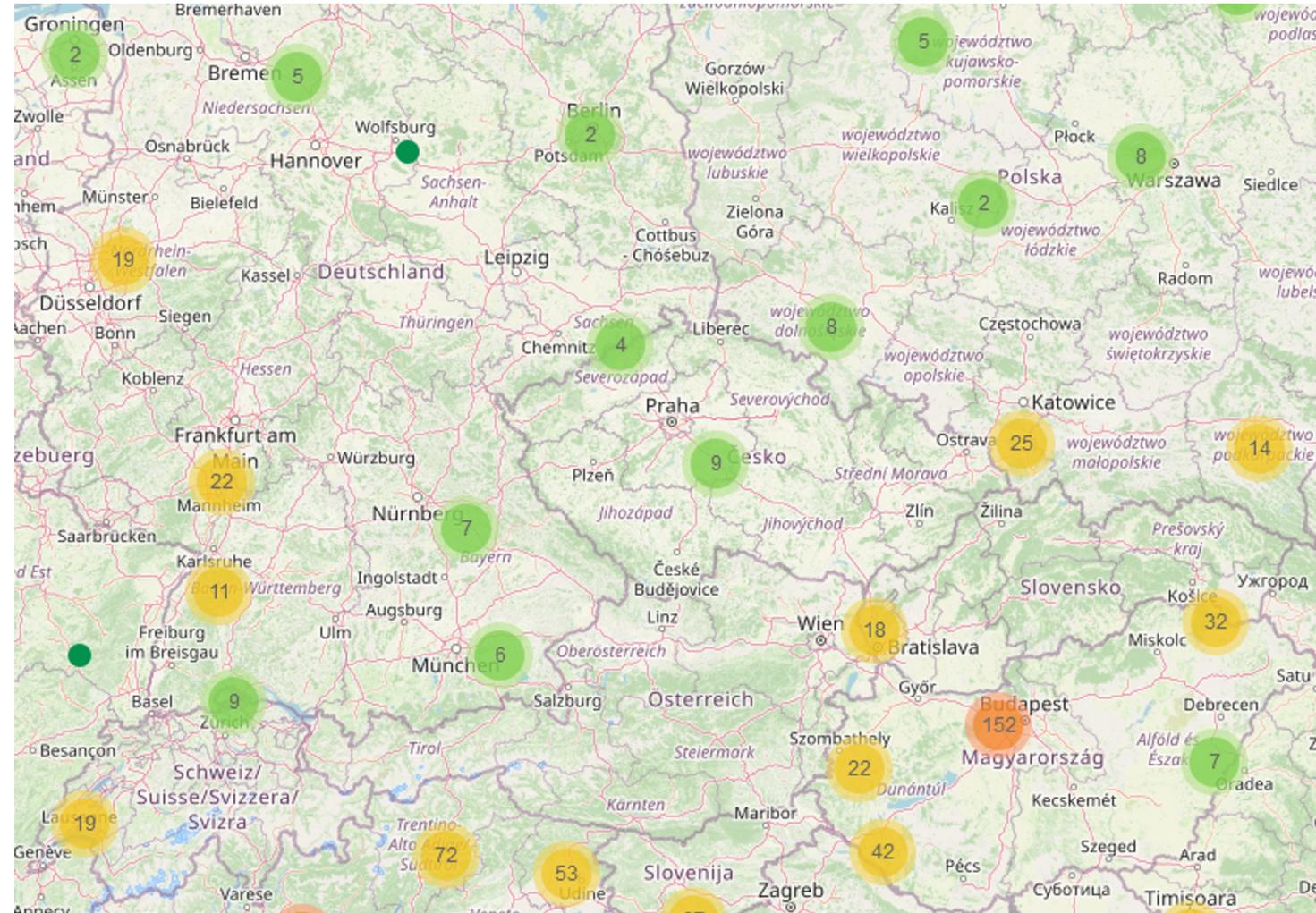
Total number of submitted Sustainable Energy and Climate Action Plans per country (in November 2020):

- 15 municipalities in Germany
- 32 municipalities in Hungary
- 2 municipalities in Slovakia

Rapidly increasing number of signatories all across Europe in the last couple of years

The energy efficient and smart improve of the building sector is one of the main goals in every SECAP !

Map of Covenant signatories



covenantofmayors.eu

Hungary 2030 goals

Hungary National Energy and Climate Plan objectives for 2030:

- to reduce greenhouse gas emissions by 40 %
- to increase the share of renewable energy to 21 %
- to make a 8-10 % improvement in energy efficiency

National Energy and Climate Plan,
Hungary (NECP)



vgfszaklap.hu

Energy consumption projections in the National Energy and Climate Plan (NECP) of Hungary

Projected **growth in primary domestic energy consumption**, increase

from **1117 PJ in 2017** to more than **1284 PJ by 2030**, which is an **increase of 15%**.

This does not meet the expectations of environmental and climate protection, nor the declining consumption trends of developed economies.



Role of renewable energy sources in the NEPC of Hungary

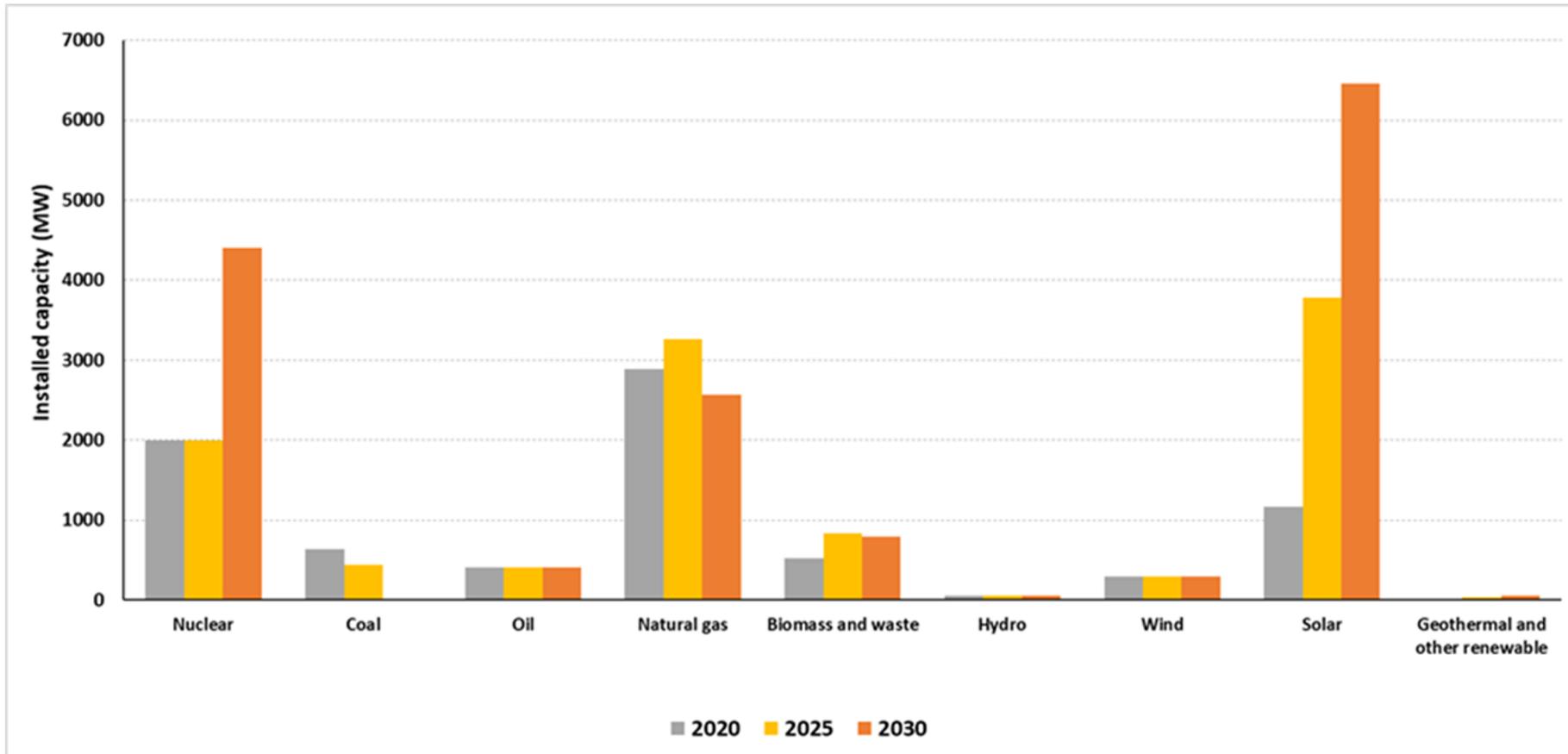
Expansion of solar PV systems is the most ambitious part of the NECP:

- According to the goals, **6500 MW PV capacity** will work in Hungary **by 2030**, adding up the larger (industrial-scale) systems and the household systems.
- A **large increase** is expected in the number of **household PV systems** as well in the next decade. The NECP's goal is to install an **average capacity of 4 kW for 200,000 households by 2030**. Thus, 5% of Hungarian households could be connected to the electricity system as a prosumer.



mnnsz.hu

Planned evolution of installed power generation capacity in Hungary



NECP of Hungary

Heating and cooling of buildings in the NECP of Hungary

In the field of **heating** the document has a **firewood-based concept** for the household level, despite the local air pollution problems and its overconsumption.

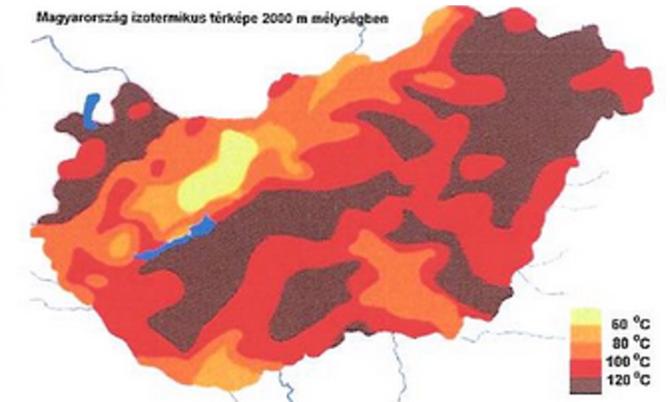
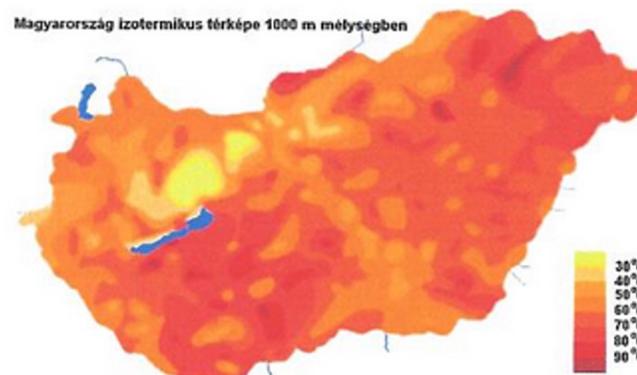
Access heat and other **ambient heat** utilisations, as air source and ground source **heat pumps**, **should have been mentioned** as important development areas.

Geothermal energy is the only one, which is **mentioned frequently**.

As for the crucial development area of **district heating**, the NECP **does not mention the solar energy** as a possible source of heat.



energiaoldal.hu



A hőáramsűrűség területi eloszlása

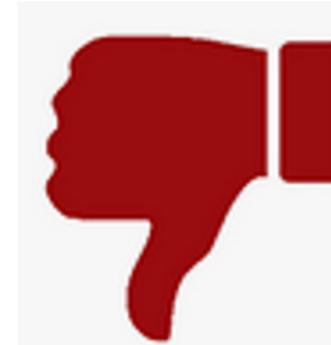
Kurunczi Mihály: Egyetemi jegyzet

Cons of the National Energy and Climate Plan of Hungary

a) Energy efficiency, which is rather lightly discussed, raises a number of issues. The planned measures **do not consider energy efficiency as a primary target area**

b) **Energy awareness**, as another means of reducing consumption and integrating renewable energy sources, is **one of the rather neglected topics** of the NECP. The document presents it only as a sketched idea, which will have to be run up somehow in the future, but only faint references can be read in the material

c) The third key element of the energy revolution in Europe is the use of renewable energy sources. According to EUROSTAT, Hungary is the only EU Member State where the share of renewable energy sources has been declining every year since 2013. There are no ambitious plans in this area either, as the target of the 21% RES share (in gross final energy consumption) is significantly below the EU average.



Slovakia - 2030 NECP goals

Slovakia National Energy and Climate Plan objectives for 2030:

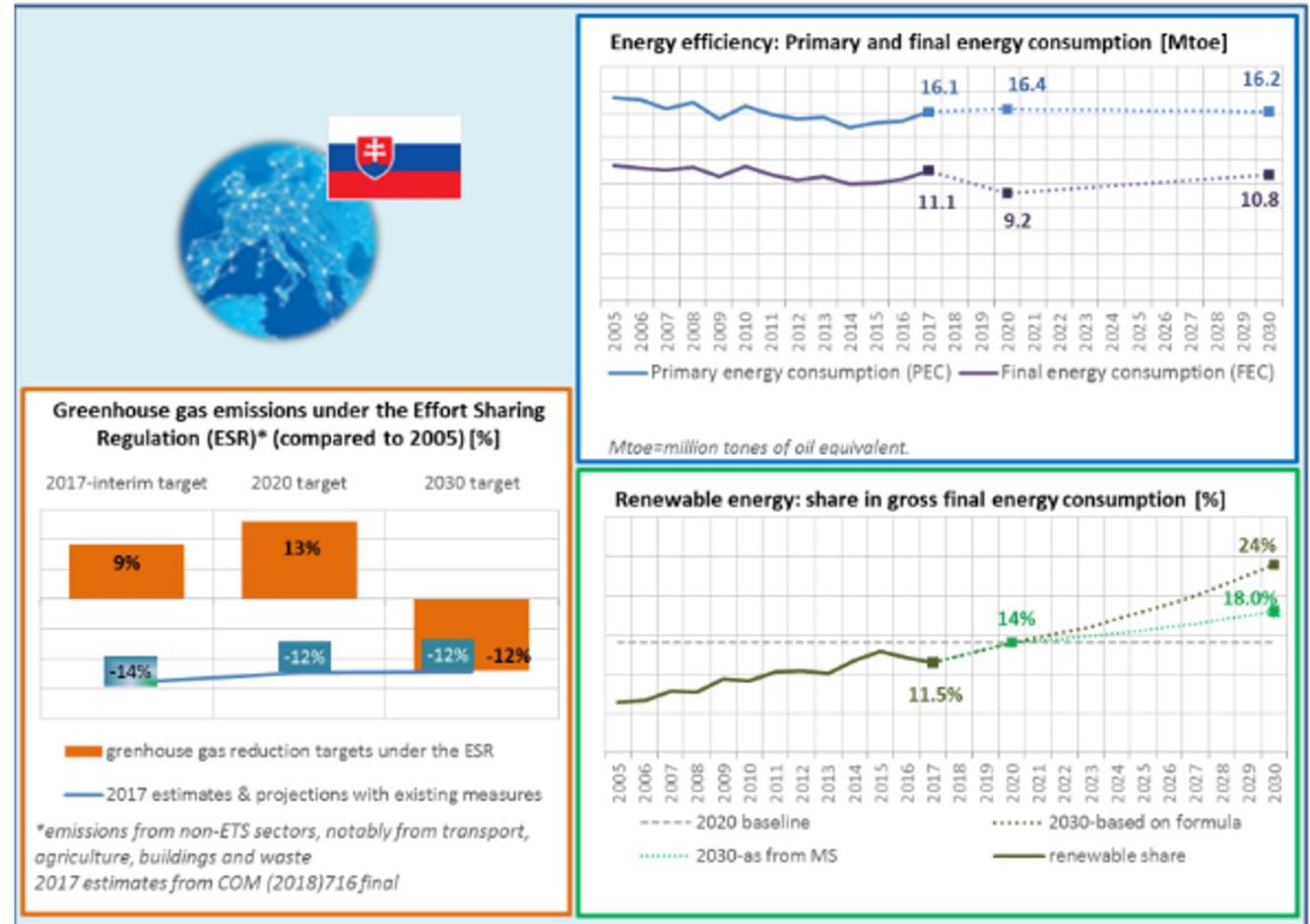
- reduce greenhouse gas emissions by 12 % compared to 2005
- increase the share of renewable energy to 18 %
- minor reduction for primary energy consumption and an increase for final energy consumption compared to the 2020 targets.

Slovakia - 2030 goals

Limited efforts in all fields:

- low percentage of renewables
- very conservative goals for energy consumption
- insufficient decrease in CO₂-emissions

SLOVAKIA - National targets and contributions foreseen in the draft National Energy and Climate Plan



Sources: Slovakia's draft National Energy & Climate Plan, Eurostat (PEC2020-2030, FEC2020-2030 indicators and renewable SHARES), COM (2018) 716 final (2017 GHG estimates)

Germany - 2030 NECP goals

Germany National Energy and Climate Plan objectives for 2030:

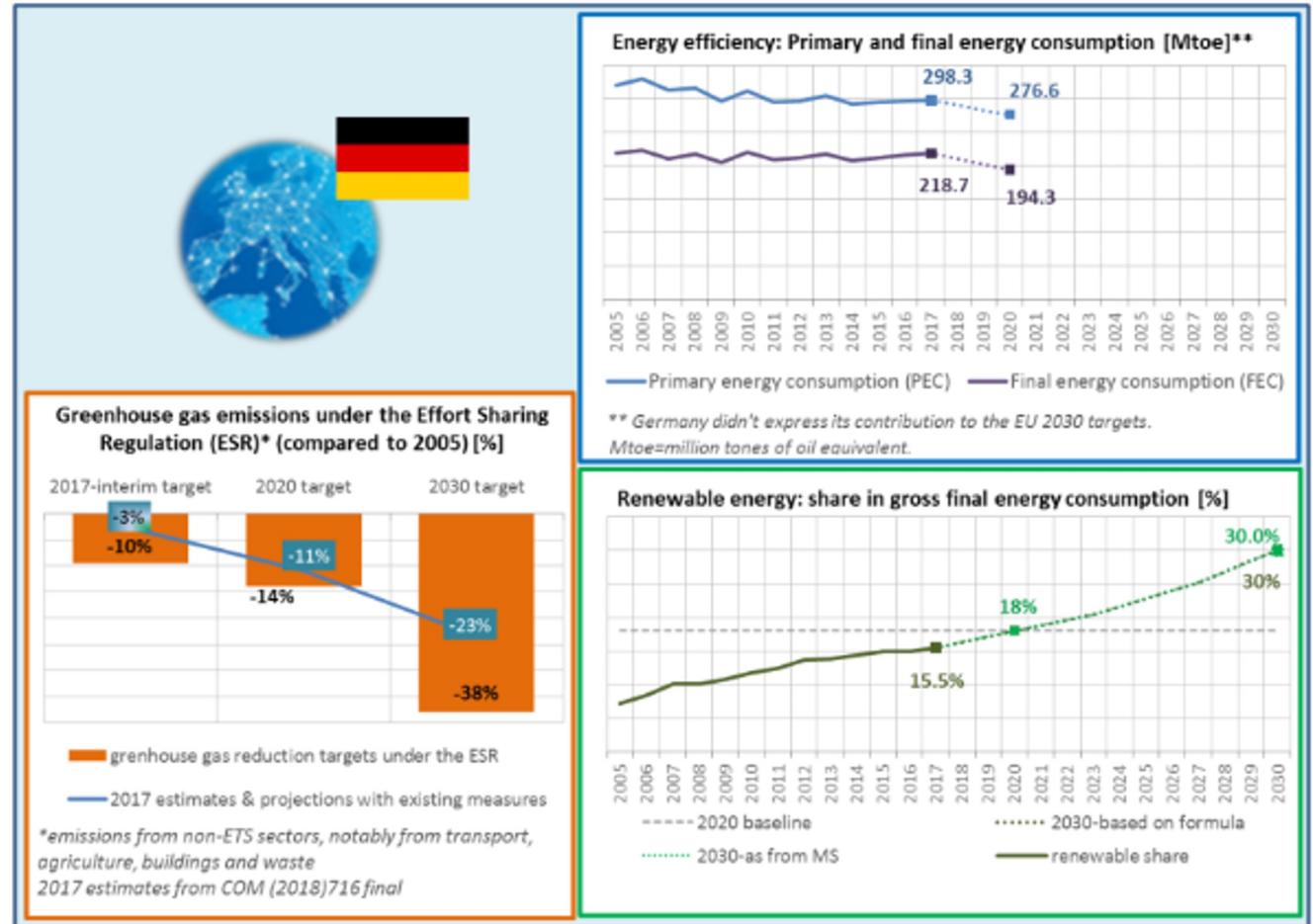
- reduce greenhouse gas emissions by 38 % compared to 2005
- increase the share of renewable energy to 30 %
- the draft plan lacks clarity on Germany's energy efficiency contribution to the EU target of 32.5% in 2030

Germany - 2030 goals

More ambitious goals than in Slovakia and Hungary:

- slightly lower renewable energy percentage goal, than the EU target (30% vs 32%)
- similarly slightly lower CO2-emission reduction goal (38% vs 40%)
- energy efficiency goal is not clarified, but a significant decrease is projected in energy consumption between 2017 and 2020

GERMANY - National targets and contributions foreseen in the draft National Energy and Climate Plan



Sources: Germany's draft National Energy & Climate Plan, Eurostat (PEC2020-2030, FEC2020-2030 indicators and renewable SHARES), COM (2018) 716 final (2017 GHG estimates)

National long-term strategy of Hungary

In order to achieve climate neutrality by 2050, **greenhouse gas emissions in Hungary are expected to decrease by approx. 95% compared to 1990.**

To achieve this goal, intervention is needed in all emission sectors and steps must be taken to maintain absorption capacities.

Currently – at the end of the 2010s – the **rate of reduction is about 32%** compared to 1990.

According to the models, the share of renewable energies reaches 45% by 2040.

The estimated cost of reaching climate neutrality until 2050 is about 50 000 billion HUF ~ 140 billion EUR

National long-term strategy of Hungary

According to the Strategy:

- energy efficiency investments can be made most cost-effectively by introducing a commitment system.
- in the heating and cooling sector, there is great potential for the utilization of biomass in both individual heating installations and district heating, as well as in the use of ambient heat through heat pumps.
- In view of the geological conditions of Hungary, the aim is to exploit the potential of geothermal energy, both in district heat production and in agricultural utilization

The strategy mentions the importance of smart-systems and smart-metering

Energy independence of families can be:

- promoted by supporting renewable energy production of households,
- by promoting the spread of smart meters, and
- by investing in energy efficiency that sustains the results of overhead reductions.

National long-term strategy of Slovakia

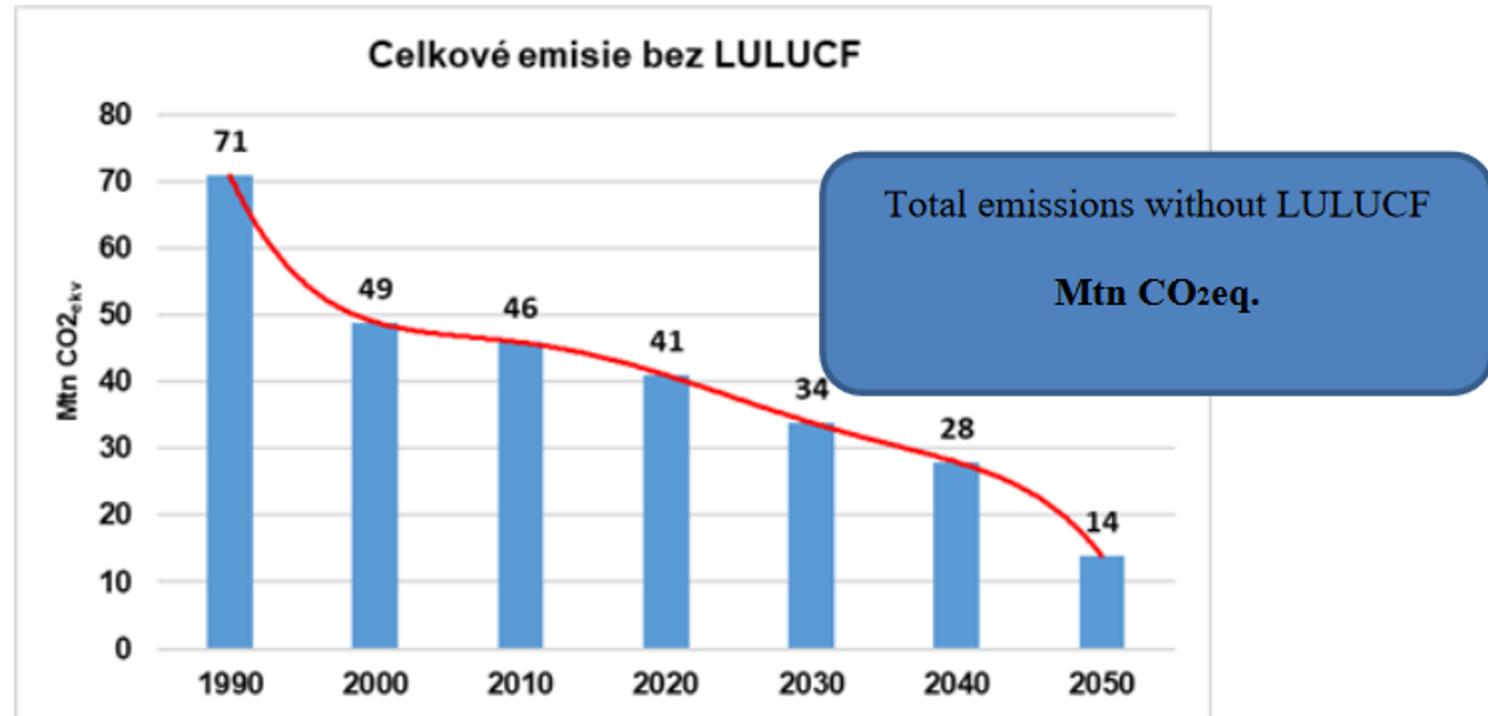
Goal: achieve climate neutrality in Slovakia by 2050

- projected emission gap is likely to be 14 MtCO₂eq., which accounts for an 80% emissions reduction compared to 1990
- the expected costs will be EUR 196 billion

SHMI projects (until 2040) and an expert estimate of the MoE; the projections rely on the data used in the Slovak-CGE and CPS model

Energy efficiency measures:

- Increase the energy savings achieved in building renovation from 30% to 60%
- Promote the improvement of buildings' energy performance with measures implemented in the heating and cooling sector aimed at decarbonizing the supply of heat to buildings from district heating and cooling systems.



National long-term strategy of Germany

Germany define an emissions reduction pathway with a final target of 80 to 95 percent lower greenhouse gas emissions compared to 1990 by 2050

Area of action	1990 (in million tonnes of CO ₂ equivalent)	2014 (in million tonnes of CO ₂ equivalent)	2030 (in million tonnes of CO ₂ equivalent)	2030 (reduction in % compared to 1990)
Energy sector	466	358	175 – 183	62 – 61 %
Buildings	209	119	70 – 72	67 – 66 %
Transport	163	160	95 – 98	42 – 40 %
Industry	283	181	140 – 143	51 – 49 %
Agriculture	88	72	58 – 61	34 – 31 %
Subtotal	1,209	890	538 – 557	56 – 54 %
Other	39	12	5	87 %
Total	1,248	902	543 – 562	56 – 55 %

Source: Climate Action Plan 2050 of the Federal Government

National long-term strategy of Germany

The building sector in the ‚Climate Action Plan 2050‘ of Germany:

Of all investments that are relevant for greenhouse gas emissions, **buildings have the longest service life** – approximately 100 years – and their integrated buildings services are also often in use for over 20 years. We should therefore **define an efficiency standard for all new buildings** which, in conjunction with direct use of renewable energy and electricity, would produce zero CO2 emissions. We already have cost-efficient technologies, so that this new standard could be introduced without delay.’

The challenges presented by the stock of existing buildings are incomparably greater. It consists largely of only moderately well insulated buildings that are heated for the most part by gas and oil-fired boilers. Converting these systems to run on efficient condensing boilers could vastly reduce CO2 emissions.’

The other relevant issue in the buildings sector, along-side the necessity of an efficient electricity and heat supply, is the question of construction materials and whether they are based on fossil or renewable raw materials.’



National Building Energy Performance Strategy of Hungary

The Strategy put the task of improving building energy performance into a wider energy policy, economic and social context.

Objectives:

- Harmonisation with the energy and environmental objectives of the EU
- Modernisation of buildings as a means to reduce the utility costs of the population
- Cutting back on budgetary expenses
- Reducing energy poverty
- Creating jobs
- Reducing greenhouse gas (GHG) emissions.

National Building Energy Performance Strategy of Hungary

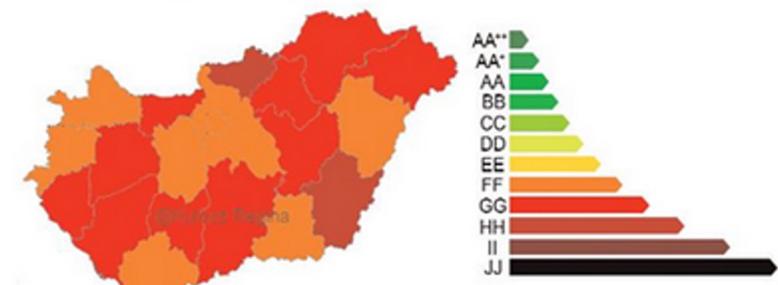
Objectives:

- The energy savings to be achieved by 2030 should be in line with the relevant energy efficiency requirements set in the National Energy Strategy 2030.
- 2020 targets for energy savings from improved building energy performance should be defined on the basis of calculations made with the current condition of the building stock, the requirements applicable to the different building types, the technical modernisation tasks needed to meet these requirements as well as the costs this involves and the available Government and other resources taken into account.

ÁTLAGOS ENERGETIKAI OSZTÁLY 2012-2017
LAKÓ- ÉS SZÁLLÁSJELLEGŰ ÉPÜLETEK



ÁTLAGOS ENERGETIKAI OSZTÁLY MEGYÉNKÉNT 2012-2017
LAKÓ- ÉS SZÁLLÁSJELLEGŰ FUNKCIÓ



Residential and Non-residential Building Stock Renovation Strategy of Slovakia

,Includes an **overview of the national stock of residential and non-residential buildings**, the **identification of cost-effective approaches to renovations** relevant to the building type and climatic zone, **policies and measures to stimulate cost-effective major (deep) renovations** of buildings, including staged (deep) renovations. It contains a forward-looking evidence-based **estimate of expected energy savings** and other benefits of renovations of residential and non-residential buildings to **guide the investment decisions of individuals, the construction industry and financial institutions** in Slovakia.'

Building category	Energy class								Total
	A0	A1	B	C	D	E	F	G	
Single-family buildings	168	391	656	126	37	9	7	2	1 396
Multi-apartment buildings	80	69	820	121	19	8	4		1 121
Office buildings	4	8	67	37	2	1		2	121
Schools and school facilities	1	2	37	26	6	3	1		76
Hospitals	1	2	9	1					13
Hotels and restaurants	2	5	35	9	3	2			56
Sports halls and other buildings intended for sport		1	5	4	3	1			14
Wholesale and retail trade services buildings		7	52	32	12	2		2	107
Other mixed-purpose buildings	1	8	49	13	1	3			75
Total	257	493	1 730	369	83	29	12	6	2 979

Source: INFOREG

Numbers of energy performance certificates by building category and energy class in 2016

Energy Efficiency Strategy for Buildings in Germany

The Federal Government wants to make Germany's building stock virtually climate-neutral by 2050.

The Energy Efficiency Strategy for Buildings brings together the three aspects of power, heat, and energy efficiency to form a clear policy framework for the energy transition in the buildings sector.

Digitisation in the buildings sector

- can make an important contribution towards implementing the energy transition in the building sector technical progress, better consideration of energy efficiency measures, the use of renewable energy in digitised planning, and digital applications for building management such as the energy-efficient control of equipment

Flagship projects for the energy transition in the buildings sector

- to show how concepts that are available but not yet established on the market can realise virtually climate-neutral buildings and neighbourhood

Systemic funding for innovation in the heating and cooling infrastructure More investment needed

- Federal Government aims to cut primary energy demand in the building stock by approx. 80% by 2050 (compared with 2008)